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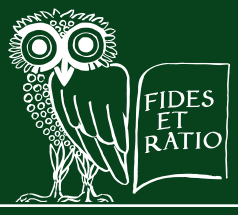
Life and Fertility
Life and Health

interdisciplinary approach



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Assessment of menstrual cycle self-observation skills using the double-check symptom-thermal method based on chart evaluation[1]

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Abstract: Systematic observation of the menstrual cycle allows a woman to monitor her procreative health, which has great diagnostic value. It gives the opportunity to learn about the natural rhythm of fertility and, in the case of observing abnormalities, reduces the time until the first medical consultation. Reliable learning of observation takes time and is carried out through a certified teacher of a particular method of fertility awarness. Therefore, this skill from the area of prevention and diagnosis should occupy an important place in the teaching of both health care workers and the education of women themselves. In Poland, there are several non-governmental non-profit organizations that provide professional teaching support in the field of health-promoting education and natural family planning. *Method:* I and III of self- cycle observation chart were studied. The total number of analyzed charts was 74. The study was based upon the SPSS Statistics package version 25. The $p < 0.05$ level was considered statistically significant. *Results:* The majority of women with high self-observation skills in menstrual cycle charting using the double-check symptom-thermal method were single , with a university degree (53.65%, n = 22), learning the method at the Lublin branch of Polish Association of Natural Family Planning Teachers (51.21%, n = 21), motivated to learn charting for procreative health monitor (75.60%, n = 31), with no support from a husband/fiancé/partner (60.96%, n = 25). *Conclusions:* The study group of women was homogeneous in terms of the eligibility criteria applied, i.e. they were all at reproductive age, had typical cycles and did not use any contraception methods, which would exclude self-monitoring of the cycle. The women's high skills in cycles self-observation are the result of the excellent quality of the NFP teacher of the symptothermal double check method work with the client, the ability to communicate and convey the principles of self-observation skills as well as the user's motivation to keep charting their cycles. The main goal of the women learning the method was to monitor their own procreative health.
Keywords: fertility bioindicators, menstrual cycle, symptothermal double-check method, self-observation, procreative health.

Introduction

Fertility awareness allows not only the woman herself, but also the couple to engage in intercourse responsibly and conscientiously, taking actual reproductive plans into account. Thus, natural family planning (NFP) forms a viable option for those who are not interested in or have contraindications to mechanical or pharmacological contraception (Piasecka, Łyszczarz, Pytka, Ślizień-Kuczapska, Kanadys, 2022). NFP involves, among other things,

1 Article in polish language: Ocena umiejętności samoobserwacji cyklu miesiączkowego metodą objawowo-termiczną podwójnego sprawdzenia na podstawie analizy kart https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Pias.pdf

the systematic observation of the cycle by the woman, as prescribed by a given method, on a chart drawn up for this purpose.

The cycle chart with self-observations can be an element of prevention of reproductive health disorders and an aid for the physician in interpreting, diagnosing and administering treatment of gynaecological problems (Ślizień-Kuczapska, Smyczyńska, Rabijewski, 2020). The chart also makes it easier to monitor the progress of treatment for reproductive health disorders and helps the patient to adjust her plans (vacation, surgery) with the cycle. It can also be a reliable tool in the daily work with women, not only for the physician, but also for the nurse and midwife as part of their primary health care duties, with the latter roles gaining increasing competencies (e.g. by continuing prescription of hormonal medications administered by the physician or prescribing certain additional check-ups).

1. Overview of the typical menstrual cycle

A typical menstrual cycle according to self-observation rules is characterized by a correlation of the main signs of fertility, i.e. spike in BBT (basal body temperature), the peak of cervical mucus level and the peak of the cervix (Kinle, Szymaniak, 2009). The following criteria for typical menstrual cycles according to double-check fertility awareness methods (FAM) can be distinguished:

- normal length of the cycle,
- normal course of menstrual bleeding,
- normal occurrence of the cervical mucus symptom,
- normal changes occurring in the cervix,
- normal biphasic course of BBT,
- a minimum of 10 days of the luteal phase,
- convergence of major fertility indicators,
- limited perimenstrual complaints, e.g. premenstrual syndrome (PMS), menstrual soreness (Piasecka, Łyszczarz, Pytka, Ślizień-Kuczapska, Kanadys, 2022).

All major bioindicators of fertility should be measured or tested according to specific rules of the method, in this case symptothermal double-check method. Their record is kept on a standardized paper card or in a mobile application. In the morning, immediately after waking up, the BBT symptom is recorded on the cycle chart; in the evening, after a day-long observation – the status of cervical mucus (Kuźmiak, Szymaniak, Walczak, 2014).

Based on more than 30 years of work of the Polish Natural Family Planning Teachers Association (PNFPTA) with women learning how to observe their menstrual cycles, a pattern for teaching the method under the guidance of a certified teacher was developed. The first three meetings with the woman being taught are carried out at weekly intervals; after the third meeting a month's break is recommended. If necessary, additional consultations are carried out. At the first meeting, the teacher conducts an interview and informs the trainee about the effectiveness of the method in planning and postponing conception, as well as how FAM can help the woman learn more about her fertility physiology. She can then use this knowledge to monitor her reproductive health. An interview with a woman involves collecting data for an individual metric, covering such information as age, place of learning the method, marital status, education, number of children, purpose of learning the method, and potential support from her husband / fiancé / partner in conducting self-observations. The teacher shares instructional materials on the basics of the anatomy and physiology of the male and female reproductive systems and the principles of observing basal body temperature (BBT). It is recommended that a sexually active client be informed that, optimally, for the first three observed cycles, she should not engage in sexual activity throughout the entire cycle. Otherwise, there is a risk of lowering the quality of observation results due to the impact of ejaculate on the mucus symptom – an indicator that may be difficult to correctly interpret in the cycle observation chart during the learning process. The second meeting a week after the first serves to verify the quality of the BBT measurement record in the chart. The teacher also guides the woman in self-interpretation of sample practice sheets, so that

she learns how observation is to be carried out and how mucus records should be interpreted. During the third meeting, a week after the previous one, the woman learns how to determine the fertile period based on her own menstrual cycle self-observation chart. The fourth meeting, a month after the last one, is intended to check if the woman knows how to and can correctly observe temperature (BBT) and cervical mucus. At the fifth meeting, three months later, the woman learns to carry out calculations.

It is only by being thorough and systematic that a woman can become proficient in the principles of a specific FAM. What is also required at this point is professional assistance from a qualified teacher as well as having enough time to master the observation of basic fertility indicators and analyse them in relation to determining the phases of the monthly cycle and recognizing periods of fertility and infertility. However, it is not only the knowledge and interpersonal skills of the teacher that makes the woman encouraged to observe her cycle and to keep correct, systematic records of fertility indicators in the observation chart. Above all, it is her own attitude and motivation.

The cycle chart contains information such as the date (month, year), consecutive days of the observed cycle, cycle length, cycle number, number of the next cycle chart (if the cycle lasts more than 40 days, its symptoms are recorded in the next chart), the time and place where the temperature measurement (BBT) was recorded in the form of a graph, the last day of menstruation (spotting/bleeding is also included in the duration of menstrual bleeding), the consecutive days of the cycle (the first day of menstruation is the first day of the cycle), planning and postponing the conception of a child, the shortest and longest of the last 12 observations of the monthly cycle, the image of the mucus (its appearance and the feeling it gives), height and hardness of the cervix (for sexually active clients who want to analyse this symptom), length of the luteal phase, time of temperature measurement (BBT), place of measurement (mouth, vagina, anus), fertile days in the cycle; also, prophylactic measures regarding breast self-examination immediately after menstruation, and recording any cycle disturbances and additional cycle-related observations and irregularities (Kuźmiak, Szymaniak, Walczak, 2014).

The aim of this study was to learn about the ability of self-observation of the monthly cycle according to the symptothermal double-check method among women of reproductive age who reported typical cycles.

2. Methodological basis of the study

The study used the method of documentation analysis obtained with the permission of the Polish Natural Family Planning Teachers Association (PNFPTA). The collected material covered the monthly cycle charts of women who received training in this area over a period of 7 years (from 2015 to 2022). Only those charts that appeared complete and met the criteria for a typical cycle were selected for statistical analysis. Charts with missing data and those not meeting the criteria for typical cycles were excluded from further analysis. Ultimately, the 1st chart of the observed menstrual cycle in a group of 33 women and the 3rd chart in a group of 41 women from the Poznań and Lublin branches of PNFPTA were analysed. All observation charts that qualified for analysis met the following criteria: they included records of at least 2 out of 3 main BBT fertility biomarkers (biphasicity of temperature waveform, notes from observation of cervical mucus), correlation of fertility symptoms, normal luteal phase, and normative length of bleeding. Based on the adopted criteria, a total of 12 observation charts were disqualified. The total number of charts analysed in the study was 74. During their FAM training, the women were not using contraception, had typical cycles, and were not in puberty, postpartum, breastfeeding or premenopausal. The majority of women, before starting to learn the symptothermal double-check method, did not know it earlier and did not use this method. The average age of the respondents was 29, with the youngest at 17 and the oldest at 42 years old.

From the first meeting with a certified teacher, every respondent worked using educational materials prepared by PNFPTA – these included a cycle observation notebook for recording observations on an ongoing basis. After a teaching cycle finished, the teacher who worked with the woman handed

over her observation charts to PNFPTA for archival purposes. The progress in acquiring self-observation skills and the thoroughness and accuracy of records entered in cycle charts were assessed on the basis of a proprietary scale specifically developed for this purpose. The scale incorporated the criteria for assessing the correctness of teaching self-observation of the menstrual cycle as developed by PNFPTA.

The criteria adopted in the proprietary (authors') scale for assessing observation skills of the surveyed women covered 7 areas, each of which could receive a maximum score of 9 points:

1. regularity in recording BBT measurements – max. 1 point;
2. entering days, months, year in which observations were conducted, days of menstrual cycle and monthly bleeding – max. 1 point;
3. completing cycle statistics: number of the cycle, number of the next cycle chart, the last day of menstruation, the longest and shortest of the last observed cycles, increase in temperature in the previous cycle (BBT), the day on which the first mucus occurred, the first day of the highly fertile mucus, the day of the peak of the mucus symptom, the third day of the peak of the mucus symptom, the overlap line, the third day of temperature above the overlap line, the length of the luteal phase, the length of the cycle, the time of temperature measurement (BBT), the place of temperature measurement (mouth, vagina, anus) – max. 2 points (1 point if completion is only partial);
4. conducting daily observation of cervical mucus – max. 2 points (1 point if completion is only partial);
5. correctly determining the peak of mucus – max. 1 point;
6. correctly determining the overlap line and spike in BBT – max. 1 point;
7. correctly determining the end of the fertility phase – max. 1 point.

A score of 0 to 4 points meant low skills and 5 to 9 points high skills of the surveyed women.

In addition to the observation charts, each woman filled out a metric with questions about her age, marital status, education, and the site of her FAM training.

For statistical analyses, the SPSS Statistica software, version 25 was used. The level of $\alpha < 0.05$ level was considered statistically significant. In the statistical description of the results, on the quantitative scale of the level of skills in cycle observation, the mean, standard deviation, median, mean rank, skewness and kurtosis coefficients were used. A statistical description of results of a nominal nature was carried out with the use of percentage and number distributions. In order to formulate statistical inferences about the level of skills in the symptothermal method, 95% confidence intervals for the mean were used. McNemar and Wilcoxon tests were used to examine the difference in the number of points scored in the first and last measurements. Assessments of the relationship between the respondents' classified scores and sociodemographic variables were verified using the chi-square test. The results thus obtained were presented graphically in tables.

3. Analysis of results

Our study examined whether the ability to observe the menstrual cycle depended on sociodemographic variables such as age, marital status, the site of FAM training, and education. More than half of the surveyed women (56.08%, n = 23) were single and (43.89%, n = 18) were married. Less than half of the respondents (46.33%, n = 19) received FAM training in the Poznań branch and more than half (53.64%, n = 22) in the Lublin branch of PNFPTA. Higher education was reported by more than half of the respondents (58.52%, n = 24). The analyses showed statistically significant correlations between the level of cycle observation skills and education (strong correlation, p = 0.013). As regards education, statistically significant differences were found between its higher and secondary levels. Respondents with secondary education displayed low observation skills (4.87%, n = 2). University and secondary school students exhibited a high

Table 1. The level of self-observation skills among female respondents versus sociodemographic factors in chart III of the cycle

Factor	Variable	Evaluation of the skills analysed in chart III				Chi-square test			
		High skill		Low skill		χ^2	df	p	V
		n	%	n	%				
Marital status	Single	22	53.65%	1	2.43%	1.740	1	0.187	0.206
	Married	15	36.58%	3	7.31%				
Site of FAM training	Poznań	16	39.02%	3	7.31%	1.464	1	0.226	0.189
	Lublin	21	51.21%	1	2.43%				
Education	Higher	22	53.65%	2	4.87%	12.605	4	0.013	0.554
	Secondary	4	9.74%	2	4.87%				
	Vocational	1	2.43%	0	0.00%				
	Secondary school / university student	10	24.39%	0	0.00%				

n – number of observations; % – percentage; χ^2 – test result; p – test probability; df – degrees of freedom; V – Cramér's V

Table 2 Monthly cycle self-observation skills vs. the goal of learning

The goal of learning	Factor level	Assessment of cycle observation skills Chart III				Chi-square test			
		High		Low		χ^2	df	p	V
		n	%	n	%				
Assessment of reproductive health	No	6	14.63%	3	7.31%	7.281	1	0.007	0.421
	Yes	31	75.60%	1	2.49%				
Postponing conception	No	19	46.34%	3	7.31%	0.812	1	0.368	0.141
	Yes	18	43.90%	1	2.49%				
Planning conception	No	33	80.48%	2	4.87%	4.438	1	0.035	0.329
	Yes	4	9.75%	2	4.87%				

n – number of observations; % – percentage; χ^2 – test result; p – test probability; df – degrees of freedom; V – Cramér's V

Table 3. Cycle observation skills vs. support in learning the method from husband / fiancé / partner

Support in learning the method	Factor level	Assessment of cycle observation skills Chart III				Chi-square test			
		High		Low		χ^2	df	p	V
		n	%	n	%				
From husband / fiancé / partner in learning the method	Yes	12	29.26%	3	7.31%	2.856	2	0.240	0.264
	No	2	4.87%	0	0.00%				
	N/a	23	56.09%	1	2.43%				

n – number of observations; % – percentage; χ^2 – test result; p – test probability; df – degrees of freedom; V – Cramér's V

Table 4. Assessment of the individual criteria of the self-reporting scale as a determinant of the thoroughness of the respondent's records and assessment of these skills in relation to cycle charts I and III.

Assessed skills	Number of points scored on a self-reported scale	Cycle observation chart I n = 33		Cycle observation chart III n = 41		Test probability of the McNemar and Wilcoxon test
		n	%	n	%	p
Regularity of BBT measurements	0	16	48.48	13	31.71	0.070
	1	17	51.51	28	68.29	
Entering the dates of cycle days, bleeding, month and year of observation	0	3	9.09	3	7.32	1.000
	1	30	90.90	38	92.68	
Completing menstrual cycle statistics	0	3	9.09	3	7.32	0.827a
	1	13	39.39	13	31.71	
	2	17	51.51	25	60.98	
Daily observation of cervical mucus	0	13	39.39	11	26.83	0.423b
	1	2	6.06	5	12.20	
	2	18	54.54	25	60.98	
Correctly determining the peak of cervical mucus	0	6	18.18	2	4.88	0.250
	1	27	81.81	39	95.12	
Determining the overlap line and spike in BBT	0	2	6.06	3	7.32	1.000
	1	31	93.93	38	92.68	
Correctly determining the end of the fertile phase	0	6	18.18	4	9.76	0.375
	1	27	84.38	37	90.24	
Assessment of the respondents' skills based on the scores obtained	High	27	84.38	37	90.24	0.625
	Low	6	15.63	4	9.76	

a – Wilcoxon test result Z = –0.218; b–Wilcoxon test result Z = 0.801; p–test probability; n–number of observations; % – percentage

level of cycle observation skills (24.39%, n = 10). Table 1 presents an assessment of the level of the respondents' cycle observation skills according to sociodemographic factors such as marital status, the site of FAM training, and education.

Table 2 presents an assessment of the level of the respondents' cycle observation skills according to the declared goal of learning. The conducted analyses revealed statistically significant correlations between cycle observation skills and the goal of learning, i.e. reproductive health (moderate correlation, p = 0.007) and the goal of learning, i.e. planned conception (moderate correlation, p = 0.035). The women for whom the goal of learning the method was to monitor their reproductive health were more likely to exhibit high skills (75.60%, n = 31); in contrast, those who declared conception as their goal were more likely to belong in the low skill group (4.87%, n = 2).

Table 3 presents an assessment of the skills of the surveyed women according to the support they receive from their husband / fiancé / partner. The study found that most women with high menstrual cycle observation skills did not receive support from their husband / fiancé / partner (4.87%, n = 2), or the question did not concern them (56.09%, n = 23). Women who declared support in learning the method from their husband / fiancé / partner accounted for (36.56%, n = 15), with (7.31%, n = 3) of this group scoring low in cycle self-observation skills. Married women formed a group which included (43.90%, n = 18).

The study also analysed records in the cycle observation charts pertaining to the days of the cycle and the occurrence of changing, main fertility symptoms during the cycle, e.g. the BBT waveform and the occurrence of the cervical mucus symptom, as well

as the completed cycle statistics table i.e. information on planning or postponing conception, number of the cycle, number of the next cycle chart, the last day of menstruation, the longest and shortest of the 12 observed cycles, increase in BBT in the previous cycle, the beginning and end of fertility period, the day on which the first mucus occurred, the first day on which highly fertile mucus occurred, the day of the peak of the mucus symptom, the day of the peak of the mucus symptom + 3, the third day of temperature above the overlap line, the length of the luteal phase, the length of the cycle, and the time and place of measurement (mouth, vagina, anus).

Based on the analysis, it is worth noting that for all criteria, more than half of the respondents scored the maximum number of points (regardless of whether it was the first or third observation chart). The result that came closest to the adopted significance level of $p < 0.05$, but was not statistically significant, was the relationship between charts I and III in terms of the regularity of temperature measurements taken by the respondents ($p = 0.070$). The study showed an increase in the regularity of BBT measurements taken in chart III of menstrual cycle observation among the respondents. In chart I, 1 point for BBT measurement was scored by 51.51% (n = 17) of the women and in chart III by 68.29% (n = 28). Zero points were scored by 48.48% (n = 16) of the respondents; however, an increase in skills was found in chart III and the number dropped to 31.71% (n = 13). In the "cycle statistics completion" criterion in chart I, the maximum score was obtained by 51.51% (n = 17) of the women; in chart III this number increased to 60.98% (n = 25). The study also showed an increase in skills regarding daily observation of cervical mucus in chart III of menstrual cycle observation. In chart I, 2 points were scored by 54.54% (n = 18), 1 point by 6.06% (n = 2) and 0 points by 39.39% (n = 13) of the surveyed women. Under the same criterion, in chart III, 2 points were scored by 60.98% (n = 25), 1 point by 12.20% (n = 5) and 0 points by 26.83% (n = 11) of the women. The peak of cervical mucus was correctly determined by 81.81% (n = 27) of women in chart I and 95.12% (n = 39) in chart III. Six respondents (18.18%) in chart I failed to determine the peak of cervical mucus, while in chart III it was only two of them (4.88%). In the criterion of correctly determining the end of the fertile phase, the maximum score was obtained by 84.38% (n = 27) of the respondents in chart I and 90.24% (n = 37) in chart III. Six respondents (18.18%) incorrectly determined the end of the fertility phase in chart I and four of them (9.76%) in chart III. The results are presented in Table 4.

4. Discussion

The subject matter of the study on the acquisition of skills in the self-observation of menstrual cycle using the symptothermal double-check method among women of reproductive age is novel insofar as the scientific literature, including papers in English, addresses it in an rather modest way. According to the authors, there should be many more such research works.

In our study, the women ranged in age from 17 to 42. The respondents' mean age was 28.91 with a standard deviation of 6.26. In the study by Tawara et al. the mean age was slightly higher at 32 years (Tawara, Tamura, Suganuma, Kanayama, 2012). Ayoola et al. conducted their study in the most age-diverse group of women, between 18 and 51 years old (Ayoola, Zandee, Adams, 2016). In the study by Crawford et al. the range was narrower at 30–44 years (Crawford, Pritchard, Herring, 2017). In the study by Najmabadi et al. the female respondents were between the ages of 18 and 40 (Najmabadi, Schliep, Simonsen, Porucznik, Egger, Stanford, 2021). In the study by Ecochard et al., the range was 19–45 years (Ecochard, Duterque, Leiva, Bouchard, Vigil, 2015). It was therefore a study that looked at a group of women in an age range most similar to our own research.

The study discussed in this paper, involving a group of women who observed their monthly cycles, shows that their motivations varied before learning the self-observation method. The respondents' prevailing need was to monitor their reproductive health and to postpone conceiving or conceive a child. In her study, Ślizień-Kuczapska found that observation of the menstrual cycle can be used for several purposes, i.e. to recognize periods of physiological fertility and

infertility in a woman, to diagnose and monitor the aetiological treatment of infertility, but also to detect at an early stage general disorders that may manifest themselves in cycle disturbances (Ślizień-Kuczapska, Smyczyńska, Rabijewski, 2020). Similar insights regarding the use of women's cycle charts are offered by Smyczyńska, who believes it is reasonable to employ observation charts in the diagnosis of female endocrine diseases. Self-observation of the menstrual cycle enables the identification of such symptoms as abnormal length of the various phases of the cycle, as well as disorders of cervical mucus or basal body temperature. Noticing these alarming symptoms correctly and as early as possible requires close cooperation of the patient not only with the physician, but especially with the natural family planning instructor (Smyczyńska, 2019).

Physicians can use the information in the cycle observation chart to diagnose and treat medical conditions and also to support or restore the healthy functioning of the reproductive and endocrine systems (protocols according to restorative reproductive medicine, RRM). Fertility awareness methods can also be recommended for highly effective family planning by professionally trained teachers/instructors (Duane, Stanford, Porucznik, Vigil, 2022).

Therefore, if we assume that the ability to self-observe the menstrual cycle according to a specific FAM is an important component of health-promoting education or "health literacy", then, as the authors emphasize, it is vital that further studies are conducted on comprehensive reproductive knowledge, involving a larger population of women (Ayoola et al., 2016), and that adequate programs are implemented to teach FAM to women who express interest in these methods. According to U.S. research, up to 60% of women are interested in learning more about fertility and fertility awareness from their physicians (Fertility Awareness-Based Methods. A Medical Update. FACTS, 2016).

Research by Hampton et al. indicates that the majority of women surveyed who sought help and support from various types of assisted reproductive technologies and attempted intercourse during the fertile phase lacked sufficient knowledge and, therefore, ability to correctly identify this phase; they also had low awareness of their own fertility, which may have contributed to problems with conception (Hampton, Mazza, Newton, 2012). Research conducted by Stanford as part of Creighton Model Fertility Care System in the years 1996–2000 indicated that 65% of couples used it to postpone conception and 18% to plan conception. Research from 2009–2011 demonstrated a shift in these trends: 42% of couples who postponed and 41% who planned conception (Notare, 2019).

As observed in this research conducted on a group of female students, among others, who accounted for 24.39% (n = 10), cycle observation can be very useful in young women and girls who do not engage in sexual activity and who consider reproductive health to be important. For this reason, it seems expedient to educate girls and young women on how to identify fertility biomarkers and keep observation charts, considering the physiological peculiarities of this period of life (Ślizień-Kuczapska, Smyczyńska, Rabijewski, 2020).

In addition, Hampton et al. point to the need to pay more attention to educating women about their fertility awareness. This task would be assigned to primary health care nurses (Hampton, Mazza, Newton, 2012). Lundsberg et al. point out that there is too little involvement on the part of health care professionals regarding aspects of fertility health (Lundsberg, Pal, Gariepy, Xu, Chu, Illuzzi, 2014).

The analysis of the respondents' menstrual cycle charts confirmed the possibility of specifying cycles in accordance with the adopted criteria for typical cycles. For every woman taught in this area, self-observation of the menstrual cycle is a source of knowledge about the state of her reproductive health, in addition to providing emotional balance and mental and physical comfort. In the case of women who are married or have a partner, the ability to determine the time of highest fertility and confirm the onset of ovulation based on biomarkers of the symptothermal double-check method allows planning or postponing conception; it also strengthens the relationship and facilitates effective communication between spouses/partners. This seems particularly important in view of an increased incidence of problems related to fertility disorders and the occurrence of abnormal

menstrual cycles. The method itself allows for early recognition of any anomalies and reduces the time before the patient consults a doctor, is diagnosed and undertakes treatment. A very important role is played here by an adequately prepared NFP teacher who can serve as a "liaison" between the patient and a health care professional, e.g. a physician (Szymaniak, Ślizień-Kuczapska, 2016; Ślizień-Kuczapska, Żukowska-Rubik, Sys, 2018). The lack of support from the husband or partner during the learning of the method for family planning is puzzling in light of the data on its relevance during the joint use of the method (Komorowska-Pudło, Rawicka, 2020). Perhaps this support reveals itself only at the stage of using the method requires additional study The authors believe that papers of this type are a valuable source of information and should undergo further analysis.

Conclusions

1. Mastering the observation of menstrual cycle with the use of the symptothermal double-check method was found to increase over the course of FAM training between the first and the third cycles.
2. More than half of the respondents scored the maximum number of points according to the criteria of the observation skills assessment scale, both in charts I and III.
3. The majority of women who proved highly skilled in menstrual cycle observation had university degree and received FAM training at the Lublin branch of PNFPTA. They also did not obtain support from their husbands / fiancés / partners in learning the method, and their motivation for learning was to monitor their reproductive health.
4. High self-observation skills among the respondents are the result of women's motivation to learn and to use expert assistance from a certified FAM teacher.
5. It is advisable that the method be first taught to young women of school age and university students, as they usually do not yet have responsibilities associated with work or family.
6. In order to be able to interpret the chart completely unassisted, women should conduct continued observation of their cycles. They should also have access to consultations, in person or on-line, with FAM teachers.
7. Further research, education among the public, and training opportunities for health care professionals in this area of prophylactic measures are needed.

Bibliography

Ayoola, A.B., Zandee, G.L., Adams, Y.J. (2016). Women's Knowledge of ovulation, the Menstrual cycle, and Its Associated Reproductive Changes, *Birth, 43*(3), 255-262. https://doi.org/10.1111/birt.12237

Crawford, N.M., Pritchard, D.A., Herring, A.H., Steiner, A.Z. (2017). Prospective evaluation of luteal phase lenght and natural fertility, *Fertility and Sterility*, *107*(3), 749-755. https://doi.org/10.1016/j.fertnstert.2016.11.022

Duane, M., Stanford, J.B., Porucznik, Ch., A. Vigil, P. (2022). Fertility Awareness-based Methods For Women's Health And Family Planning, *Frontiers In Medicine, 9*, https://doi.org/10.3389/fmed.2022.858977

Ecochard, R., Duterque, O., Leiva, R., Bouchard, T., Vigil, P. (2015). Self-identification of the clinical fertile window and the ovulation period. *Fertility and Sterility, 103*(5), 1319-1325. http://dx.doi.org/10.1016/j.fertnstert.2015.01.031

Fertility Awarness based method a medical update FACTS, Natural Womenhood, (2016). (From:) https://naturalwomanhood.org/wp-content/uploads/NW-FACTS-Brochure-Jan-2016-update-FINAL-updated.pdf (access: 01.07.2023).

Hampton K.D., Mazza D., Newton J.M. (2012). Fertility-awareness knowledge, attitudes, and practices of women seeking fertility assistance. *Journal of Advanced Nursing. 69*(5), 1076–1084. https://doi.org/10.1111/j.1365-2648.2012.06095.x

Kinle, M., Szymaniak, M. (2009). Fazy cyklu miesiączkowego i objawy płodności w cyklu miesiączkowym. (W:) M. Troszyński (red.), *Rozpoznawanie płodności. Materiały edukacyjno-dydaktyczne dla nauczycieli NPR, pracowników służby zdrowia oraz zainteresowanych zdrowiem prokreacyjnym*, 59-70. Warszawa: Polskie Stowarzyszenie Nauczycieli Naturalnego Planowania Rodziny.

Kuźmiak, M., Szymaniak, M. (red.), (2014). *Rozpoznawanie płodności, metoda objawowo-termiczna podwójnego sprawdzenia, praktyczny kurs dla użytkownika metody, podręcznik*, Warszawa: Polskie Stowarzyszenie Nauczycieli Naturalnego Planowania Rodziny

Lundsberg, L.S., Pal, L., Gariepy, A.M., Xu, X., Chu, M.C., Illuzzi, J.L. (2014). Knowledge, attitudes, and practices regarding conception and fertility: a population-based survey among reproductive-age United States women, *Fertility and Sterility, 101*(3), 767-774. http://dx.doi.org/10.1016/j.fertnstert.2013.12.006

Najmabadi, S., Schliep, K.C., Simonsen, S.E., Porucznik, Ch.A., Egger, M.J. & Stanford, J.B. (2021). Cervical mucus patterns and the fertile window in women without known subfertility: a pooled analysis of three cohorts, *Human Reproduction*, *36*(7), 1784-1795. https://doi.org/10.1093/humrep/deab049

Notare, T. (2019). *Humanae Vitae, 50 years later. Embracing Gods Vision for Marriage, Love, and Life; A Compendium. Edited.* Washington: The Catholic University Of America Press. https://doi.org/10.2307/j.ctvkjb333

Piasecka, K., Łyszczarz, P., Pytka, M., Ślizień-Kuczapska, E., Kanadys, K. (2022). Analiza kart obserwacji cykli w grupie kobiet w wieku prokreacyjnym. *Kwartalnik Naukowy Fides et Ratio, 3*(51), 41-51. https://doi.org/10.34766/fetr.v3i51.1115

Tawara, F., Tamura, N., Suganuma, N., Kanayama, N. (2012). Changes in cervical neutrophil elastase levels during the menstrual cycle, *Reproductive Medicine and Biology, 11*(1), 65-68. https://doi.org/10.1007/s12522-011-0104-7

Smyczyńska, J. (2019). Diagnostyka i leczenie zaburzeń hormonalnych jako wyraz troski o zdrowie prokreacyjne i profilaktyka niepłodności.: Czy metody rozpoznawania płodności mogą być pomocne? *Kwartalnik Naukowy Fides et Ratio, 39*(3), 44-57. https://doi.org/10.34766/fetr.v3i39.119

Ślizień-Kuczapska, E., Smyczyńska, J., Rabijewski, M. (2020). Wybrane zagadnienia zaburzeń kształtowania się zdrowia prokreacyjnego u dziewcząt. Czy warto włączyć obserwację cyklu do praktyki lekarskiej? *Kwartalnik Naukowy Fides et Ratio* 3(43), 303-319. https://doi.org/10.34766/fetr.v43i3.318

Ślizień-Kuczapska, E., Żukowska-Rubik, M., Sys, D. (2018). W trosce o rozwój zdrowia prokreacyjnego rodziny. Poradnictwo medyczne i pozamedyczne w promocji karmienia piersią oraz zagadnień naturalnego powrotu płodności po porodzie. *Kwartalnik Naukowy Fides et Ratio, 2*(34), 50-73. https://www.fidesetratio.com.pl/Presentations0/2018-04Kuczapska.pdf

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A cross-sectional study on Polish Medical Students' knowledge of Fertility Awareness-based Methods

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Abstract: Fertility Awareness-based Methods (FAMs) observe physiological signs to determine fertile and infertile phases in a women's cycle. WHO recommends to use both natural family planning (NFP) or FAM as a synonym. They may serve as methods for family planning as well as a procreation health monitor in restorative medicine and as a useful biomarker in management of reproductive-health disorders. Unfortunately, this knowledge is marginalized during medical education. A cross-sectional study was performed among 542 Polish medical students to assess their skills in NFP. The most common NFP method indicated by 84.9% students was the Calendar Method, the one with historical value. The Billings Method and Creighton Model System were known by 42% and 14% participants respectively, while Multi Index Methods were known by 26.4%. A total of 6% of the respondents use NFP themselves. The largest group of students (42%) assessed the effectiveness of NFP in avoiding pregnancy at about 50%. The results show little interest and incomplete knowledge in up to date NFP among future medical professionals. It seems there is an urgent need to introduce this subject into medical education as a valuable tool to understand and monitor procreation health as well as family planning method.
Keywords: Natural Family Planning (NFP); Fertility Awareness-based Methods (FAM); restorative medicine; procreative health; fertility

Introduction

Reproductive health literacy seems to become an increasingly important issue especially due to falling fertility indicators and growing infertility rate (Chawłowska et al.2020). The question arises as to whether healthcare professionals and medical students are sufficiently educated and prepared to promote fertility care among their patients and use it in their own lives.

In the late seventies, the WHO began to take an interest in Fertility Awareness-based Methods (FAMs) and promoted them as a part of public awareness with respect for the environment and nature in all aspects (Ohme-Peters, S.,& Fedra work Group (2019) . In 1988, the WHO defined Natural Family Planning (NFP) as methods for achieving or preventing pregnancies. Modern FAMs are a useful part of NFP based on self-observation of natural signs and symptoms of the cycle as well as on new-technology monitors which help to distinguish whether the woman's cycle phase is fertile or not (Smoley, Robinson, 2012). The classic biomarkers include basal body temperature fluctuations, characteristics

of cervical mucus and modification of the cervix. When applying FAMs, the use of drugs, devices or any surgical procedures which lead to fertility impairment is not needed. The couple only agrees on abstinence during the fertile phase of the cycle if they are not planning to conceive (Natural family planning: A guide to provision of services.1988) . The routine of observing and recording fertility signs allows women to be active participants in monitoring their gynecologic health from adolescence to menopause (Fehring & Mu, 2014) . Moreover, usage of FAM has a strong influence on relationships, since it helps to create a better communication between spouses and more openness for each other's needs (Unseld et al.2017). FAMs are applied in restorative reproductive medicine that seeks to cooperate with or restore the normal physiology and anatomy of human procreation. Many health problems can be addressed through it, for instance infertility, miscarriage, polycystic ovarian syndrome and more (Tham et al. 2012). The classic methods of NFP can be divided into single index methods, like the Billings Ovulation Method and Creighton Model Fertility Care System (CrMS) (both focusing on observation of cervical mucus changes), as well as multi-index methods like symptothermal methods, considering basal body temperature fluctuations in addition to other symptoms. The Lactation Amenorrhea Method (LAM) is a natural family planning method for women who breastfeed and are amenorrheic; it can be used up to six months postpartum (Van der Wijden, et al. 2015). The examples of NFP methods which are enriched with some advanced techniques can be so called new technologies as Persona, Lady comp and the Marquette Method that introduces the use of an electronic hormonal fertility monitor to estimate the fertile phase of the cycle in combination with traditional natural markers in the postpartum period (Ślizień-Kuczapska, 2007)

1. Materials and Methods

Since FAMs are significant in the context of family planning, fertility awareness and reproductive health, a survey was conducted to check the knowledge of medical students in Poland about NFP methods and their effectiveness in both achieving or avoiding pregnancy.

The scientific method used in the study was a diagnostic survey, using the online authors' own questionnaire compiled for the particular research containing closed-ended questions of single or multiple choice. From March to May 2020, the total of 542 medical students participated in the survey. The group of respondents consisted of 445 women (82.1%) and 97 men (17.9%). The mean age of the participants was 22.3 years ± 2.11 SD with the range of 19-39 years. Among the respondents, 181 (33.3%) came from the rural areas and 361 (66.7%) from the urban areas. The majority of the participants were unmarried (518; 95.4%) and sexually active (331; 61.0%). The respondents were medical students studying at universities in 13 Polish cities: Lublin (221), Wrocław (91), Łódź (60), Warszawa (55), Białystok (37), Poznań (19), Kraków (18), Zabrze (14), Olsztyn (12), Katowice (9), Rzeszów (2), Szczecin (1) and Gdańsk (1). Two students did not declare the city of their studies. One person replied that he or she is not a student, so the questionnaire was rejected in the further analysis of the study and this person was not included to our statistics. Students were asked to complete an online questionnaire that was widespread through the online student groups. The questionnaire was divided into three parts:

1. Physiology of the Menstrual Cycle and Fertility,
2. Reproductive Health
3. Fertility Awareness-based Methods and Family Planning which is presented in this publication.

The participants' characteristics underwent a descriptive analysis. Continuous variables were presented as means ± standard deviations (SD), and categorical variables were shown as the numbers and percentages of individuals. A two proportion Z-test was used to compare the answers of the groups of students. Differences with a p-value less than 0.05 were considered significant. The data was explored and analyzed using the RStudio ver. 1.1.463 software (Boston, MA, USA).

2. Results

The medical students' knowledge of NFP methods is presented in Table 1. Considering the best known methods, the Calendar Method and phone applications were indicated by 84.9% and 71.4% of the medical students, respectively. In the case of phone applications, females are more familiar with them than males 74.4% vs. 57.7% respectively. Ovulatory testing, the third most recognized method among the medical students (61.8%), is also significantly better known by women. In the study population, 42.4% of the participants were aware of the Billings Method and 26.4% of the Multi-index methods. The least known methods were LAM and Creighton Model System, indicated by 14.9% and 14.6% of the respondents respectively.

The main source of information about reproductive health and FAMs for medical students is the Internet, indicated by 83.0% of the respondents (Table 2). Considering other common answers, medical textbooks, consultation with medical staff and gynecology lectures were chosen by the respondents (73.4%, 48.3% and 36.0%, respectively). Female respondents more often marked consultations with medical staff than male ones, while men more frequently get the knowledge from gynecology lectures than women. In the study population, 13.3% of the participants used the friends' advice and 11.8% a talk with their parents. The least common sources of information were the NFP lectures and consultations with NFP teachers indicated by 4.8% and 2.6% of the respondents respectively. There was no significant correlation between sexual activity or respondents' year of studies and the replies to this question.

Table 1. Medical Students' Knowledge of NFP Methods

Method	Total n = 542	Males n = 97	Females n = 445	P value
Calendar Method	84.9%	86.6%	84.5%	0.7132
Phone application	71.4%	57.7%	74.4%	0.0016
Ovulatory tests	61.8%	37.1%	67.2%	<0.0001
Billings Method	42.4%	35.1%	44.0%	0.1309
Multi-index methods	26.4%	28.9%	25.8%	0.6276
LAM	14.9%	17.5%	14.4%	0.5289
Creighton Model System	14.6%	12.4%	15.1%	0.6029

Table 2. Percentage of respondents' sources of information

Information source	Total n = 542	Males n = 97	Females n = 445	P value
Internet	83.0%	83.5%	82.7%	0.9659
Medical Textbooks	73.4%	73.2%	73.5%	1.000
Consultation with medical staff	48.3%	41.2%	50.0%	0.1519
Gynaecology lectures	36.0%	40.2%	35.1%	0.4004
Friend's advice	13.3%	13.4%	13.3%	1.000
Parent's advice	11.8%	11.3%	11.9%	1.000
NFP lectures	4.8%	7.2%	4.3%	0.3328*
Consultations with NFP teachers	2.6%	3.1%	2.5%	1.000

Table 3. Percentage of respondents using different family planning methods

Type of family planning methods	Contraception	Not using a method	Natural Family Planning (NFP)	Other
Number of respondents	273	229	34	6
Percentage	50.3%	42.2%	6.3%	1.1%

The perception of the effectiveness of FAMs is presented in Figure 1. The largest group of medical students (42.3%) believe that these methods ensure efficacyat the level of approximately 50%. 22.9% of the respondents indicated the efficacyof FAM at the level of nearly 100%.

The number and percentage of the respondents using different types of family planning are presented in Table 3.

Half of the students use contraceptive methods, while 42% do not apply any methods. 6.3% of the students surveyed use NFP.

81.0% of all respondents considered FAMs helpful in planning the conception of a child.

3. Discussion

Our research focused on medical students' FAM skills and NFP knowledge.; namely, its types, effectiveness in avoiding or achieving pregnancy and their own experience. There was also an attempt to assess their sources of information about fertility care.

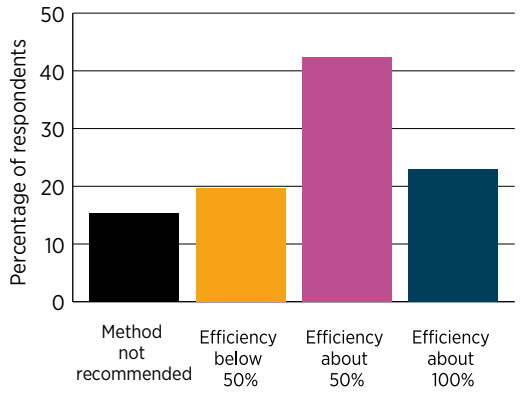

Figure 1. Medical students' attitude towards efficacy of FAM.

In the opinion of Muzyczka et al. (2012), who conducted a study among students of medicine and medical fields in Lublin, the total of 34% of the students do not use any method at all to avoid pregnancy. If they do, hormonal contraception (12%) are most commonly used, then condoms and other mechanical devices (8% each). A symptothermal method is only used by 1% of the students (Muzyczka et al. 2012). According to a study by Dębska et al. (2017) on medical students from Warsaw, as many as 64% of the respondents use or will use a condom. More than half of them (51%) uses or will use contraceptive pills, 39% use or will use NFP (Dębska et al.2017). As far as our study is concerned, about half of the respondents declared to apply contraception and 42% are not using any method to avoid pregnancy. Only 6% of the respondents use FAMs. The low interest in NFP methods might indicate that they never gained wide use and physicians acceptance as efficient and valuable methods. This way spreading NFP widely is inhibited (Pallone et al. 2009).

Moreover, Dębska et al. (2017) highlighted the medical students' opinion on the main advantages of NFP. Detection of various gynecological diseases through NFP is believed to be helpful. NFP is also thought to involve a spouse in the observations of the female cycle. High efficacy is noticed as the benefit reported by only few respondents. Asked directly about the efficacy of NFP in avoiding pregnancy at a five-level Likert scale, the assessment of three is the most common (27%). The highest score of five was given only by 8% of the respondents. Moreover, another Polish study on Tricity students (in Gdańsk, Gdynia, Sopot in Poland) revealed that 75% of the respondents have an opinion that "the effectiveness of NFP is lower than that of condoms and oral contraceptives" and this opinion was shared by a significantly larger group of medical students than non-medical ones. Similar opinions are expressed by

doctors (Targan et al. 2018). 3-6% of family doctors, gynecologists and residents participating in the study by Choi et al., 2010) had correct knowledge about the efficacy of NFP. The underestimation of NFP translates into relatively rare inclusion of NFP in counseling on the choice of a contraceptive method (Choi, et al. 2010). FAMs efficacy is scientifically proven to be close to 100%, if it is appropriately applied(Manhart et al. 2015). However, there may be some differences between typical and correct use especially among unmarried young couples. Successful use can be determined by social attitude, sexuality, relation with partner and need of his support as well as religion and ecological aspects.

In our research, the efficacy of NFP was assessed at a medium level, about 50% by most students. The low efficacy marked by the students might be due to fact that NFP cannot be effective in avoiding pregnancy in fertile periods what make them more difficult to use for these who are not ready to observe their body language and prefer an incidental sex relation instead of a stable partnership what was already mentioned above(Simmons et.al 2020) The respondents of our research indicated some important advantages of NFP. On the question whether NFP is helpful in achieving pregnancy 81% (n = 439) of the students agreed with the value of NFP in distinguishing the fertile and infertile phases as well as its use in monitoring procreative health. The answer denying the use of NFP or the answer declaring partial helpfulness of NFP was chosen only by 8% (n = 47) of the students respectively. These results show that the knowledge of the relationship between FAM and health care is no longer taboo (Vigil et al. 2012).

Our study showed that the largest group of students (85%) selected the Calendar Method as a known NFP method, while it is based on calculation only and nowadays only has historical importance. The Calendar Method does not observe any signs of fertility which are directly connected to the cycle and thus cannot be used to determine infertile periods reliably. Using the calendar method is more guessing than knowing the fertile periods. (Johnson et al. 2018). This method has a low Pearl Index (PI), around 20, which means that 20 women in 100 who use it get pregnant per year. Moreover, in our research 71% of the medical students marked phone applications as a known NFP method, while the majority of apps implement a mobile version of the Calendar Method (Fehring 2005). The Billings Method is quite well known (42 %), but other NFP methods like multi-index methods, the Creighton Model are known by only 26%, and 14% of the students, respectively. This means that medical students have heard about NFP methods but probably know little about them and are unlikely to use them in practice. Meanwhile, it is known that modern NFP methods may have a high success rate in avoiding conception; for example: The Billings Method in correct use has a PI of 1.1 and in typical use a PI of 10.5 (Duane et al. 2022), the Creighton Model System has a PI of 0.5(Hilgers, Stanford, 1998), and multi-iIndex – symptothermal methods have a PI of 0.4 with correct use and a PI of 1.8 with typical use (Frank-Herrmann, et al. 2007). The female respondents tend to be slightly more familiar with NFP methods than the men, for example the Billings Method was known by 44% of the women and by 35% of the men. Interestingly, no significant correlation was found between the years of studies and answers about known NFP methods chosen in our research in contrast to the study by Chawłowska, 2020 where the increasing age of students corresponded with overall greater knowledge about fertility awareness. This might indicate that careful explanation of NFP is neglected during medical studies. Moreover, in the study of Tricity, there was a significant increase in positive responses regarding high efficacy of NFP, which correlated with older non-medical participants. It is compelling, however, there was no such correlation found among medical students. Therefore, again, it can be concluded that studying at medical universities does not always provide the students with reliable and up-to-date knowledge of NFP efficacy(Targan et al. 2018).

Furthermore, in our research, the correlation was not found in the case of students' sexual activity and their knowledge of NFP methods. This might indicate that progress in students' sexual activity might not correlate with more interest in NFP. This could be explained by the fact highlighted by Meston, 2007, that people's most frequent motives

of sexual acts are connected to physical pleasure and emotional sphere(Meston,2007). Planning a family can be deduced to stand in a further place in these motivations, so people are not interested in deepening their knowledge on NFP. Another possible reason for lack of knowledge or insufficient eagerness to use NFP is due to some difficulties of the application like regularity and accuracy of the observation of symptoms (Dębska et al. 2017) This can be partially confirmed by our study because NFP was assessed as too difficult to use daily, especially in women with irregular cycles or that it disturbs the spontaneity of intercourse (8% and 2%, respectively). NFP are sometimes perceived as methods reserved only for women with a normalized lifestyle and regular menstruation. That was confirmed by 74.3% of the respondents stated in the study in Tricity (Targan et al. 2018). This might be the reason for considering NFP as irrelevant to them; therefore, they neither gather information on it, nor use it. Moreover, according to the study by Pedro et al., higher levels of fertility awareness is presented by the groups of women and educated individuals but more importantly by people having difficulty in conceiving and those that had planned their pregnancies. This might mean that people without the need for the use of NFP are not well informed about it and its efficacy (Pedro et al. 2018).

In the study of Muzyczka, 40 % of the medical students assess their knowledge about fertility as poor, while 45% of them admitted ignorance .Only 2% of the medical students were noted to have a good knowledge about fertility awareness. The study in Melbourne on students of various fields (Prior et al. 2019) discovered that at least two-thirds of the respondents rated their knowledge about the physiology of reproduction, prevention of sexually transmitted infections and avoiding pregnancy as 'good'. However, proportions rating their knowledge about fertility care and the influence of various factors on fertility as 'good' were much lower. This might indicate a lack of coherence between fertility knowledge and fertility care among students.

The sources from which students learn about reproductive health, including NFP, might to some extent show the quality of knowledge they achieve. In the study by Muzyczka et al. (2012), the most preferred sources of information for medical students were books (65%) and the internet (61%). About 29% draw knowledge from medical consultations and 21% learn from the journals. About 14% gain the knowledge from a friend or from the media [10]. According to the study in Melbourne (Prior et al. 2019) , the internet as well as general practitioners were the most preferred sources of information on fertility by 55% and 33%, respectively. Few students rated friends or family as their top source of information (6%). In our research, the most common source of information was also the internet (83%), medical textbooks and consultation with medical staff (73% and 48%, respectively). However, in the study on medical staff in Warsaw, most of the respondents (64%) claimed that the issue of NFP is rarely discussed in media, handbooks and medical journals (Bączek et al. 2017) .

Danis et al. conducted a study on 3rd-year medical students at one institution in the USA, where students were given a quiz containing the same questions before and after two lectures about FAMs included in their OB-GYN rotation. The examination showed that students' knowledge improved from the initial test score of 39% to the final test score of 54%. Furthermore, students have acquired more confidence in sharing information about NFP with patients, as well as in using NFP to diagnose and treat gynecological and reproductive problems (Danis et al. 2017). This shows a possibility of effective refinement of the students' knowledge by the provision of extra lectures.

Conclusions

The knowledge of modern FAMs among medical students from selected Polish universities can be considered as medium. Most of them confirm its value in planning the conception and in expressing woman's health status. Unfortunately, our research did not reveal the actual scale of their use for this purpose in practice. Among the well-known NFP methods are the ones of historical importance, like

the Calendar Method, or their modern equivalents for instance phone applications. Modern NFP methods are less known and used by only very few students on the contrary to contraceptive methods' popularity. It seems that students' interest could increase only if they were given the opportunity to learn more about the physiology underlying FAM and its importance in reproductive health care. Knowing FAM can provide them to choose NFP as a life style. This decision needs partnership acceptance, joint commitment and shared responsibility for the creation of new human life. The knowledge of NFP methods seems to be higher among females but not correlated with the year of studies or sexual activity. The main source of information about reproductive health is the internet, medical textbooks and university lectures.

Medical university curricula and textbooks contain only residual information about FAMs. Therefore, the introduction of modern knowledge about fertility-based awareness and its application in procreative health care is of great significance and urgent necessity to the future medical staff. It might be helpful to underline unique advantages of FAM, for example allowing women to be active participants in monitoring their gynecologic health as well as in building strong relationships with their partners.

Bibliography

Bączek, G. et al. (2017). Knowledge and opinions of medical Staff on Natural Fertility Awareness Methods, *Kwartalnik Naukowy Fides et Ratio*, 32, 215-232

Chawłowska, E., Lipiak, A., Krzysztoszek, J., Krupa, B. & Staszewski, R. (2020) Reproductive Health Literacy and Fertility Awareness Among Polish Female Students. *Frontiers in Public Health*, *8* (September), 1–12. https://doi.org/10.3389/fpubh.2020.00499

Choi, J. et al. (2010). Natural Family Planning: Physicians' Knowledge, Attitudes, and Practice, *Journal of Obstetrics and Gynaecology*, 32, 673-678.

Danis, P, Kurz, S. & Covert, L. (2017). Medical Students' Knowledge of Fertility Awareness-Based Methods of Family Planning, *Frontiers in Medicine,* 4, https://doi.org/10.3389/fmed.2017.00065

Dębska, S., Szyszka, M., Bączek, G. & Dmoch- Gajzlerska, E. (2017). The knowledge of physiology of female fertility and natural family planning methods among medical students. *Nursing and Public Health*, 7(2), 141–147. https://doi.org/10.17219/pzp/64687

Duane M, Stanford, J.B., Porucznik C.A., Vigil, P. (2022) Fertility Awareness-Based Methods for Women's Health and Family Planning, *Frontiers in Medicine, 9,* https://doi.org/10.3389/fmed.2022.858977

Fehring, R.J. (2005). New low- and high-tech calendar methods of family planning. *Journal of Midwifery and Women's Health*. https://doi.org/10.1016/j.jmwh.2004.07.001

Fehring, R.J. & Mu, Q. (2014). Cohort efficacy study of natural family planning among perimenopause age women. *Journal of Obstetric, Gynecologic, and Neonatal Nursing,* JOGNN / NAACOG, 43(3), 351–358.

Frank-Herrmann, P. et al. (2007). The effectiveness of a fertility awareness based method to avoid pregnancy in relation to a couple's sexual behaviour during the fertile time: a prospective longitudinal study. *Human Reproduction*, *22*(5), 1310–1319.

Hilgers, T.W., Stanford, J.B. (1998). Creighton Model NaPro-Education Technology for avoiding pregnancy. Use effectiveness, *The Journal of Reproductive Medicine, 43*(6), 495-502 PMID: 9653695

Johnson S, Marriott L, Zinaman M (2018) Can apps and calendar methods predict ovulation with accuracy?, *Current Medical Research and Opinion*, *34*(9), 1587-1594, https://doi.org/10.1080/03007995.2018.1475348

Manhart, M.D., Duane, M., Lind, A., Sinai, I. & Golden-Tevald, J. (2013). Fertility awareness-based methods of family planning: A review of effectiveness for avoiding pregnancy using SORT, *Osteopathic Family Physician* https://doi.org/10.1016/j.osfp.2012.09.002

Meston, C.M., Buss, D.M. (2007). Why Humans Have Sex. *Arch Sex Behav* 36, 477–507. https://doi.org/10.1007/s10508-007-9175-2

Muzyczka, K., Rząca M., Deluga, A., Denisow, M., Janiec, E., Krzos, A., Oleszczuk, K., Przystupa, H. (2012). Wiedza studentów Uniwersytetu Medycznego w Lublinie na temat płodności i metod planowania rodziny, (W:) *J.K. Stępkowska, K.M. Stępkowska* (red.), *Instytucja rodziny wczoraj i dziś. Perspektywa interdyscyplinarna. Społeczeństwo i kultura. Tom 2,* 51-58, Lublin: Wydawnictwo Politechnika Lubelska.

Natural family planning: A guide to provision of services. (1988). Geneva: World Health Organization.

Ohme-Peters, S. & Fedra work Group. (2019). *Natural Family Planning Manual. Theoretical Basis for all NFP methods.* European Institute for Family Life Education.

Pallone, S.R. & Bergus, G.R. (2009). Fertility Awareness-Based Methods: Another Option for Family Planning. *The Journal of the American Board of Family Medicine,* 22(2), 147-157. https://doi.org/10.3122/jabfm.2009.02.080038

Pedro, J., Brandão, T., Schmidt, L., Costa, M.E. & Martins, M.V. (2018). What do people know about fertility? A systematic review on fertility awareness and its associated factors. *Upsala journal of medical sciences*, *123*(2), 71–81. https://doi.org/10.1080/03009734.2018.1480186

Prior, E., Lew, R., Hammarberg, K. & Johnson, L. (2019). Fertility facts, figures and future plans: an online survey of university students. *Human Fertility*, *22*(4), 283–290. https://doi.org/10.1080/14647273.2018.1482569

Simmons, R.G. & Jennings, V (2020). Fertility awareness-based methods of family planning. Best Practice and Research: Clinical Obstetrics and Gynaecology, *Bailliere Tindall Ltd.* https://doi.org/10.1016/j.bpobgyn.2019.12.003

Ślizień-Kuczapska, E. (2007). Czy metody rozpoznawania płodności potrzebują nowych technologii? (W:) R. Domżał-Drzewiecka, E. Gałęziowska (red.) *Nowoczesne metody rozpoznawania płodności wybrane zagadnienia*, 109-120, Lublin: Wydawnictwo Makmed.

Smoley, B.A. & Robinson, C.M. (2012). Natural family planning. *American Family Physician*, *86* (10), 924–928.

Targan, M., Świetlik, D., Kicińska, A., Kardasz, K. & Wierzba, T. (2018). Wiedza studentów trójmiejskich uczelni wyższych na temat fizjologii prokreacji oraz metod rozpoznawania płodności. *Kwartalnik Naukowy Fides et Ratio,* 35(3), 55-69.

Unseld, M., Rötzer, E., 2, Weigl, R., Masel, E., Manhart, M. (2017). Use of Natural Family Planning (NFP) and its effect on couple relationships and sexual satisfaction: a Multi-country survey of NFP Users from US and Europe. *Frontiers in Public Health,* Vol. 5, Article 42.

Unseld, E., Schliep, K. & Stanford, J. (2012). Natural procreative technology for infertility and recurrent miscarriage: outcomes in a Canadian family practice. *Canadian family physician. Medecin de famille canadien, 58*(5), e267–e274.

Van der Wijden, C. & Manion, C. (2015). Lactational amenorrhoea method for family planning. *The Cochrane database of systematic reviews*, (10), CD001329. https://doi.org/10.1002/14651858.CD001329.pub2

Vigil, P., Blackwell, L.F. & Cortés, M.E. (2012). The Importance of Fertility Awareness in the Assessment of a Woman's Health a Review. *The Linacre Quarterly, 79*(4), 426–450. https://doi.org/10.1179/002436312804827109

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Premenstrual syndrome symptoms in women of reproductive age – a preliminary report[1]

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Abstract: At least one or more psychosomatic symptoms, characteristic of premenstrual syndrome (PMS) or premenstrual dysphoric disorder (PMDD) occur in the vast majority of women prior to the menstrual bleeding. *Aim of the study:* The objective of the work was to investigate whether and to what extent PMS symptoms occur in women of reproductive age as well as what the symptoms depend on. *Material and Methods:* The research was conducted from February to June 2019 among 252 reproductive-age women aged 20-35 years old at the Medical University of Lublin, University of Life Sciences in Lublin and Obstetric-Gynaecological Outpatient Clinic in Świdnik, Poland. In the work the survey diagnostic method was applied along with the use of the authors' own questionnaire and Premenstrual Syndrome Scale (PMSS). *Results:* In nearly a half of the respondents (45.2%) intensity of symptoms was found at the moderate level. In turn, a total of 40.5% of the respondents experienced no symptoms of PMS (0.4%) or mild ones (40.1%). The category of the most frequent symptoms encompassed physical symptoms namely breast tenderness and swelling (52.8%), skin lesions (44%), food cravings for salt and sugar (40.9%). The level of education of the respondents differentiated experiencing of PMS symptoms ($p = 0.001$). Intensity of PMS symptoms was not dependent on age ($p = 0.097$), physical activity ($p = 0.054$), dietary habits ($p = 0.650$) and taking vitamin D ($p = 0.159$) and vitamin B ($p = 0.458$). *Conclusions:* The vast majority of the women experience at least one of PMS symptoms. Nearly a half of them suffer from PMS syndrome at the moderate level. Physical symptoms are found among the most common PMS symptoms, in particular breast tenderness and swelling, skin lesions and food cravings. The category of psychological symptoms encompassed mainly irritability, mood swings, tension, lack of concentration, crying spells and anxiety. Behavioural symptoms are the most rare ones; the women report the following as the most common symptoms being over sensitive, impaired work performance, lack of interest in usual activities, social withdrawal and restlessness. The results obtained indicate the necessity of further investigations in the subject area referring to women of different age groups, different health status, level of education and having different health behaviours.
Keywords: menstrual cycle, premenstrual syndrome, premenstrual dysphoric disorder

Introduction

Currently an increasingly greater attention is drawn to an influence of premenstrual period on the quality of life in women as well as wellbeing of their families and the entire community. During the menstrual cycle, concentration of hormones change. Symptoms that occur in women are strictly time-related to menstrual cycle. The symptoms become noticeable

1 Article in polish language: Objawy zespołu napięcia przedmiesiączkowego u kobiet w wieku rozrodczym – badania wstępne https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Palu.pdf

in the luteal phase and symptoms remission follows the start of menstrual bleeding (Itriyeva, 2022; Khalida, 2022).

The International Society of Premenstrual Disorders (ISPMD) that consists of a multidisciplinary team of experts, distinguished two main disorders regarding premenstrual problems. They include premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) (Itriyeva, 2022; Khalida, 2022).

PMS constitutes a group of somatic symptoms, psychological and behavioural associated with the second phase of the cycle. Symptoms of the syndrome begin in the luteal phase, usually around ten days prior to the menses and finish in the first days of the period or at the end of the period. It concerns solely women of reproductive age, namely those who have ovulation cycles. Worldwide a total of 47.8% of reproductive age women suffer from PMS. Approximately 20% of them experience so severe symptoms that they interfere their daily functioning, the rest have mild to moderate symptoms (Frey Nascimento, Gaab, Kirsch, Kossowsky, Meyer, Locher, 2020). Other authors report that PMS prevalence oscillates even in the range of 50–85% (Ryu, Kim, 2015). Lack of diagnostic consensus and differences in symptoms interpretation aimed at the determination of the syndrome along with differences in the populations researched, contribute to a vast inconsistency in determining epidemiology of the phenomenon (Rezende, Alvarenga, Ramos, Franken, Costa, Pattussi, Paniz, 2022).

Although different hypotheses have been formulated, the aetiology of PMS and PMDD is not fully known. Females with PMS are recognized to have inappropriate response to physiologically fluctuating ovarian hormones. The current scientific evidence shows that premenstrual disorders are brought on by the interaction between cyclic changes in ovarian steroids and functioning of neurotransmitters. One of the most frequently researched neurotransmitter in the pathogenesis of PMS is serotonin. Serotonin insufficiency and increased sensitivity to progesterone can also be responsible for the disorder. The occurrence and increase in severity of PMS symptoms can be caused by neurohormonal and genetic factors that are still researched along with mineral and vitamin deficiency, and unhealthy lifestyle (Pokharel, Rana, Moutchia, Uchai, Kerri, Gutiérrez, Islam, 2020).

PMS symptomatology is considerably vast and different for each individual. Differences in experiencing PMS symptoms can result from cultural differences, socioeconomic status, lifestyle, individual attitudes, work overload and family duties. A total of 200 psychosomatic symptoms have been distinguished that can be manifested in the luteal phase of the cycle. Most females experience at least one of them (Nappi, Cucinella, Bosoni, Righi, Battista, Molinaro, Stincardini, Piccinino, Rossini, Tiranini, 2022; Siminiuc,Țurcanu, 2023).

The American College of Obstetricians and Gynaecologists (ACOG) developed the diagnostic criteria of PMS. The diagnosis of PMS requires the occurrence of at least one of the four somatic symptoms and one of the six psychological symptoms. The symptoms need to occur at least 5 days prior to menstruation and subside to the fourth day following the beginning of menstrual bleeding. PMS symptoms cannot occur in the pre-ovulation phase, which means that the symptoms should not occur before the 13th day of the menstrual cycle. Assessment needs to be done in the three previous menstrual cycles – retrospective assessment, alternatively during the two consecutive cycles – prospective assessment. While filling in the observations diary, pharmacotherapy cannot be used along with hormone administration, alcohol, drugs and psychoactive substances. The diagnostic symptoms of the somatic group include abdominal bloating, breast tension, oedematous extremities and headache. Psychological symptoms encompass anger, irritation, depression, concerns, anxiety, social withdrawal (Molugulu, Tumkur, Nilugal, 2016).

PMDD is characterised by cyclic relapse of psychological symptoms including irritability, nervousness/restlessness, stimulation, anger, insomnia, poor concentration, severe fatigue, depression, anxiety and disorientation. The disorder considerably impairs women's performance and therapy is required. The prevalence of PMDD fluctuates between 3 and 8% of all menstruating women (Osborn, Wittkowski, Brooks, Briggs, ShaughnO'Brien, *2020*). Other authors report that PMDD occurs in 3-5% females, and while making a detailed diagnosis the percentage is reduced to 2% of the population of females of reproductive age (American Psychiatric Association, 2013; Śliwerski, Koszałkowska,2021).

PMDD is manifested by more severe symptoms than PMS, in particular in psychosocial sphere. The American Psychiatric Association (APA) determined diagnostic criteria according to the Diagnostic and Statistical Manual of Mental Disorder – fourth edition (DSM – IV). In 2019 the World Health Organisation (WHO) announced the inclusion of PMDD in the International Classification of Diseases and Related Health Problems 11th Revision (ICD-11) as genitourinary diseases. The classifications of PMDD, both as a mental condition in DSM-5 and as a morbidity in ICD-11 demonstrate the complexity of differentiation of factors of both physical and mental health because healthcare systems are still traditionally divided into treatment of medical issues and mental ones (Osborn et al., 2020). To make a diagnosis of PMDD, symptoms need to occur in the luteal phase in most cycles within the last year and need to encompass somatic symptoms, in particular affective ones. Furthermore, the condition needs to cause considerable worsening of quality of life (Schroll, Lauritsen, 2022). The issue of premenstrual disorders is common and is associated with cyclic experiencing of a lot of oppressive psychophysical symptoms by females. This can reasonably impair their quality of life both in their private life and professional development. Wellbeing of women and their daily performance also affects indirectly their families and the entire communities they live with. Therefore, investigating the issue is of great significance and aimed at improvement of care of the group of females (Nappi et al., 2022; Siminiuc, Țurcanu, 2023).

1. Own research

1.1. The aim of the work

The objective of the study was to investigate whether and to what extent severity of premenstrual symptoms occur in women of reproductive age and what they depend on.

1.2. Material and Methods

The diagnostic survey method was applied in the work. A technique of questionnaire of reproductive-age women was used to collect date. The research instrument utilized was the authors' own questionnaire compiled specially for the study and Premenstrual Syndrome Scale (PMSS).

The study was carried out from February to June 2019 among 252 females. The paper questionnaires were provided for the women to fill them in at the Medical University of Lublin, University of Life Sciences in Lublin and Obstetric-Gynaecological Outpatient Clinic in Świdnik, Poland. In the study, purposive sampling was applied and the inclusion criteria were as follows reproductive age women, aged 20-35 years old. The participation in the research was voluntary following the provision of the consent according to the Helsinki Declaration.

The research material was collected due to the authors' own questionnaire and Premenstrual Syndrome Scale (PMSS) taken from the publication by P. Padmavathi, R. Sankar, N. Kokilavani, K. Dhanapal, B. Ashok entitled *Validity and Reliability Study of Premenstrual Syndrome Scale (PMSS)* after getting the authors permission (Padmavathi et al. 2014).

The questionnaire consisted of 28 questions concerning sociodemographic factors like place of residence, age, marital status and education. They regarded the females' lifestyle, a type of diet, sexual and physical activity, taking stimulants and diet supplements or medicines. The questionnaire also contained a brief ob-gyn interview: age of menarche, duration of periods and menstrual cycles, number of pregnancies, deliveries and complications of pregnancy.

The PMSS contains 40 most common symptoms of PMS divided into 3 groups, namely physical (somatic), psychological (emotional) and behavioural ones. The physical symptoms include 16 ones such as breast tenderness and swelling, abdominal bloating, weight gain, headache, dizziness/fainting, fatigue, palpitations, pelvic discomfort and pain, abdominal cramps, change in bowel habits, increased appetite, generalized aches and pains, food cravings (for sugar, salt), skin changes, rashes/pimples, nausea/vomiting, muscle and joint pains. The 12 emotional symptoms are as follows irritability, anxiety, tension, mood swings, loss of concentration,

depression, forgetfulness, crying spells, sleep changes – hypersomnia or insomnia, confusion, aggression and hopelessness. In turn, the behavioural symptoms include the following 12 ones: social withdrawal, restlessness, lack of self-control, feeling guilty, clumsiness, lack of interest in usual activities, poor judgement, impaired work performance, obsessional thoughts, compulsive behaviours, irrational thoughts and being over sensitive.

A respondent attributes each PMS symptom a number of points depending on the experienced intensity during the last menstrual cycle. The scale ranges from 1 to 5 where 1 means never, 2 – rarely, 3 – sometimes, 4 – very often, 5 – always. The maximum possible score is 200 points while the minimum 40 points. Each symptom is multiplied by its severity and all the symptoms are added. The scale allows for classification of severity of PMS symptoms into 5 groups: no symptoms, mild symptoms, moderate, severe and very severe ones.

The respondents were provided with the questionnaire along with the informed consent form to participate in the study that included information about the aim of the research performed, anonymity and the use of the data collected solely for scientific purposes.

The research material obtained was subjected to descriptive and statistical elaboration. The variables measured on the nominal scale were characterized by numbers and percentage of the values given. However, the variables measured on the quotient scale were described using mean, standard deviation, median, minimum and maximum values of the phenomenon researched.

Dependence between categorial qualitative variables was checked using the Chi-square test of independence. The results of the analysis were assumed to be statistically significant at the significance level of $p<0.05$.

2. Results

2.1. Characteristics the research group

The mean age of the females researched was 26.76 years old while median was 26 years old. The youngest woman was 20 years old and the oldest was 35. Almost a half of the women researched (46.8%; N = 118) was aged 20-25 years old, a total of 27% of the women (N = 68) were in the age range of 31-35 years old, and 26.2% (N = 66) were aged 26-30 years old.

More than a half of the respondents (66.3%; N = 167) were inhabitants of urban areas and the rest 33.7% (N = 85) of rural ones. A total of 60.7% of the women (N = 153) had higher education, 32.0% (N = 78) secondary and 6.3% (N = 16) vocational, the fewest women 2% (N = 5) had primary education. More than a half of the females (55.6%; N = 140) were single while the rest 44.4% (N = 112) were married.

2.2. Data on the ob-gyn interview

The mean age of menarche was 12.95 years old while median was 13 years old. The lowest age of menarche was 8 years old and the highest was 17 years old. Most of the females admitted that menarche occurred when they were under 13 years old (38.9%; N = 98). A total of 29.4% (N = 74) had menarche at the age of 13 years old and 31.7% (N = 80) at the age 13 plus years old. A total 81% of the women researched (N = 204) had regular menstrual cycles while 19% (N = 48) of the respondents had irregular cycles. More than a half of the respondents (61.9%; N = 156) did not have offspring while the rest of 38.1% (N = 96) had at least one child.

2.3. Data on factors that can affect PMS symptoms

Physical activity level of the women researched was assessed and it was as follows: most of them were physically active (72.2%; N = 182) and the rest of the women (27.8%; N = 70) were not physically active. Most of the females (46.4%; N = 117) were physically active once or twice a week, 21.0% of the respondents were active three or four times a week and 4.8% (N = 12) of the women were active five and more times a week.

The vast majority of the females (69.8%; N = 176) did not use any stimulants. At least one stimulant was used by 30.2% (N = 76) of the women. The vast majority of the respondents (76.3%; N = 58) used alcohol.

The vast majority of the respondents (83.3%; N = 210) were sexually active. Slightly more than a half of the females (54.8%; N = 138) did not use any contraceptives. The most common method used was condoms by 34.9% (N = 88), considerably fewer women (10.3%; N = 26) used hormonal contraceptives.

More than a half of the respondents (56.6%; N = 141) slept 5-7 hours a night. Every third woman slept 7-9 hours (32.1%; N = 81) while a total of 11.1% (N = 28) of the women slept 3-4 hours a night. Two women (0.8%) slept more than 9 hours a night.

The vast majority of the respondents ((0.5%; N = 228) were on a general diet. A small percentage of the females had special diets. Slightly more than a half of the females (56.0%; N = 141) did not take vitamin D whereas 44.0% (n = 111) of them took it. More than a half of the women (60.7%; N = 153) did not take vitamin B while a total of 39.3% (N = 99) of the respondents took it.

The vast majority of the women (96.0%; N = 242) had never been treated for premenstrual disorders while a total of 4.0% (N = 10) used drugs to cope with increased PMS and PMDD symptoms. Table 1 shows data on medicines taken by the women researched. The most common drugs taken were hormonal contraceptives by 11.1% (N = 28) of the females. Whereas a total of 2.68% (N = 17) of the women used other pharmaceuticals (SSRI, GnRH and other) to reduce PMS symptoms.

2.4. Severity of PMS symptoms

Table 2 demonstrates the level of intensity of symptoms in the women researched based on the PMSS.

Every woman had the level of intensity of typical PMS symptoms assessed using the PMSS. A total of 40.5% (N = 102) of the respondents had mild symptoms including one woman (0.4%) who did not have any symptoms. Moderate level of

Table 1. Drugs taken to decrease symptoms of PMDD by the women researched

Drugs	n	%**
SSRIs	5	1.98
hormonal	28	11.11
GnRH agonists	1	0.40
other	13	0.31
Total	47*	-

* number of responses; **n = 252, i.e. 100 %

Table 2. Level of PMS symptoms in the women researched

Level of PMS symptoms	N	%	Highly/ poorly intensified
No symptoms	1	0.4	40.5
Mild	101	40.1	
Moderate	114	45.2	45.2
Severe	31	12.3	14.3
Very severe	5	2.0	
Total	252	-	-

Table 3. Values of coefficients for the sum of intensity of PMS symptoms in all the group

	M	SD	Min	Max	Q1	Me	Q3
Sum of intensity of physical PMS symptoms (16–80)	41.35	11.24	16.00	72.00	33.00	41.00	50.00
Sum of intensity of mental PMS symptoms (12–60)	28.73	10.45	12.00	60.00	21.00	27.00	35.00
Sum of intensity of behavioral PMS symptoms (12–60)	20.73	9.52	12.00	60.00	13.00	18.00	25.00

*assessed in 5-point Likert scale

Table 4. Dependence between the level of intensity of symptoms due to different factors

Age	No symptoms/ mild symptoms	Moderate symptoms	Severe/ very severe symptoms	Total
20-25 years old	42	57	19	118
	35.6%	48.3%	16.1%	100.0%
26-30 years old	23	34	9	66
	34.8%	51.5%	13.6%	100.0%
31-35 years old	37	23	8	68
	54.4%	33.8%	11.8%	100.0%
Total	102	114	36	252
	40.5%	45.2%	14.3%	100.0%
Chi-square = 7.847; p = 0.097				
Education	No symptoms/ mild symptoms	Moderate symptoms	Severe/ very severe symptoms	Total
Primary/ post-primary/ Vocational	13	1	7	21
	61.9%	4.8%	33.3%	100.0%
Secondary	24	42	12	78
	30.8%	53.8%	15.4%	100.0%
Higher	65	71	17	153
	42.5%	46.4%	11.1%	100.0%
Total	102	114	36	252
	40.5%	45.2%	14.3%	100.0%
Chi-square = 19.758; p = 0.001				
Vitamin D	No symptoms/ Mild symptoms	Moderate symptoms	Severe/ very severe symptoms	Total
Yes	50	50	11	111
	45.0%	45.0%	9.9%	100.0%
No	52	64	25	141
	36.9%	45.4%	17.7%	100.0%
Total	102	114	36	252
	40.5%	45.2%	14.3%	100.0%
Chi-square = 3.684; p = 0.159				

Age	No symptoms/ mild symptoms	Moderate symptoms	Severe/ very severe symptoms	Total
Vitamin B	No symptoms/ Mild symptoms	Moderate symptoms	Sever/ very severe symptoms	Total
Yes	44	40	15	99
	44.4%	40.4%	15.2%	100.0%
No	58	74	21	153
	37.9%	48.4%	13.7%	100.0%
Total	102	114	36	252
	40.5%	45.2%	14.3%	100.0%
Chi-square = 1.562; p = 0.458				
Physical activity	No symptoms/ Mild symptoms	Moderate symptoms	Sever/ very severe symptoms	Total
Yes	77	85	20	182
	42.3%	46.7%	11.0%	100.0%
No	25	29	16	70
	35.7%	41.4%	22.9%	100.0%
Total	102	114	36	252
	40.5%	45.2%	14.3%	100.0%
Chi-square = 5.839; p = 0.054				
Being on a special diet	No symptoms/ mild symptoms	Moderate symptoms	Severe/ very severe symptoms	Total
No (general)	94	101	33	228
	41.2%	44.3%	14.5%	100.0%
Yes	8	13	3	24
	33.3%	54.2%	12.5%	100.0%
Total	102	114	36	252
	40.5%	45.2%	14.3%	100.0%
Chi-square = 0.861; p = 0.650				

experiencing PMS symptoms was found in 45.2% (N = 114) of the women while severe and very severe symptoms were found in 14.3% (N = 36) of the respondents.

Values of coefficients for the sum of intensity of symptoms in all the groups are presented in Table 3.

The mean sum of points of physical symptoms was 41.35 while median 41 points. The minimum value obtained was 16 points and the maximum value was 72 points. The mean sum of points of psychological symptoms was 28.73, median 27 points. The minimum value obtained was 12

Table 5. Intensity of physical PMS symptoms in the women researched

Physical symptoms						
Response	Breast tenderness and swelling		Highly/ poorly intensified	Abdominal bloating		Highly/ poorly intensified
	N	%		N	%	
Never	34	13.5	25.8	34	13.5	32.1
Rarely	31	12.3		47	18.7	
Sometimes	54	21.4	21.4	74	29.4	29.4
Very often	82	32.5	52.8	67	26.6	38.5
Always	51	20.2		30	11.9	
Response	Weight gain		Highly/ poorly intensified	Headache		Highly/ poorly intensified
	N	%		N	%	
Never	49	19.4	43.3	83	32.9	67.4
Rarely	60	23.8		87	34.5	
Sometimes	67	26.6	26.6	43	17.1	17.1
Very often	50	19.8	30.2	27	10.7	15.5
Always	26	10.3		12	4.8	
Response	Dizziness/fainting		Highly/ poorly intensified	Fatigue		Highly/ poorly intensified
	N	%		N	%	
Never	152	60.3	82.9	34	13.5	31.1
Rarely	57	22.6		47	18.7	
Sometimes	32	12.7	12.7	93	36.9	36.9
Very often	8	3.2	4.4	59	23.4	32.0
Always	3	1.2		19	7.5	
Response	Palpitations		Highly/ poorly intensified	Pelvic discomfort and pain		Highly/ poorly intensified
	N	%		N	%	
Never	146	57.9	80.9	50	19.8	41.3
Rarely	58	23.0		54	21.4	
Sometimes	34	13.5	13.5	70	27.8	27.8
Very often	11	4.4	5.6	47	18.7	31,.0
Always	3	1.2		31	12.3	
Response	Abdominal cramps		Highly/ poorly intensified	Changes in bowel habits		Highly/ poorly intensified
	N	%		N	%	
Never	38	15.1	32.5	72	28.6	51.2
Rarely	44	17.5		57	22.6	
Sometimes	77	30.6	30.6	66	26.2	26.2
Very often	60	23.8	36.9	37	14.7	22.6
Always	33	13.1		20	7.9	
Response	Increased appetite		Highly/ poorly intensified	Generalized aches and pains		Highly/ poorly intensified
	N	%		N	%	
Never	35	13.9	28.2	71	28.2	54.4
Rarely	36	14.3		66	26.2	
Sometimes	79	31.3	31.3	60	23.8	23.8
Very often	71	28.2	40.5	35	13.9	21.8
Always	31	12.3		20	7.9	

Physical symptoms						
Response	Breast tenderness and swelling		Highly/ poorly intensified	Abdominal bloating		Highly/ poorly intensified
	N	%		N	%	
Response	Food cravings (sugar/salt)		Highly/ poorly intensified	Skin changes, rashes, pimples		Highly/ poorly intensified
	n	%		N	%	
Never	36	14.3	29.0	32	12.7	30.2
Rarely	37	14.7		44	17.5	
Sometimes	76	30.1	30.1	65	25.8	25.8
Very often	63	25.0	40.9	71	28.1	44.0
Always	40	15.9		40	15.9	
Response	Nausea/vomiting		Highly/ poorly intensified	Joint and muscle pains		Highly/ poorly intensified
	n	%		N	%	
Never	158	62.7	75.8	117	46.4	75.8
Rarely	52	20.6		74	29.4	
Sometimes	29	11.5	11.5	34	13.5	13.5
Very often	9	3.6	5.2	21	8.3	10.7
Always	4	1.6		6	2.4	

Table 6. Intensity of psychological PMS symptoms in the women researched.

Psychological symptoms						
Response	Irritability		Highly/ poorly intensified	Anxiety		Highly/ poorly intensified
	n	%		n	%	
Never	20	7.9	18.6	65	25.8	51.2
Rarely	27	10.7		64	25.4	
Sometimes	68	27.0	27.0	55	21.8	21.8
Very often	76	30.2	54.4	35	13.9	27.0
Always	61	24.2		33	13.1	
Response	Tension		Highly/ poorly intensified	Mood swings		Highly/ poorly intensified
	n	%		n	%	
Never	38	15.1	35.7	17	6.7	21.4
Rarely	52	20.6		37	14.9	
Sometimes	62	24.6	24.6	72	28.6	28.6
Very often	55	21.8	39.7	67	26.6	50.0
Always	45	17.9		59	23.4	
Response	Loss of concentration		Highly/ poorly intensified	Depression		Highly/ poorly intensified
	n	%		n	%	
Never	55	21.8	46.8	175	69.4	83.3
Rarely	63	25.0		35	13.9	
Sometimes	68	27.0	27.0	27	10.7	10.7
Very often	31	12.3	26.2	7	2.8	6.0
Always	35	13.9		8	3.2	

Psychological symptoms

Response	Irritability		Highly/ poorly intensified	Anxiety		Highly/ poorly intensified
	n	%		n	%	
Response	Forgetfulness		Highly/ poorly intensified	Crying spells		Highly/ poorly intensified
	N	%		n	%	
Nver	158	62.7	86.9	60	23.8	50.0
Rarely	61	24.2		66	26.2	
Sometimes	18	7.1	7.1	61	24.2	24.2
Very often	9	3.6	6.0	40	15.9	25.8
Always	6	2.4		25	9.9	
Response	Sleep changes (insomnia/ hypersomnia)		Highly/ poorly intensified	Confusion		Highly/ poorly intensified
	n	%		n	%	
Never	102	40.5	64.7	144	57.1	81.3
Rarely	61	24.2		61	24.2	
Sometimes	57	22.6	22.6	30	11.9	11.9
Very often	21	8.3	12.7	12	4.8	6.8
Always	11	4.4		5	2.0	
Response	Aggression		Highly/ poorly intensified	Hopelessness		Highly/ poorly intensified
	n	%		n	%	
Never	130	51.6	71.8	148	58.7	75.0
Rarely	51	20.2		41	16.3	
Sometimes	37	14.7	14.7	38	15.1	15.1
Very often	20	7.9	13.5	16	6.3	9.9
Always	14	5.6		9	3.6	

points whereas the maximum value was 60 points. The mean sum of points of behavioural symptoms was 20.73, median 18 points. The minimum value obtained was 12 points and the maximum value was 60 points.

Dependences between the level of intensity of PMS symptoms and different factors are depicted in Table 4.

Statistical significance was not found ($p>0.05$) analysing age and severity of PMS symptoms. However, it is worth noticing that the highest percentage of the women of 54.4% at the age of 31-35 years old had no symptoms or mild ones. In the case of the comparison of education and severity of PMS symptoms statistical significance ($P<0.005$) was found. The highest percentage of the respondents (61.9%) with no PMS symptoms or mild ones was found in the group of women with primary, post-primary and vocational education. Simultaneously, this category had statistically more frequently severe and very severe symptoms. The lowest percentage (11.1%) of the females suffering from severe and very severe PMS symptoms was fund in the women with higher education. In turn, the highest percentage (53.8%) of the women with moderate PMS symptoms was found in the respondents with secondary education. Taking vitamin D had no statistical significance in severity of PMS symptoms ($p>0.05$). the result obtained were compared in the two categories. No statistical significance was found in dependence of vitamin B supplementation and PMS intensity ($p>0.05$). similarly, no statistical significance was found in dependence between physical activity and severity of PMS symptoms ($p>0.05$). However, it is worth mentioning that the category of physically active women had higher percentage of females with no PMS symptoms or mild ones ($p > 0.05$). No statistical significance was found in dependence between the

Table 7. Intensity of behavioural PMS symptoms in the women researched.

Behavioural symptoms						
Response	Social withdrawal		Highly/ poorly intensified	Restlessnss		Highly/ poorly intensified
	n	%		n	%	
Never	151	59.9	76.6	122	48.4	77.0
Rarely	42	16.7		72	28.6	
Sometimes	35	13.9	13.9	36	14.3	14.2
Very often	19	7.5	9.5	16	6.3	8.7
Always	5	2.0		6	2.4	
Response	Lack of self control		Highly/ poorly intensified	Feeling guilty		Highly/ poorly intensified
	n	%		n	%	
Never	182	72.2	85.3	165	65.5	86.9
Rarely	33	13.1		54	21.4	
Sometimes	24	9.5	9.5	18	7.1	7.1
Very often	8	3.2	5.2	12	4.8	6.0
Always	5	2.0		3	2.0	
Response	Clumsiness		Highly/ poorly intensified	Lack of interest in usual activities		Highly/ poorly intensified
	n	%		n	%	
Never	149	59.1	80.9	124	49.2	72.6
Rarely	55	21.8		59	23.4	
Sometimes	29	11.5	11.5	48	19.1	19.1
Very often	14	5.6	7.6	16	6,3	8.3
Always	5	2.0		5	2.0	
Response	Poor judgement		Highly/ poorly intensified	Impaired work performance		Highly/ poorly intensified
	n	%		n	%	
Never	187	74.2	89.3	100	39.7	68.3
Rarely	38	15.1		72	28.6	
Sometimes	18	7.1	7.1	57	22.6	22.6
Very often	6	2.4	3.6	14	5.6	9.1
Always	3	1.2		9	3.6	
Response	Obsessional thoughts		Highly/ poorly intensified	Compulsive behaviour		Highly/ poorly intensified
	n	%		n	%	
Never	156	61.9	81.0	183	72.6	88.9
Rarely	48	19.0		41	16.2	
Sometimes	26	10.3	10.3	18	7.1	7.1
Very often	14	5.6	8.7	5	2.0	4.0
Always	8	3.2		5	2.0	
Response	Irrational thoughts		Highly/ poorly intensified	Being over sensitive		Highly/ poorly intensified
	n	%		n	%	
Never	176	69.8	86.1	93	36.9	52.8
Rarely	41	16.3		40	15.9	
Sometimes	24	9.5	9.5	68	27.0	27.0
Very often	7	2.8	4.4	26	10.3	20.2
Always	4	1.6		25	9.9	

type of diet used and intensity of PMS symptoms ($p>0.05$). The results obtained in all the groups were similar.

In the research, intensity of particular PMS symptoms was of great interest; the results are depicted in tables 5-7.

The most common physical PMS symptoms always and very often experienced by the females were breast tenderness and swelling (52.8%), skin changes, rashes and pimples (44%), food cravings for sugar and salt (40.9%), increased appetite (40.5%), abdominal bloating (38.5%), abdominal cramps (36.9%), weight gain (32.2%), pelvic discomfort and pain (31%), and fatigue (32%). The symptoms that were indicated as never experienced during the second phase of menstrual cycle are as follows: dizziness and fainting, palpitations, joint and muscle pains, and headache.

The most severe psychological symptoms experienced by the females researched in the last phase of menstrual cycle are irritability (54.4%), mood swings (50%), tension (37.9%). Loss of concentration (27%), crying spells (24.4%) and anxiety (21.8%) sometimes occur in the women. Such symptoms as depression, forgetfulness, confusion, sleep disorders (insomnia or hypersomnia), aggression and hopelessness never or rarely occur in the women researched.

In the research conducted, behavioural PMS symptoms are the most rare ones. The Most of the women provided frequency of always and very often for the following symptoms: being over sensitive (22.2%), impaired work performance (9.1%), lack of interest in usual activities (8.3%), social withdrawal (9.5%) and restlessness (8.7%). In the last phase of the cycle, the females did not have or rarely had the following symptoms: compulsive behaviours, irrational thoughts, obsessional thoughts, poor judgement, clumsiness, feeling guilty and loss of self-control.

3. Discussion

Prevalence of PMS is very differentiated and differs depending on the selection of diagnostic criteria, subjective PMS symptoms and social and cultural differences of the populations researched. Epidemiological studies demonstrated that approximately 80–90% of females declare at least one of the PMS symptoms (Fatemi, Allahdadian, Bahadorani, 2019). The most intense PMS symptoms manifest in the age range of 25-35 years old (Pałucka et al., 2016). In the authors' own research, the research group was 20-35 years old. Although no statistical significance was found between age and severity of PMS symptoms, more than a half of the females researched (54.4%) who was observed to report no symptoms or mild ones were in the highest age range, namely 31-35 years old. Other authors noticed a tendency to diminishing severity of PMS symptoms along with age (Sut, Mestogullari, 2016). In the analysis of the impact of women's age on PMS occurrence and severity, the research on 500 females by Freeman at al. (2009) is worth mentioning. Probability of PMS in women aged 40-44 years old was ascertained to be 41% less than in women aged 35-39 years old. In turn, in the age group of 50-54 years old it was 79% less than in the age group of 35-39 years old.

In the authors' own research, almost a half of the respondents (45.2%) was found to experience PMS symptoms at the moderate level and 40.1% had mild symptoms. Solely 14.3% of the females assessed them as severe. Interestingly, only one woman (0.4%) reported to have no PMS symptoms. Other authors observed that diagnosis of PMS can be made in 38.1% of women by means of a similar scale for assessing PMS symptoms (Sut, Mestogullari, 2016). Still other researchers noticed that all women researched experienced at least one of the PMS symptoms. A total of 58.3% and 17.1% of the respondents respectively had moderate and severe PMS symptoms (Abu Alwafa, Badrasawi, Haj Hamad, 2021).

The study of 2500 Polish women of reproductive age showed that prevalence of PMS and PMDD was 76.39% and 4.17% respectively (Drosdzol, Nowosielski, Skrzypulec, Plinta, 2011). Other Polish authors observed that prevalence of PMS was found in 42% of professional sportswomen aged 16-22 years old (Czajkowska, Drosdzol-Cop, Naworska, Galazka, Gogola, Rutkowska, Skrzypulec-Plinta, 2020).

In the authors' own research, regarding particular symptoms in the luteal phase of the cycle in PMS, the research indicated the most intensified somatic

symptoms such as breast tenderness and swelling, increased appetite, food cravings for sugar and salt, skin changes, abdominal bloating, fatigue and abdominal cramps. In turn, psychological symptoms declared by the women researched included irritability, mood swings, tension, loss of concentration, crying spells and anxiety. Behavioural symptoms were the most rare and encompassed being over sensitive, impaired work performance, lack of interest in usual activities, social withdrawal, and restlessness. Similarly, in the work of Rozende at al. (2022), physical symptoms were the most common (breast tenderness, headache, joint and muscle pains, oedema and weight gain) and followed by eagerness to overeat/eagerness to eat. In turn, in the work by other authors (Kozłowski, Kozłowska, Kozłowska, Cisło, 2017) psychological symptoms were the most intense; first irritability and emotional lability, then decreased mood, lower self-esteem, anxiety and nervous tension.

The relationship between the level of education and PMS was well documented in the literature. In the population research in Great Britain, reverse linear dependence was found in which the lowest level of education was associated with frequent occurrence of PMS symptoms. However, the Brazilian study showed high occurrence of PMS in women with higher education (Rezende et al., 2022). In the authors' own research, statistically significant dependence was found in the relationship between the level of education and intensity of PMS ($P<0.05$). Interestingly, the highest percentage of the respondents (61.9%) was found in the group of the women with primary, post-primary and vocational education who experienced no PMS symptoms or ones. Simultaneously, in this category the women with severe and very severe PMS symptoms were statistically more frequently found. The lowest percentage of the females with severe and very severe PMS symptoms was observed in the women with higher education (11.1%). In turn, the highest percentage of the women with moderate PMS symptoms was noticed in the women with secondary education (53.8%).

Approximately 80% of daily requirement for vitamin D is usually met by 7-dehydrocholesterol due to ultraviolet radiation and the rest 20% is provided with food. The role of vitamin D in reducing the risk of PMS is still researched and it seems it is mainly correlated with modulation of calcium concentration, some neurotransmitters and sex hormones. In the research by Abdi et al. (2019) based on a systematic review, a low level of vitamin D and calcium in the luteal phase of the menstrual cycle was shown to cause and/or intensify PMS symptoms. However, in this work no statistically significant dependence was noticed between vitamin D supplementation and intensity of PMS symptoms in females researched. Group B vitamins are essential in the synthesis of neurotransmitters potentially involved in pathophysiology of PMS. However, no association was found with group B vitamins supplementation and severity of PMS symptoms. Taking supplements of group B vitamins was not related to a lower risk of PMS (Siminiuc, Țurcanu, 2023; Retallick-Brown, Blampied, Rucklidge, 2020). In the authors' own research, supplementation of group B vitamins also was not associated with milder PMS symptoms. Moreover, no statistical significance was found between the type of diet and severity of PMS symptoms. However, it should be highlighted that the influence of nutrition on PMS is confirmed, in particular regarding a negative impact of fast food, deep-fried food, coffee and alcohol since it is significantly related to PMS development. Whereas consumption of fruit and vegetables can decrease PMS symptoms (Kwon, Sung, Lee, 2022). The main aim of PMS treatment is reducing the symptoms and decreasing its influence on daily living. Pharmacotherapy has always been the first-line treatment of PMS but the latest research shows better benefits of combined therapy. The combination of pharmacotherapy (anxiolytics; non-steroidal anti-inflammatory drugs, NSAIDs; gonadotropin-releasing hormone agonists, GnRH agonists; selective serotonin reuptake inhibitors, SSRIs; spironolactone; oral contraceptives) with non-pharmacological therapy like appropriate physical activity and modifying nutrition turned out to be beneficial in PMS management (Gudipally et al., 2020). However, in the authors' own research no dependency between pharmaceuticals taken and occurrence, and severity of PMS symptoms was observed, which can be explained by a low number of the respondents taking any drugs used to treat PMS.

Physical activity has a positive influence on the reduction of PMS, which is well documented in the scientific research. In the systematic review of 17 studies by Saglam and Orsal (2020), the research encompassed the effect of physical activity such as yoga, aerobic exercise, swimming and Pilates on PMS symptoms. The results clearly showed that irrespective of the type of physical activity, regular exercise seems to be effective in alleviation of symptoms. In the authors' own research no statistical dependence was found between physical activity and intensity of PMS symptoms ($p>0.05$). However, it is worth mentioning that in the category of physical active women a higher percentage of women free from PMS symptoms or with mild ones was found.

The strength of the research conducted was the application of a standardized research instrument of the PMSS due to which not only particular PMS symptoms were depicted in the women researched but also intensity of the symptoms. The work presents preliminary research results that suggest the need for further investigations in the subject area. Weakness of the research performed constitutes quite a low number of the females in the research group, not representative for the entire population of women in Poland, students of universities in Lublin and patients of one outpatient clinic for women in the Lublin region. Therefore, some next research should be carried out in the all-Poland population and also supplemented with additional questions regarding, e.g. health status of respondents.

While analysing the literature available, very differentiated diagnostic methods can be observed to identify PMS. This makes the comparison of frequency and intensity of PMS symptoms difficult. Moreover, there is scarce current research into PMS in women in Poland. The vast majority of the research in this area constitutes foreign studies. This makes the comparison of own results with research on women in Poland difficult though such a comparison could more precisely reflect the picture of PMS symptoms in the group researched of similar socio-cultural background. Thus, an increase in interest in the subject area should be considered also in the Polish scientific environment mainly due to the fact that PMS phenomenon is of great significance in public health. The main challenges related to research into PMS encompass their subjective character of PMS symptoms and variability of menstrual patterns at different reproductive stages that require appropriate diagnostic criteria (Itriyeva, 2022; Khalida, 2022).

Conclusions

1. The vast majority of the females experience at least one PMS symptom. Nearly a half of the women suffer from premenstrual disorders moderately. Among the category of symptoms that occur the most commonly, physical symptoms are found, in particular breast tenderness and swelling, skin lesions and food cravings. Another category of psychological symptoms mainly include irritability, mood swings, tension, poor concentration, crying spells and anxiety. Behavioural symptoms are the most rare ones and the most commonly encompass being over sensitive, impaired work performance, lack of interest in usual activities, social withdrawal and restlessness.
2. The results obtained in the preliminary research indicate the necessity of further investigations in this scope and referring to women of different age groups, of different health status, level of education and differentiated health behaviours.

Bibliography

Abu Alwafa, R., Badrasawi, M. & Haj Hamad, R. (2021). Prevalence of premenstrual syndrome and its association with psychosocial and lifestyle variables: a cross-sectional study from Palestine. *BMC Women's Health, 21*(233). https://doi.org/10.1186/s12905-021-01374-6

Abdi, F., Ozgoli, G. & Rahnemaie, F.S. (2019). A systematic review of the role of vitamin D and calcium in premenstrual syndrome. *Obstetrics & Gynecology Science*, *62*(2), 73-86. https://doi.org/10.5468/ogs.2019.62.2.73

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (2013). Washington, DC: American Psychiatric Association Publishing.

Czajkowska, M., Drosdzol-Cop, A., Naworska, B., Galazka, I., Gogola, C., Rutkowska, M., Skrzypulec-Plinta, V. (2020). The impact of competitivesports on menstrualcycle and menstrualdisorders, includingpremenstrualsyndrome, premenstrualdysphoricdisorder and hormonalimbalances. *Ginekologia Polska*, *91*(9), 503-512. https://doi.org/10.5603/GP.2020.0097.

Drosdzol, A., Nowosielski, K., Skrzypulec, V., Plinta, R. (2011). Premenstrualdisorders in Polish adolescent girls: Prevalence and riskfactors. *Journal of Obstetrics and Gynaecology-Research*, *37*(9), 1216-1221. https://doi.org/10.1111/j.1447-0756.2010.01505.x

Fatemi, M., Allahdadian, M., Bahadorani, M. (2019). Comparison of serum level of some trace elements and vitamin D between patients with premenstrual syndrome and normal controls: A cross-sectional study. *International Journal of Reproductive Biomedicine, 17*(9), 647-652. https://doi.org/10.18502/ijrm.v17i9.5100

Frey Nascimento, A., Gaab, J., Kirsch, I., Kossowsky, J., Meyer, A., Locher, C. (2020). Open-label placebo treatment of women with premenstrual syndrome: study protocol of a randomised controlled trial. *British Medical Journal*, 10(2), e032868. https://doi.org/10.1136/bmjopen-2019-032868

Itryieva, K. (2022). Premenstrual Syndrome and Premenstrual Dysphoric Disorder in adolescents. *Current Problems in Pediatric Adolescent Health Care*, 52(5),101187. https://doi.org/10.1016/j.cppeds.2022.101187

Khasanova, D. (2022). Premenstrual Syndrome in the modern science. *International Bulletin of Medical Sciences and Clinical Research*, *2*(12), 16–22.

Kozłowski, P., Kozłowska, M., Kozłowska, K., Cisło M. (2017). The prevalence of premenstrual syndrome in young woman. *Journal of Education, Health and Sport*, (7), 866-872.

Kwon, Y.J., Sung, D.I. & Lee, J.W. (2022). Association among premenstrual syndrome, dietary patterns, and adherence to mediterranean diet. *Nutrients*, *14*(12), 2460. https://doi.org/10.3390/nu14122460

Molugulu, N., Tumkur, A.N.I.L., Nilugal, K.C. (2016). Study of premenstrual syndrome among future healthcare professionals in Masterskill Global College. *Intrnational Journal of Pharmacy and Pharmaceutical Sciences*, *8*(2), 66-71.

Nappi, R.E. Cucinella L., Bosoni, D., Righi, A., Battista, F., Molinaro, P., Stincardini, G., Piccinino, M., Rossini, R., Tiranini, L. (2022). Premenstrual Syndrome and Premenstrual Dysphoric Disorder as Centrally Based Disorders. *Endocrines*, *3*, 127-138. https://doi.org/10.3390/endocrines3010012

Osborn, E., Wittkowski, A., Brooks, J. *Briggs, P.E.,* Shaughn O'Brien, P.M. (2020). Women's experiences of receiving a diagnosis of premenstrual dysphoric disorder: a qualitative investigation. *Boston Medical Center Women's Health,* 20, 242. https://doi.org/10.1186/s12905-020-01100-8

Padmavathi, P., Sankar, R., Kokilavani, N., Dhanapal, K., AshokB. (2014). Validity and Reliability Study of Premenstrual Syndrome Scale (PMSS), *International Journal of Contemporary Management, 2*(1), 04-05.

Pałucka, K., Łepecka-Klusek, C., Pilewska-Kozak, A.B., Pawłowska-Muc, A.K., Stadnicka G. (2016). Premenstrual syndrome – myth or reality. *Journal of Education, Health and Sport*, *6*(6): 478-490.

Pokharel, P., Rana, J., Moutchia, J., Uchai, S., Kerri, A., Gutiérrez, P.L. L., Islam, R.M. (2020). Effect of exercise on symptoms of premenstrual syndrome in low and middle-income countries: a protocol for systematic review and meta-analysis, *British Medical Journal Open*, *10*(9), e039274. https://doi.org/10.1136/bmjopen-2020-039274

Retallick-Brown, H., Blampied, N., Rucklidge, J.J. (2020). A Pilot randomized treatment-controlled trial comparing vitamin B6 with broad-spectrum micronutrients for premenstrual syndrome. *The Journal Alternative Complementary Medicine*, 26, 88–97. https://doi.org/10.1089/acm.2019.0305

Rezende, A.P.R., Alvarenga, F.R., Ramos, M., Franken, D.L., Costa, J.S. D.D., Pattussi, M.P. & Paniz, V.M.V. (2022). Prevalence of premenstrual syndrome and associated factors among academics of a university in midwest Brazil. *RevistaBrasileira de Ginecologia e Obstetrícia*, *44*, 133-141.https://doi.org/10.1055/s-0041-1741456

Ryu, A, Kim, T.H. (2015). Premenstrual syndrome: A mini review. *Maturitas*, 2015;82(04), 436-440. https://doi.org/10.1016/j.maturitas.2015.08.010

Schroll, J.B., Lauritsen, M.P. (2022). Premenstrual dysphoric disorder: A controversial new diagnosis. *Acta Obstetricia and Gynecologica Scandinavica, 101*(5), 482-483. https://doi.org/10.1111/aogs.14360

Sieradzy, K., Sieńko, K. Płoch K. (2017). Objawy przedmiesiączkowe u kobiet w wieku 16-35 lat. *Położna Nauka i Praktyka, 2*, 8-14.

Siminiuc, R., Țurcanu, D. (2023). Impact of nutritional diet therapy on premenstrual syndrome. *Frontiers in Nutrition*, *10*, 1079417. https://doi.org/10.3389/fnut.2023.1079417

Sut, H.K., Mestogullari, E. (2016). Effect of premenstrual syndrome on work-related quality of life in Turkish nurses. *Safety and Health at Work*, *7*(1), 78-82. https://doi.org/10.1016/j.shaw.2015.09.001

Śliwerski, A., Koszałkowska, K. (2021). The influence of depression on biased diagnosis of premenstrual syndrome and premenstrual dysphoric disorder by the PSST inventory. *Life*, 11(11),1278. https://doi.org/10.3390/life11111278

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Young women's transition to motherhood: relations with partners and visions of motherhood

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Abstract: The study uses a processual approach drawing on the modern definition of reproductive health, which recommends individualised measurements of populations. A case study analysis is performed to build a comprehensive empirical model of transitions in young women's relations with their partners and visions of motherhood, which are critical to understanding young adult females' reproductive health. Data necessary to reconstruct the setup of individual life paths were collected using exploratory interviews and questionnaires and analysed in the framework of the Strategy of Process Transformation Reconstruction (PTR). The PTR strategy is an innovative tool that combines the qualitative analysis of individual cases and C4.5 Quinlan's algorithm to make generalisation. The empirical model of internally diverse types of relationships and visions of motherhood formed by young Polish women consists of a sequence of variants showing the evolution of the character, and ways of building and integrating intimate relationships with motherhood. The model can serve as a matrix for creating analytical categories that can be used to describe young women's relations with their partners and visions of motherhood, construct psychological scales, and plan therapeutic procedures.
Keywords: C4.5 Quinlan's algorithm, case study, motherhood, relationship, reproductive health

Introduction

As a result of the wide array of life tasks and roles that contemporary young women can choose from, motherhood ceases to be a natural element of adult life, becoming one of many competing life projects and one of the possible ways to enter adulthood (Hryciuk, Korolczuk, 2012; Pustułka, Buler, 2020). The majority of young women prefer self-development, good education, a rewarding job, and financial independence over intimate relationships and having a child.

The classics of developmental psychology considered motherhood a developmental task that comes with the optimal fertility age (Havighurst, 1981). Today, because women tend to have their first children at older age, motherhood is defined as an ability which matures after 30 years of age (the so-called mature motherhood – Czarnecka, 2019).

This article deals with young women's transitions to motherhood in the context of their relations with their intimate partners and visions of motherhood. The term 'transitions to motherhood' should be understood herein as women's inner transformation from the "I won't be a mother" attitude to the readiness of becoming one, reflecting the character of their relations with their partners and visions of motherhood associated with or independent of their current partnerships. The analysis of transitions to motherhood takes account of women's personal and developmental transformations and their socio-cultural and technological contexts (changing family relations, interactions in the real and virtual world).

1. Before I become a mother: women's personal and developmental transformations and ways of building relations with intimate partners

For last a quarter of a century, 'accepting the consequences of one's actions', 'living by one's values and beliefs', 'feeling independent" were indicated by university students as the most adequate criteria of adulthood, whereas phrases such as 'graduation from education", 'marriage', and 'parenthood' were considered the least relevant (Jensen, 1997). Recent studies confirm that the tasks and roles typical of the previous generations are losing their stabilising, socially-defined character, which gives young people more space for personal autonomy and independent decision-making (Arnett, 2004), as well as increasing the variety of relationships and visions of future motherhood (Wiszejko-Wierzbicka, Kwiatkowska, 2018). A stronger focus on priorities and the absence of a well-defined system of references make young people more exposed to inner conflicts and the feeling of underachievement (Długosz, 2017).

Studies of intimate relationships focus on the factors that attract two people to each other (similar interests, the need for someone close, the way they perceive, communicate and respond to each other; Reis, 2012) and the processes that create intimacy between two people, such as emotional self-disclosure (Clark, Fitness & Brissette, 2007) and intimate expression (Cordova & Scott, 2001). Because of the article's focus on young women's visions of motherhood in the context of their relations with their partners, the personal and developmental characteristics of the study participants are presented below.

Many psychologists posit that women have an inherent tendency to perceive the world in terms of interpersonal relations (Moir, Jessel, 1993) and that the nature of femininity consists in seeing oneself in relation to others (Borysenko, 2000). In other words, women's interactions with other people are characterised by sensitivity, an inclination to understand other people's, needs and feelings, bonding with them, and showing emotional closeness.

The female model of communication involves active listening and sharing feelings. Women more frequently than men look at their relationships, capture disturbing signals earlier, and give support, mainly through conversation (Brannon, 2002). A woman's development in a relationship is marked by subordination and dependence on the partner's support at the beginning and becoming a responsible, supportive companion after a time (Brzezińska, Piotrowski, 2010). The transition is challenging for women given considering their tendency to build relations while remaining in a subordinate position (Mandal, 2000; Mandal, Lip, 2022). Trying to oversee a relationship from this position may lead to a sense of loss and insecurity. A problem faced by women in building equal relations with their partners is also their readiness to accommodate other people's expectations and needs and give them priority over their own wishes (Kaschak, 2001).

Becoming a romantic partner to somebody else is a defining experience for the female identity because family relations, intimacy, and a feeling of belonging are more important for women than for men (Palus, 2010). The achievement of emotional independence from the parents and the quality of relations with them (Czyżowska, Gurba, 2016) influence women's functioning in intimate relationships. In both cases, relational sensitivity that helps to recognise interrelationships plays a significant role.

Women's perception of their relationship as attractive is shaped by their self-image and the images the partners hold of each other. The self-image is significantly determined by the level of self-acceptance and consistency between each partner's ideal and real images of self. The greater the consistency, the more likely the partners are to see each other as attractive; this association is particularly distinct in women (Prężyna, 1996). A woman's assessment of herself as a partner depends to a large extent on how consistent her real and ideal images of self are and on the correspondence between her reactions and interpretations of developments (Bem, 1972). It is noteworthy that a role in the women's perceptions of their intimate partners, relations in the partnership, and partners' behaviours towards them and other people is also played by their values, experiences, and relations with the parents (Michaeli, Hakhmigari, Scharf, Shulman, 2018; Lindell, Campione-Barr, Killoren, 2017).

Women who have difficulty building close relations with partners, friends, and parents sometimes seek compensation on Internet forums (Plantin, Daneback, 2009), where they may flirt or date other users or engage in various interactions. The relative ease of crossing the borders of privacy and intimacy in the virtual world makes it a convenient vehicle for self-creation and self-promotion based on one's actual or alleged successes or exceptionality, or, contrastingly, exploring misfortunes, losses, and problems (Sikorska, 2019; Maciąg-Budkowska, Rzepa, 2017). Opening the door to one's personal world and disclosing one's intimate problems to others may sometimes arise from a genuine need to find a solution, but more often than not it is an attempt to gain attention and acceptance, consolidate or boost self-esteem, or satisfy the need for closeness, which is easier than in the real world (Pedersen, Lupton, 2018).

2. Societal expectations toward women and childcare models

For many modern women, having a child is one of life projects that frequently has to give way to self-development, a career, and living an interesting life. Women who do not have children meet with disapproval but also face society's inconsistent expectations regarding motherhood: take a job and leave children alone. Motherhood is seen by them as a burdensome and unpaid position and a constraint on their freedom and independence (Maciąg-Budkowska, Rzepa, 2017) that erodes their attractiveness and ruins their careers (Bakiera, 2014; Żelazkowska, 2016). Women's awareness that having a child will change their lives in many ways to decide for themselves. The model of the Mother Pole is gradually being replaced by the western model of "intensive mothering" (Hays, 1996). Despite their dissimilarity, both contain an element of child-centeredness and have mothers subordinate their wishes to the child's needs.

The intensive mothering model holds that mothers should have expert knowledge of childcare, commit their emotions, financial resources, and time to the child and make sure that it has the right conditions to development. It also emphasises the quality of the time spent with the child (Hochschild, 2003). Motherhood is also undergoing professionalization. Young women tend to dismiss the experiences of their mothers and seek information and solutions from physicians or childcare experts, and sometimes even bloggers or celebrities. As a result, online forums and blogs significantly redefine their understanding of motherhood (Johnson, 2015; Plantin, Daneback, 2009; Dankiewicz-Berger, Cendal, 2019). Nevertheless, as researchers have observed, online discussions on parenting problems continue to refer to solutions developed at the participants' family homes (Pustułka, Buler 2020). As well as expecting women to respect long-established childcare routines, society also requires her to be a committed mother and an attractive woman, and to foster relations with her partner and family life while developing her professional career (Pufal-Struzik, 2017).

The following empirical analysis of 20-30-year-old women seeks to determine different levels of their relations with their intimate partners and related visions of motherhood to advance the understanding of how they transition to motherhood.

3. Materials and methods

The analysis utilizes a processual approach derived by the author from Sadana's definition of reproductive health (Sadana, 2002). The definition holds that individualised measurements of populations are more appropriate as they allow their distinctive characteristics to be identified and facilitate comparisons between and within populations.

The processual approach resulted in the construction of an innovative Strategy of Process Transformation Reconstruction (hereafter the PTR Strategy; Rzechowska, 2021; Rzechowska, Szymańska, 2017), which, unlike the commonly used theoretical frameworks, standardised research tools, and indicators, enables the empirical reconstruction of the phenomenon under study including its internal architecture, spectrum, and the mechanisms driving its transformation. To build the model of a phenomenon, the PTR uses qualitative analysis of individual cases and C4.5 Quinlan's algorithm, one of the data

mining methods. The study was designed to present different ways of building intimate relationships and visions of motherhood by young Polish against the background of their life paths.

The study recruited 116 childless women aged 20-35 years of different socio-demographic backgrounds[1] using a snowball method. Given the expected intricacies of young Polish women's intimate relationships and visions of motherhood, exploratory interviews and questionnaires were selected (Rzechowska, Krawiec, 2016). Their purpose was to gather as much potentially useful information about the subjects as possible, especially pieces of information that might reveal aspects that theoretical studies have not addressed or insufficiently recognised, and which could accomplish the aim of the study. The exploratory interviews involved the use of a detailed 'map' of issues that emerged as significant during the research planning stage (Rzechowska, 2021, pp. 69-70). Interviews lasted around 2 hours each and were conducted by developmental psychology seminar students trained and supervised by Rzechowska. The study protocol conformed to the ethical and data security standards for psychological research.

4. Data analysis: the Strategy of Process Transformation Reconstruction

The PTR Strategy was conceived outside of the dominant theories and models to enable the empirical identification of information about a phenomenon that other studies failed to identify, to capture its changeability and inner diversity allowing for subjects' initial characteristics at successive stages of analysis. The strategy is carried out at two levels involving: 1) an idiographic analysis of cases, and 2) the generalisation of results leading to the creation of a multi-variant model of a phenomenon (Fig. 1).

4.1. Level I: An analysis of a single case

The idiographic analysis was aimed to recognise the inner architecture of respondents' life paths, including their approach to building relations with other people in the real world (the partner, family members, etc.) and the virtual world, in the context of their visions of motherhood. The idiographic analysis included:

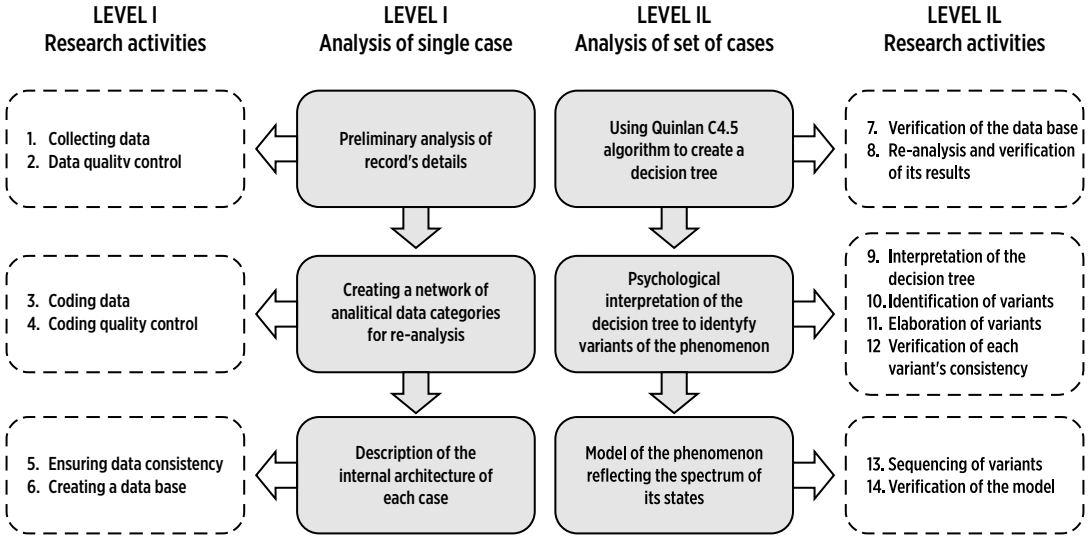

Figure 1. A PTR Strategy flowchart.

1 Unlike traditional psychological research using descriptive statistics, the RTP Strategy utilizes a processual approach that captures the inner diversity of phenomena (intimate relationships, motherhood, etc.) and describes subjects by means of tens to several hundred individual attributes such as age, socioeconomic status, etc.

1. *The transcription of interviews and preliminary analysis of record's details.* The interviews' recordings were transcribed adding interviewers' comments on the interviewees' non-verbal reactions, which could help categorise their responses.
2. *Creating a network of analytical data categories for re-analysis.* The data were reviewed several times and categorised and organised according to empirically established criteria.
3. *Description of the internal architecture of each case.* Each transcript was recoded using a network of analytical data categories, which made it possible to standardise the records. Each of the 116 respondents in the database was described by 123 attributes.

4.2. Level II: An analysis of sets of cases

Level II of the analysis was to enable the creation of a model of the phenomenon under study. The following actions were performed:

1. *Using Quinlan C4.5 algorithm to create a decision tree.* The cases were classified into groups based on the similarity of their characteristics using the C4.5 (Quinlan, 1993). The algorithm derives from the assumption that a large dataset may contain some latent knowledge that the 'regular' statistical methods cannot reveal. Thus, a decision tree can reveal patterns other than predicted by theory or unrealised by the researcher (Nisbet, Miner, Elder, 2009, p. 231).
2. *Psychological interpretation of the decision tree to identify the variants of the phenomenon.* The interpretation of the decision tree proposed in this study consisted in classifying women with common characteristics determined by the structure of the tree to reconstruct different ways of building relations with the partner and visions of motherhood (Fig. 2).

The values of the attributes preliminarily suggest that women representing Variant 5 positively viewed their motherhood, described their child concentrating on his or her internal characteristics, pointed to their parents as trustworthy persons, and were relatively independent of other people's opinions. To learn more about the V5 women, the database was searched for information omitted by the decision tree or revisiting the

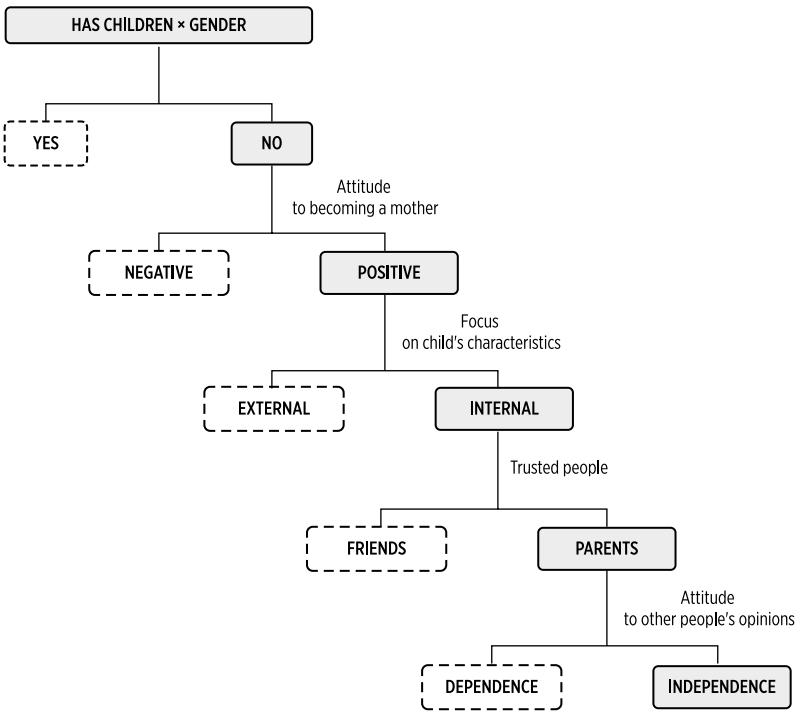

Figure 2. A section of the decision tree representing Variant 5 of the phenomenon.

transcriptions of the interviews if necessary. A set of the women's characteristics made it possible to create their personal portraits, relations with partners, and visions of motherhood.

3. *Constructing a model of the phenomenon.* Using the above approach, eight variants of the respondents were identified (V1-V8) and compared with each other allowing for their internal structures. Next, the variants were analysed and ordered to construct a model showing the course of the phenomenon (increasingly mature relations with partners and visions of motherhood), its internal diversity, and contextual influences.

4.3. Assessment of research credibility

The credibility of the research was acknowledged by independent competent judges, who verified data coding, structuring, and decoding. The credibility of the outcomes of the analysis of the sets of cases was tested by calculating the decision tree error (its value was 9.5%, well within the acceptable limit of 25%) and the internal logic of each variant and the entire model were evaluated.

5. Results

This section describes the eight variants of young women's intimate relationships and visions of motherhood based on the results of the decision tree analysis. They showed that the V1-V2 respondents' relationships were based on friendship and partnership and their visions of motherhood were unrelated to their current partner; the V3-V4 variants were in the process of building their relationships and the motherhood plans they we remaking involved their partners; the V5-V6 women were at a stage of consolidating relations with partners and planned motherhood together with them. Women representing V7-V8, had challenging childhoods that affected the quality of their relations with their close ones and made them postpone motherhood so that they could concentrate on their personal needs and development.

5.1. Focus on self and one's future: trying on the shoes of a partner and a mother

The V1 and V2 women were the youngest in the sample. Their narratives concentrated on their experiences and activities and visions of motherhood (how it should be performed, the gains and losses that come with it). Their intimate relationships and visions of motherhood were influenced to a large extent by their families, particularly by their mothers whom they considered a model or an anti-model for building relations with the partner, societal scripts and the experiences of other women.

V1: Being a partner and a mother understood in terms of fulfilling duties. Concerns about comfort of living.

The V1 women (mostly 21-24 year olds, n = 6) were raised by the grandparents because their parents did not get along with each other well and rarely participated in their upbringing. As a result, having grown up, they criticised their mothers for not showing them warmth and understanding and for being too strict on them.

Intimate relationship.

The V1 respondents described their current and future relationships in idealistic terms conforming to societal expectations. Although they were satisfied with their relationships, they characterised them superficially, as supportive and responsible men who were accepted by their families. The descriptions of the intimate relationships were more specific and included elements such as maturity, mutual respect, trust, and partners' ability to compromise. Their projections of the future assumed they would have higher education, a husband, two children, and family responsibilities but omitted references to their current partners. Their relations with the partners lacked commitment. They spent a lot of time hanging around with their friends and visited Internet forums where they revealed their personal experiences seeking quasi-intimacy, interest, and acceptance from other users.

Motherhood.

The V1 women wished to be mothers but their visions of motherhood were incoherent. They both idealised and emphasised the demands and sacrifices it involved. They thought that pregnancy and birthing were as enriching, joyful, and wonderful as scary experiences. The risks and hardships of pregnancy and birthing, and the uncertainty of whether they would be able to take proper care of the child, made them anxious. At the same time, they consoled themselves by saying that they would find a way to cope with maternal duties or that other women were not fully prepared to be mothers, either. Their pictures of motherhood centred on responsibilities: they wanted to raise their children following the established childcare scripts to avoid 'feeling remorse if they made a mistake'. They intended to be perfect mothers (loving, patient, and understanding), give their children what they lacked in childhood (trust, acceptance of needs, and support), or wanted them to be like the children they once wanted to be. They hoped their children would be healthy and brave people surrounded by friends and having a goal in life and having higher education. The V1 women's visions for their future lives were not limited to household duties and raising children. They planned to have time for their own activities and development.

V2: Trying on the shoes of a mother based on other women's maternal experiences. Current partners unrelated to motherhood.

The V2 women 21-24-year-olds (n = 18) and 25-26-year-olds (n = 4) had loving families that respected their needs when they were children. Now, as adults, they maintained close relations with other family members. and considered their mothers to be their role models.

Intimate relationship.

The V2 women did not describe their partners or their relations with them, focusing on the foundations of a good relationship: spending time together, and sharing interests, concerns, and pleasures. In their opinion, honesty and responsibility were central to an intimate relationship. When faced with problems, they would seek assistance from their closest ones, usually family members, rather than their partner. They frequently used Internet forums to share their personal problems and experiences with other users.

Motherhood.

The V2 respondents extensively talked about motherhood as if they were getting emotionally ready for it. They shared detailed accounts of their friends' or acquaintances' pregnancies (ailments, less attractive, etc.), birthing experiences, and the challenges of raising children, imagining themselves to be in their position. They were anxious about how they would feel during pregnancy, and whether they would have sufficient skills to be mothers. At the same time, however, they trusted in their motherly instincts and that their families would help them in need. Their visions of motherhood centred on themselves and their childcare activities. They imagined themselves as mothers who would look after their children but would allow them to explore the world around them and make decisions for themselves and wanted them to live by the same values they were taught by their parents. The maternity experiences of other women seemed to have a personality-shaping effect on the younger V2 respondents (imagining oneself as a mother), a self-esteem boosting effect (a child would be the envy of my friends), and a visibility-improving effect (pregnancy and walking with a pram are 'cool'). The older V2 women's narratives about their future motherhood were largely consistent with those presented by the younger ones. They, too, talked about pregnancy, early baby care, and taking care of themselves in terms of the predominant standards. Although their narratives also accentuated 'I' and 'my' ", they gave less emphasis to their needs and the desire to be free than the younger V1 women.

5.2. Building relations with partners and increasingly realistic visions of motherhood

Aware of life's realities, the V3-V4 women (22-31-year olds; n = 9) departed from societal scripts towards pragmatism. They expressed commitment to making their intimate relationships stronger and believed that their partners wanted to be a parent too.

V3: Intimate partner as the closest person. Financial independence as a prerequisite for having a child.

Being always emotionally and financially supported by the parents, the V3 respondents (22-31; n = 9) now wanted to repay their care by helping them in need.

Intimate relationship.

The V3 women described their relationships as involving partnership, trust, honesty, mutual support, and free of trivial conflicts, to which both they and their partners, whom they characterised as caring companions and friends, were committed. They believed that they made plans and thought of having children together. A recurring theme in their conversations with the partners was financial problems caused by a lack of steady jobs. Despite satisfying intimate relationships and having trusted friends, the V3 women would share private details of their relationships and families with other social media users.

Motherhood.

The V3 representatives realistically envisioned motherhood as a set of tasks. They felt ready for motherhood but did not want to have children until their financial situation was good enough to allow them to create the best conditions for their development. They claimed their partners wanted to have a child, too, but tended to perceive motherhood as their task. Unlike the V1 and V2 variants who interpreted motherhood through their actions and emotions, they stressed the quality of relations with the child (openness, honesty, respect) and motherly qualities (thoughtful, supportive), and characterised the process of upbringing (setting boundaries, teaching values and morals, and showing the world to the child).

V4: Intimate partner as the closest person. Financial independence as a basis for building a relationship and becoming a mother. Having a child as one of life tasks.

The V4 women (22-30-year-olds; n = 22) had safe homes and loving parents who imposed high expectations on them. As children, they perceived them as too high, but they developed their own life standards around them.

Intimate relationship.

The V4 women described their partners as caring, and supportive friends and the closest persons they had, with whom they spent plenty of time together. They trusted them and considered their advice in making decisions. They entered their intimate relationships with clear visions of future lives acquired from their parents, in which financial security preceded motherhood. As they believed, their life plans were approved by their partners. Despite their claims that it was their partners who were the closest to them, the V4 women reserved readiness to help their family members. Their transient relations with other social media users made them similar to V1-V3 variants, but unlike the latter, they did not disclose sensitive information about themselves or their close ones.

Motherhood.

The V4 women wished to be mothers but not until they had a job and financial security. They were concerned that having a child too early might damage their careers and intimate relationships. Self-sufficiency and financially independence were necessary for them to create good conditions for the child's development. 'Having a child', 'a mature intimate relationship', and 'motherhood' were included among their life tasks. The pictures of their motherhood were very clear: they wanted to be demanding mothers who set boundaries for their children and teach them values, like their mothers did.

5.3. Strengthening relations with the partner and building a mature vision of motherhood

The V5-V6 women were at a stage of strengthening their intimate relationships. Depending on the variant, they developed visions of motherhood (V5) or planned to have a child soon (V6).

V5: Developing the relationship and building its material basis. Having a child as a natural consequence of a mature relationship.

The V5 women (23-26-year-olds; n = 10) were raised in tender homes by parents who supported their decisions. The responsibilities they had as children caused them to become well-organized and dependable persons. They maintained close relations with the parents, whom they helped and were helped by in need.

Intimate relationship.

The intimate relationships of the V5 respondents were based on trust and understanding. They discussed their decisions with their partners and planned the future together, which included marriage and parenthood. They were also the first ones to mention their contribution to the relationship: engagement, avoidance of conflicts, and ongoing support for the partners, whom they appreciated for being honest, frank, and spontaneous. Their partners were also the only persons to whom they could open up. Their use of the Internet was practically limited to exchanges with friends and searches for information.

Motherhood.

For the V5 women, motherhood was something real. The decision about having a child was to be made by the partners together. Being already interested in motherhood and the needs of a child, they searched the Internet to learn more on these topics to be able to take care of their child. They were aware of the consequences of parental errors (unclear rules, not setting boundaries) but wanted to give their future children some freedom so that they could learn from mistakes how to cope with difficulties. Their visions of motherhood integrating protectiveness, looking after oneself, and family and career responsibilities.

V6: Developing closeness and intimacy with the partner. Partners' readiness for parenthood.

Most respondents in the sample were classified as variant V6 (24-31-year-olds; n = 34). They had warm memories of their childhoods and parents, especially of the mothers who were always ready to help them and became their role models.

Intimate relationship.

Some of the V6 respondents had been married for some years, and others had been in intimate relationships or planned to get married soon. They shared a belief that closeness and intimacy come from trust, shared interests, understanding, commitment to a relationship, solving problems, and spending time together. The decision about having a child was to be made by both partners.

Motherhood.

The V6 women were physically, mentally, and emotionally prepared to embrace motherhood. The decision to have a child was reached by both partners. They could afford to have a child because of the professional and financial status they attained. The V6 women were ready to cope with maternal duties. Like those comprising the V5 variant, they emphasised that a mother should set boundaries for the child, etc. Reconciling the roles of a parent, a partner, and an employee did not seem difficult to them. They and their partners were trying for a baby but without urging each. Some of the V6 women had suffered a miscarriage of which only their husbands knew. The experience cemented their relationship.

5.4. Breaking free of family constraints and focusing of one's needs and development: uncommitted relationships and postponed motherhood

The V7 and V8 women were the oldest in the sample. Their decisions to postpone motherhood to concentrate on themselves and their self-development reflected their difficult childhoods during which they had to look after their siblings. They lived in uncommitted but satisfying relationships, stressing their right to live free of other people's expectations, to pursue their needs (V7), or to concentrate on personal development (V8).

V7: Uncommitted relationships and seeking compensation for difficult childhoods. Motherhood equated with subordination and lost life opportunities.

The V7 women (30-32-year-olds; n = 3) had inconsistent memories of their childhoods. In one picture, they were carefree children raised in families living by traditional values. The other picture showed them as children overburdened with tasks, having to look after their siblings, stay out of their way, and cope with difficulties on their own while receiving little interest from the parents.

Intimate relationships.

The V7 respondents had been in uncommitted relationships for many years. They characterised their partners as attractive and willing to compromise, but omitted their contribution to their relationships. They tried to win others' attention by creating their image and status by parading things desired by their friends on social media.

Motherhood.

The V7 women viewed motherhood as a hypothetical construct unrelated to their lives. In their opinion, as motherhood necessitated concessions to the child's needs, it posed a risk to the woman's preferred lifestyle. They could accept having a child in the future if it did not compromise their comfort in life and after certain conditions were met. They currently wished to live exciting lives without commitments and they primarily sought compensation for what they lacked in childhood.

V8: Difficult relationships. Postponed motherhood and the pursuit of personal development.

The V8 women (23-28-year-olds; n = 10) had mothers who managed to rebuild families after divorcing from bullying and controlling husbands. They both nursed resentment towards them for being made to look after their siblings and do numerous chores in their teenage years and felt gratitude for the care and attention they received from them.

Intimate relationship.

The V8 women had been in several failed relationships. They were similar to their mothers in letting their partners dominate them but unlike the latter, they terminated relationships when their partners did not meet their expectations. They wanted their future relationships to be founded on mutual respect and comparable involvement. They viewed their future partners idealistically, as attractive, intelligent, and tender men, and themselves as independent persons making their own decisions. The V8 frequently engaged in exchanged on internet forums, where they talked in detail about their private lives and work to win and maintain other users' attention or, occasionally, to find support.

Motherhood.

The V8 women were considering having a child but postponed the decisions due to the demands of motherhood. They expressed uncertainty as to whether they were mature enough. Impressed by how their mothers coped with dysfunctional marriages, they adopted them as role models for handling problems in life. When describing themselves as future mothers, they drew on their childhood and teenage experiences and referred to the established childcare script requiring teaching values to children. The V8 women's current interests focused on their personal development and maintaining close relations with their mothers.

6. Transitions in building close relations and visions of motherhood

An analysis of the variants allowed the direction of changes in respondents' relations with their partners and visions of motherhood (Table 1).

6.1. Personal growth, relations with the partner and a vision of motherhood

The V1 and V2 respondents were dependent on other people's attention. To feel secure, they followed societal scripts (V1) or referred to the experiences

of other people (V2). Variants V3 and V4 had visions of their future life and claimed to be open to symmetrical relationships; in fact, they wanted to control them and kept their partners out of some domains that only the members of their families or Internet forum users were allowed to enter. The V5-V6 respondents' ability to introspect and self-reflect and their growing autonomy and awareness of life changes contributed to the increasing integration of their relations with their partners. The V7-V8 women having suffered from a deficit of care in childhood, now wanted to get what they lacked as children. Seemingly independent, they were sensitive to others' opinions and sought pursued challenges might make them look important and special.

6.2. Close relations as a basis for creating the visions of motherhood: partners and the Internet

Intimate relationships: ways of building relations with partner.

The V1-V2 women satisfied many of their relational needs outside of their relationships. They lived their own lives but expected their partners to comply with their wishes. They discussed matters important to them with loved ones or users of online forums. The V3-V4 variants were committed to strengthening their intimate relationships with their current partners whom they described as future fathers of their children. As they respected them, they avoided showing behaviours that might end up in arguments. They only talked openly with the members of their families and sought solutions to their personal problems among Internet forum users. They appreciated their relationships but did not want to give up on their independence, which they interpreted as having money and being able to decide when to have a child. They had lists of things they wanted to achieve in life (for themselves and their partners). Their individualism apparently hindered building intimacy with their partners and gave a utilitarian bias to their relations. The V5-V6 respondents were building mature relationships where both partners were aware of their responsibilities, relied on each other, and kept other people out of their personal matters. They did not hold any particular expectations for their partners to meet. When making plans for the future, they made sure to address their and the partner's individual needs. The V7-V8 women had been in the same long-term relationship or several short-lived relationships. Their relationships were uncommitted and attractive for both partners, who concentrate on their individual or 'common' needs. Their partners were absent from their long-term life plans. Their understanding of independence in a relationship was inconsistent: their need for autonomy and freedom from others' expectations or commitments coexisted with an inclination to pretend submission to make others do what they wanted.

Relations with Internet forum users and the extent of self-disclosures.

The nature of the women' online activity suggested that it had to do with their relations with partners and parents. The V1-V2 sought to attract attention and gain acceptance by making themselves 'visible' (V1) or disclosed their problems to be noticed (V2). The V3-V4 respondents claimed that they and their partners were committed to developing their relationships but sought relations in the Internet that might complement their relations with their close ones. The V3 women disclosed their problems with partners and parents to other forum users; those comprising V4 variant even formed temporary acquaintances but avoided disclosing any information that might be used to identify them. The V5-V6 women, used the Internet mainly to communicate with their friends or find information. The V7-V8 women, who wanted to leave their rough childhood behind, tried to gain attention on social media by emphasising their similarity to their friends and acquaintances (V7), or bringing up their problems (V8).

6.3. Visions of motherhood

Each of the variants had a markedly different vision of motherhood of how to be a mother because of the women's different levels of personal development.

Table 1. Variants V1-V8: relationships with partners and visions of motherhood

Intimate relationships	Motherhood
V1-V2: Focus on self and one's future: trying on the shoes of a partner and a mother	
• focusing on one's own needs, expecting partners to fulfill them • current partners unrelated to future motherhood • satisfying many relational needs outside the partnership • discussing important issues with selected family members or forum users • using the Internet to gain attention and acceptance by making themselves „visible" (V1) or by disclosing their problems (V2)	• visions of motherhood built around emotional imagery • being a mother described in terms of social scripts (fulfilling responsibilities; V1) or one's own actions, based on friends' experiences (V2) • family experience as a reference point for motherhood: not to be like parents (compensatory need to give the child what they lacked; V1) or to be like parents (V2) • a mother's right to have time for herself
V3-V4: Building relations with partners and increasingly realistic visions of motherhood	
• commitment to deepening intimate relationships with current partners • partners as caring friends and future fathers • relationship as a source of security, alongside the desire to maintain personal freedom and independence • considering one's own life plans as common to both partners • work, relationship, child as a successive life tasks • financial independence as the basis for building a relationship and becoming a mother • searching online for relationships that could complement current partnerships; disclosing problems with partners and parents (V3) or making temporary acquaintances without revealing personal details (V4)	• the plan to become a mother in the future, the belief that the partner wants to become a father • perception of motherhood as a personal life task • financial and personal independence a prerequisite to the decision to have a child • motherhood identified with building a relationship with the child, creating conditions for his personal development, transmitting values • involvement in raising a child and building a close relationship
V5-V6: Strengthening relations with the partner and building a mature vision of motherhood	
• focusing on one's own actions making the relationship with a partner more mature • flexibility and balance between partrners' responsibilities, mutual accountability • non-involvement of others in the affairs of the partnership • making plans for the future, taking into account their individual needs as well as those of their partner • using the Internet to communicate with friends or search for information	• jointly discussed decision on parenthood and readiness to become a mother • motherhood/parenthood as participation in the child's development and acting for the child's benefit • awareness of changes in the child's development and the need to adapt care activities to them • awareness of the consequences of parental failures • reconciliation of child care with other life roles
V7-V8: Breaking free of family constraints and focusing of one's needs and development: uncommitted relationships and postponed motherhood	
• difficult childhood experiences and marital failures of parents • being in non-committal relationships that are attractive to both partners • following their own paths in life and focusing on their own needs or those shared with their partner • manipulating a partner to fulfill their own goals; in case of failure willingness to end the relationship • not considering partners in long-term life plans • online activity, aimed at drawing attention to oneself by emphasizing one's similarity to friends and acquaintances (V7) or revealing one's own problems (V8)	• omission of information about the desirable qualities of mothers • equating motherhood with subordination and loss of life opportunities • specifying the conditions under which they could become moher • portraying motherhood from the position of a disadvantaged child who has had adult responsibilities imposed on them and has not been provided with sufficient care • the child as an impediment to realizing one's own needs and goals • focusing on the present: actions undertaken as compensation for a difficult childhood (V7) or focusing on personal development (V8)

Me and childcare.

The V1 women were concerned about being a mother, while variant V2 was more concentrated on the demands of motherhood. Both variants built their concepts of motherhood around their imagination. The V1 women perceived motherhood as a phenomenon that inspired admiration and fear but also made them concerned about their pregnancy, birthing, and ability to take proper care of the child. Their childcare concepts drew on popular scripts prescribing what mothers should do to avoid remorse. The way they defined proper motherhood reflected their compensatory need to give the child what they lacked as children. They wanted their children to have what they were not given, to be the persons they wanted to be. They also stressed that a child should not be an obstacle to a mother's right to have time for herself. The V2 women were 'trying on the shoes of a mother' drawing on the experiences of their friends who already had children. Their visions of motherhood were a combination of concerns about pregnancy, birthing, and childcare, the adequacy of their maternal skills, and ability to look after themselves. Similarly to their parents, they wanted to support their children in exploring the world.

Developing relations with the child and creating conditions for its personal growth.

The V3-V4 women wanted to be parents and believed their partners wanted the same. They perceived motherhood as their personal life task and linked the decision to have a child to achieving financial and personal independence. Their visions of motherhood were more coherent than those presented by variants V1 and V2. The V3 women emphasised the importance of relations between a mother and a child, activities stimulating a child's development, and teaching values. The concepts of motherhood presented by the V4 women who had loving but demanding parents were more developed. They wanted to commit to raising their children and have a close bond with them. Variants V3 and V4 knew how they would stimulate the personal growth of their children: they wanted to set expectations for them, make sure that they were safe in exploring the world, and teach them values.

The well-being of the child and participation in its development.

Variants V5 and V6 similarly understood motherhood as acting for the good of the child, but differed in their readiness to have a child. The V5 respondents' visions of motherhood accentuated the development and needs of a child at different stages. They were preparing for motherhood by seeking useful information. They understood the importance of the mother's daily support for the child's development and the consequences of parental failures, e.g., not setting boundaries for the child (see V4). The V6 women were already ready to have a child. Both variants shared the belief that they would be able to reconcile childcare with other life roles.

Perhaps someday.

The V7-V8 women did not talk about what characteristics mothers should have. They specified the conditions under which they might become mothers and relived their childhoods when they were prematurely forced into adult roles. They also concerned that a child might make it more difficult for them to pursue their needs and goals.

7. Discussion

Understanding how young women see life, what they expect from it, and how they picture their near and distant future is a prerequisite to developing adequate reproductive policies. However, many studies on 20-30-year-old women are designed to verify hypotheses and use research tools investigating how the women's and their partners imagine themselves as a relationship or parents. As a result, their results are discrepant with the women's actual procreative decisions. This inconsistency seems to arise from the fact that young people tend to include parenthood in their life plans and goals but omit it when describing their future in more specific terms (Długosz, 2017). The use of research methods concentrating on the selected aspects of the phenomenon without giving due attention to its complexity, diversity, and contextual changeability is also a problem.

The results of this preliminary study has only partly confirmed the relationships presented in the theoretical part, probably due to the use of an analytical method different from those employed by other researchers and the rate of changes in personal development processes and cultural and technological contexts. The discussion presented in the article is unique in that the sequence of variants (V1-V8) is considered terms of problems referred to in the theoretical section, or the results of other studies are juxtaposed with the empirically identified continuum of interpersonal relations in relationships and visions of motherhood.

The results of the study confirm the variety of young women's relationships and visions of motherhood (Wiszejko-Wierzbicka, Kwiatkowska, 2018) and their different approaches to motherhood. They also point to a non-linear association between their age and readiness to become a mother and a multitude of personal development paths (Arnett, 2004), as well as enabling different approaches to defining motherhood and its position among other activities to be compared.

The variants identified in the study defined motherhood differently, as a developmental task or ability that reaches maturity after 30 years of age (Czarnecka, 2019). Around one-fourth of the respondents (aged 22-32-lat; n = 31; V3-V4) included motherhood in their life-plan (see: Havighurst, 1981). The understanding of motherhood as an ability was common among the youngest and oldest respondents (V1-V2 and V7-V8) who emphasised living comfortable life, and women in relationships that were ready for parenthood (V5-V6).

The results of the study seem to cast doubt on whether motherhood competes with other roles that young people assume at entering adulthood, as some researchers suggest (*Pożegnanie z Matką*... 2012; Pustułka, Buler, 2020). They show that the position of motherhood relative to other life roles is modified by women's personal maturity, which also influences the quality of their relations with the partner, visions of motherhood, and themselves as mothers. Compared with the less mature respondents who concentrated on their favourite activities and postponed motherhood until later, the more mature ones (V5-V6) were capable of integrating different activities (including those related to motherhood). The same pattern was observed for motherhood and self-development (Żelazkowska, 2016). Some of the respondents equated self-development with improving abilities and competencies and consequently put off motherhood as a potential obstacle (V1-V2, V7-V8). The more mature ones (V5-V6) viewed self-development more broadly, adding personal development and improvement of relational skills to it. As a result, they tended to define themselves in terms of their relations with their partner and both partners' readiness for parenthood.

7.1. Relations with intimate partners: theoretical and empirical confrontations

The study found that the quality of women's relations with their partners depends on their personal maturity measured by their personal perspective ("I" or "we") and time (a tendency to refer to past, present or future time). The more mature respondents were the only ones in the sample who used a 'we' perspective' to refer to their commitment to the relationship, their attitude to the partners ("I don't raise issues that might provoke arguments"), and how they got along with them ("there are things that we only discuss between ourselves"); the other women' narratives about their partners and relationships centred on their expectations.

The study confirmed a relational understanding of the world and a tendency to build community and closeness attributed to women (Moir, Jessel, 1993; Borysenko, 2000). However, the characteristics were revealed in the respondents' narratives about their future and not current relationships. Even the references they made to current events (V2 – 'experiencing' other women's pregnancies) were dominated by the future and a personal perspective" ("how will I cope with it?"). Only the most mature respondents were capable of looking at things from different time perspectives and consider them in terms of 'we'.

The results of the study did not fully confirm the existence of some of the relationships presented in theoretical part of the article. For instance, the duality of women's relations with their partners –

commitment to building a relationship accompanied by a tendency to accept partner's domination evoking a feeling of confusion and insecurity – accentuated by many authors, e.g., Mandal (2000) was only found in those respondents who had challenging childhoods (V7-V8) or whose parents rarely participated in their upbringing (V1). The former faked submission to manipulate their partners into complying with their wishes and the latter gave little attention to their current relationships, being concentrated on planning their future, perfect relationships. In both cases, a feeling of loss or insecurity appeared to be a cause rather than an outcome.

The excessive readiness of women to adjust their boundaries to others' expectations suggested by Kaschak (2001) was also expressed in a special way in the study participants: the V3-V4 variants were in symmetrical relationships but worked towards financial independence to be able to achieve singlehandedly what they viewed as their (and their partners') – money and parenthood.

The study found that some of the characteristics of women's relations with their partners presented in the theoretical part of the article only occurred in the mature respondents. Those women did not talk about what they expected their relationships and partners to give to them but presented in detail their efforts to develop bonds with their partners and how they fostered their relationships: worked on self-control ("I avoid doing things that might end up in misunderstandings"; Bem, 1972), fostered communication with partners (listened actively, talked about feelings, etc.; Brannon, 2002), adjusted their perceptions of self and the partner to make them more realistic (Prężyna, 1996).

7.2. Young women's motivations for online searches

Respondents' voluntary references to their use of the Internet revealed that they rarely used it to seek information about motherhood. The aims of their online searches included seeking information for their friends who had children (V2) or information about motherhood (V5) (Plantin, Daneback, 2009). While the respondents believed in the benefits of professional mothering, the younger of them expected that their mothers would help them to take care of the children (V1-V2), which was aligned with the traditional patterns of childcare identified by researchers in the online discussions (Pustułka, Buler, 2020).

For the majority of the respondents, the Internet was important as a space where they could make new acquaintances and satisfy their needs (V1-V4 and V7-V8) for attention, acceptance, self-esteem, and closeness, even if the price for was disclosing their and other people's secrets (Maciąg-Budkowska, Rzepa, 2017; Pedersen, Lupton, 2016). The mature respondents (V5-V6) used the Internet for more pragmatic reasons.

7.3. Visions of motherhood

The results of the study generally pointed out that expert knowledge, professionalism in parenting, and emotional, financial and time commitments were important elements of the respondents' visions of motherhood (Hochschild, 2003). The maturity of the visions increased with each variant, moving from the respondents' focus on their activities as mothers activities and established childcare patterns (V1-V2), through mothering concepts reflecting an increased awareness of the importance of the quality of contact with a child and the environment in which it grows and develops (V3-V4), to a vision integrating motherhood, relations with the partner and other major life roles (V5-V6). A similar transformation was observed regarding respondents' visions of a child: from seeing it as an object of the mother's actions through stressing the importance of personal contact with a child and creating conditions for its development to emphasis on its development.

Conclusions and implications

The analysis of case studies described in the article enabled the construction of a comprehensive empirical model capturing transitions in young female adult's relations with their partners and visions of motherhood, which are important to understand

their reproductive health and wellbeing. The model consists of a sequence of variants showing the evolution of the character and ways of building relations and integrating intimate relationships with motherhood. The sequence starts with the participants (1) 'trying on the shoes' of a mother' based on societal scripts or other women's mothering experiences without involving the current partner, then moves on to (2) motherhood perceived as one of the life tasks that would be undertaken together with the current partner but still considered from a personal perspective, and ends with (3) integrating mature relations in the relationship and the partners' decision to spend life together and have children. The study also identified a special variant comprised of women who had difficult childhoods.

Because of its properties, the presented model can be used outside the scope of this study. For instance, it can be used to create matrices for: (1) psychological scales based on the empirical models of phenomena rather than theoretical frameworks (see: Rzechowska, Szymańska, 2017); (2) individualised diagnoses and predict potential directions of changes; (3) therapeutic procedures addressing a wide range of problems relating to relationships, procreation, and wellbeing; (4) training addressing critical points in making decisions about further course of activities or ways of solving problems.

The article depicts the subtleties of young women's visions of motherhood and relations with their partners, which can be useful for deepening and specifying the understanding of their wellbeing and reproductive health.

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Bibliography

Arnett, J.J. (2004). *Emerging adulthood: The Winding Road from the Late Teens Through the Twenties.* New York, NY: Oxford University Press.

Bakiera, L. (2014). Zaangażowanie w rodzicielstwo na tle współczesnej rodziny. *Kultura i Edukacja, 2*(102), 147-172.

Bem, D. (1972). Self-Perception Theory. *Advances in Experimental Social Psychology, 6*, 1-62. https://doi.org/10.1016/S0065-2601(08)60024-6

Brannon, L. (2002). *Psychologia rodzaju.* Gdańsk: GWP.

Brzezińska, A., Piotrowski, K. (2010). Formowanie się tożsamości a poczucie dorosłości i gotowość do tworzenia bliskich związków. *Czasopismo Psychologiczne, 16*(2), 265–274.

Clark, M.S., Fitness, J., Brissette, I. (2007). Understanding People's Perceptions of Relationships Is Crucial to Understanding their Emotional Lives. (In:) M.B. Brewer, M. Hewstone (eds.), *Emotion and Motivation*, 21–46. Blackwell Publishing. https://doi.org/10.1002/9780470998557.ch10

Cordova, J.V., Scott, R.L. (2001). Intimacy: A behavioral interpretation. *The Behavior Analyst, 24*(1), 75–86. https://doi.org/10.1007/BF03392020

Czarnecka, M. (2019). Dojrzałe macierzyństwo a kształtowanie więzi emocjonalnej z dzieckiem w okresie prenatalnym. *Forum Pedagogiczne, 9*(2), 151-164. https://doi.org/10.21697/fp.2019.2.34

Czyżowska, D., Gurba, E. (2016). Bliskość w relacjach z rodzicami a przywiązanie i poziom intymności u młodych dorosłych. *Psychologia Rozwojowa, 21*(4), 91-107.

Dankiewicz-Berger, M., Cendal, S. (2019). „Macierzyństwo nowoplemienne" – analiza jakościowa parentingowych komunikatów internetowych. *Annales Universitatis Paedagogicae Cracoviensis. Studia Psychologica, 12*, 237–258. https://doi.org/10.24917/20845596.12.12

Długosz, P. (2017). Pokolenie przegranych? Kondycja psychospołeczna młodzieży w Europie Środkowo-Wschodniej. *Zeszyty Pracy Socjalnej, 21*(2), 77–90. https://doi.org/10.4467/24496138PS.16.006.6276

Havighurst, R. (1981). *Developmental tasks and education.* New York: Longman.

Hays, S. (1996) *The Cultural Contradictions of Motherhood.* Yale: University Press, New Haven, CT.

Hochschild, A.R. (2003). *The Commercialization of Intimate Life. Notes from Home and Work*. University of California Press.

Jensen, A.J. (1997). Young people's conception of transition to adulthood. *Youth and Society, 1*, 3-23.

Kaschak, E. (2001). *Nowa psychologia kobiety. Podejście feministyczne*. Gdańsk: GWP.

Lindell, A.K., Campione-Barr, N., Killoren, S.E. (2017). Implications of parent–child relationships for emerging adults' subjective feelings about adulthood. *Journal of Family Psychology,* 31(7), 810–820. https://doi.org/10.1037/fam0000328

Maciąg-Budkowska, M., Rzepa, T. (2017). Jaka jest „idealna matka"? Rozumienie roli matki przez współczesne kobiety. *Annales Universitatis Maria Curie-Sklodowska Lublin – Polonia,* Vol. XXX, 3, Sectio J., 93-107. https://doi.org/10.17951/j.2017.30.3.93

Mandal, E. (2000). *Podmiotowe i interpersonalne konsekwencje stereotypów związanych z płcią*. Katowice: Uniwersystet Śląski.

Mandal, E., Lip, M. (2022). Mindfulness, relationship quality, and conflict resolution strategies used by partners in close relationships. *Current Issues in Personality Psychology*, *10*(2), 135–146. https://doi.org/10.5114/cipp.2021.111981

Michaeli, Y., Hakhmigari, M.K., Scharf, M., Shulman, S. (2018). Romantic Outcomes in Young Adulthood: The Role of Dependency, Parental Support, and Reflective Functioning. *Journal of Family Psychology, 32*(7), 873–881. https://doi.org/10.1037/fam0000441

Moir, A., Jessel, D. (1993). *Płeć mózgu.* Warszawa: Państwowy Instytut Wydawniczy.

Palus, K. (2010). *Wybrane psychologiczne uwarunkowania braku partnera życiowego w okresie wczesnej dorosłości.* Poznań: Wydawnictwo Naukowe Wydziału Nauk Społecznych Uniwersytetu im. Adama Mickiewicza.

Pedersen, S., Lupton, D. (2018). 'What are you feeling right now?' Communities of maternal feeling on Mumsnet. *Emotion, Space and Society, 26*(2), 57-63. https://doi.org/10.1016/j.emospa.2016.05.001

Plantin, L., Daneback, K. (2009). Parenthood information and support on the internet. A literature review of research on parents and professionals online. *Bmc Family Practice, 10*(1), 1-12. https://doi.org/10.1186/1471-2296-10-34

Pożegnanie z Matką Polką? Dyskursy, praktyki i reprezentacje macierzyństwa we współczesnej Polsce. (2012). R. Hryciuk, E. Korolczuk (red.). Warszawa: Wydawnictwa Uniwersytetu Warszawskiego. https://doi.org/10.31338/uw.9788323511175

Prężyna, W. (1996). Obraz siebie i partnera a wzajemna atrakcyjność w diadzie mieszanej. *Roczniki Filozoficzne, 44*(4), 75-133.

Pufal-Struzik, I. (2017). Aktywność zawodowa współczesnych kobiet–trudności w realizacji nowych ról i tradycyjnych obowiązków. *Polskie Forum Psychologiczne, 22*(2), 242-257.

Pustułka, P., Buler, M. (2020). (Wyboista) droga do macierzyństwa. Tranzycje do macierzyństwa w perspektywie trzech pokoleń Polek oraz ekspertek i ekspertów. *Youth Working Papers, 3*. Warszawa: SWPS Uniwersytet Humanistycznospołeczny – Młodzi w Centrum LAB. https://doi.org/10.23809/10

Nisbet, R., Miner, G., Elder, J. (2009). *Handbook of Statistical Analysis and Data Mining Applications.* Cambridge, MA: Academic Press.

Quinlan, J.R. (1993). *C4.5: Programs for machine learning*. San Mateo: Morgan Kaufman Publishers.

Reis, H.T. (2012). Perceived partner responsiveness as an organizing theme for the study of relationships and well-being. (In:) L. Campbell, T.J. Loving (eds.), *Interdisciplinary research on close relationships: The case for integration*, 27–52. American Psychological Association. https://doi.org/10.1037/13486-002

Rzechowska, E. (2021). On the nature of qualitative research in process transformations: the changing man in the changing world. (In:) N. Rezaei (ed.), *Integrated Science: Science without Borders*, 57-79. Springer International Publishing. https://doi.org/10.1007/978-3-030-65273-9

Rzechowska, E., Krawiec, B. (2016). *Młodzi dorośli: ścieżki życia w kontekście przemian*. Lublin: Katedra Psychologii Rozwojowej KUL (unpublished material).

Rzechowska, E., Szymańska, A. (2017). Wykorzystanie strategii Rekonstrukcji Transformacji Procesu do budowy skali psychologicznej. (In:) W.J. Paluchowski (ed.), *Diagnozowanie – wyzwania i konteksty,* 31–58. Wydawnictwo Naukowe WNS UAM.

Sadana, R. (2002). Definition and measurement of reproductive health. *Bulletin of the World Health Organization, 80* (5), 407-409.

Sikorska, M. (2019). *Praktyki rodzinne i rodzicielskie we współczesnej Polsce–rekonstrukcja codzienności*. Warszawa: Wydawnictwo Naukowe Scholar.

Wiszejko-Wierzbicka, D., Kwiatkowska, A. (2018). Wchodzenie w dorosłość. Ogólnopolskie badanie młodych Polaków w wieku 18–29 lat. *Studia Socjologiczne 2*(229), 147–176. https://doi.org/10.24425/122467

Żelazkowska, M. (2016). Wczesne macierzyństwo. Kryzys czy szansa? Olsztyn: Szkoła Wyższa im. J. Rusieckiego.

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The level of stress in pregnant women hospitalized in the Department of Pathology of Pregnancy[1]

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Abstract: *Introduction and aims:* Pregnancy is a physiological state for a woman. However, if pathology develops, posing a risk to the health or life of the mother or child, the course of pregnancy is affected by both mental and biological stress. Stress experienced during pregnancy may irreversibly alter the cerebral structures in the foetus. Moreover, chronic stress is likely to cause miscarriage, preterm delivery, IUGR, or low birth weight in the newborn. The aim of this study was to analyse the correlation of the stress level in hospitalized pregnant women and sociodemographic factors. *Methods:* The study was carried out in a group of 140 pregnant women hospitalized in the Department of Pathology of Pregnancy, Independent State Clinical Hospital No.1 in Lublin, Poland. Inclusion criteria for the study were: age 18 or older, confirmed pregnancy, and hospitalization for more than two weeks in the Department of Pathology of Pregnancy. The participants were diagnostically surveyed with the Perceptible Stress Scale (PSS-10) and a questionnaire created for the study.
Results. Almost every second (n = 76; 54.3%) pregnant woman demonstrated low level of stress, 13.6% (n = 19) respondents showed a moderate level, and high level was found in 32.1% (n = 45) of the respondents. A statistically significant correlation was identified between the level of perceived stress and education (p = 0.031), as well as between stress and financial situation (p = 0.017). *Conclusions:* During hospitalization, nearly every third pregnant woman was affected by a high level of stress. The very fact that the health of the child and/or the mother may be at risk is already a source of stress for the woman. Statistically significant higher intensity of stress was found in mothers with professional education and average financial situation. Data from reports in the literature indicate that stress during pregnancy can also negatively affect the health of the psychophysical mother-child dyad. Further research in this area is needed, along with relevant steps measures to promote psychophysical comfort of hospitalized mothers.
Keywords: stress in pregnancy, sociodemographic factors, hospitalization

Introduction

Stress has always accompanied humans: it can have a positive, mobilizing effect (in which case it is called *eustress*) or a negative effect, destructive to the system (*distress*). According to Seyle's original theory of stress, it is defined as a reaction to a threat to stability (the homeostasis of the system); therefore, the period of pregnancy can be particularly prone to an increase in distress, i.e. negative acute or chronic stress reaction, or one superimposed on an already existing problem (Chudzik, Jarosz, Gołębiowska, Gołębiowska, 2017;

1. Article in polish language: Poziom stresu u kobiet ciężarnych hospitalizowanych w oddziale patologii ciąży https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Kana.pdf

Gajda, Biskupek-Wanot, 2020). It is a reaction to the demands placed on the system, as well as a process by which environmental factors threaten its stability – indeed, stress is defined as the body's response to the stimuli that upset its balance. A number of both biochemical and physiological changes occur as a result of stress (Gajda, Biskupek-Wanot, 2020; Kaczmarska, Curyło-Sikora, 2016). Incidental and periodic stress can affect the body's motivation to act effectively, while moderate stress can mobilize action but can also lead to negative effects (Kaczmarska, Curyło-Sikora, 2016; Sowa, Hess, 2015).

According to Social Readjustment Scale, the period of pregnancy is ranked as the 12th of up to 43 situations that cause the highest levels of stress for respondents (Szydełko, Szydełko, Piątek, Tuzim, Boguszewska-Czubara, 2016). Pregnancy is associated with both psychological and biological stress. The major role is played by hormones (adrenaline, cortisol), produced in the woman's body in a stressful situation, passing through the placenta to the foetus and causing it to experience emotions similar to those experienced by the mother (Brodowska, Bąk-Sosnowska, 2020; Makara-Studzińska, Zwierz, Madej, Wdowiak, 2015; Yildiz, Ayers, Phillips, 2017; Musiała, Hołyńska-Iwan, Olszewska-Słonina, 2018).

The positive effects of pregancy include the fulfilment of the dream of parenthood, the expectation of a happy childbirth, the fulfilment of personal needs related, among others, to the sense of security, recognition, respect, positive self-esteem, the meaning of life or, in a metaphorical sense, immortality (Brodowska, Bąk-Sosnowska, 2020; Wojaczek, 2012).

In contrast, it has been found that traumatic or chronic stress experienced by a pregnant woman alters the child's nervous system by inhibiting neurogenesis, which leads to neuronal atrophy, reduced number of neurons, lessened communicative efficiency between them, and decreased neuroplasticity. There is also an increased risk of the child developing an autism spectrum disorder, Down's syndrome, a mental deficiency and various somatic illnesses (Brodowska and Bąk-Sosnowska, 2020). The consequences of permanent stress also include miscarriages, premature births, low birth weight, IUGR, and cardiovascular or neurological changes in the foetus (Andhavarapu, Orwa, Temmerman, Musana, 2021; Huras, Radoń-Pokracka, 2016; Jośko-Ochojska, 2016; Musiała, Hołyńska-Iwan, Olszewska-Słonina, 2018; Szydełko, Szydełko, Piątek, Tuzim, Boguszewska-Czubara, 2016). Furthermore, in a study by Zietlow, Nonnenmacher, Reck, Ditzen, Müller (2019), emotional stress during pregnancy was shown to be associated with infant stress reactivity, which in turn affects mother-child interactions up to preschool age.

In addition, the pathological course of pregnancy and the need for hospitalization increase the level of negative emotions in pregnant women (Lewicka, Wójcik, Sulima, Makara-Studzińska, 2015; Tałaj, Fischer, Kupcewicz, 2012). Hospitalization in a pathology of pregnancy unit disrupts the satisfaction of women's psychosocial needs. A pregnant woman may begin to identify herself as a sick person, which increases stress and fear for the course of the pregnancy. Patients feel lonely during their stay in a hospital, while at the same time they hold themselves responsible for complications that pose a risk to the health and life of the child (Dembińska, Wichary, 2016; Tałaj, Fischer, Kupcewicz, 2012).

1. Own research

1.1. Aim of the study

The aim of this study was to analyse the correlation of the stress level in hospitalized pregnant women and sociodemographic factors.

1.2. Methods

The study was conducted in a group of 140 pregnant women hospitalized in the Department of Pathology of Pregnancy of the Independent Public Clinical Hospital No. 1 in Lublin, Poland, between November 2019 and February 2020. The inclusion criteria for the study were: age 18 years or older, confirmed pregnancy, and hospitalization for more than two weeks in the Department of Pathology of Pregnancy. Patients were informed of the purpose of the study and their consent was obtained. The study was carried out with the aid of a diagnostic survey method

with the Perceived Stress Scale PSS-10 and a survey questionnaire created specifically for this project. The self-administered questionnaire consisted of 39 closed questions. Questions 1-18 concerned previous pregnancies and the course of the current pregnancy. Questions 19-33 referred to the conditions in the Department of Pathology of Pregnancy. The last six questions were related to sociodemographic data of the pregnant women surveyed. The Perceived Stress Scale (PSS-10), proposed by S. Cohen, T. Kamarcki and R. Mermelstein, and adapted for the Polish context by Juczyński Oglińska-Bulik (2012), is used to test adults, both healthy and with various conditions. It is used as a method for self-assessment, but also as a form of interview. It contains ten questions evaluated subjectively by the respondent. The questions concern affective, emotional reactions to personal problems and events, behaviours and ways of managing them. The PSS-10 scale is used to measure the intensity of stress related to the respondent's life situation over the past month. The higher the total score, the higher the intensity of perceived stress (Juczyński, Ogińska-Bulik, 2012).

The present research was conducted following approval of its design by the Council of the Faculty of Health Sciences of the Medical University of Lublin and in accordance with the assumptions of the Declaration of Helsinki. The data collected were statistically processed using the statistical package SPSS21 Academic License and R3.61. First, the number and percentage of specific responses to each question were reported. The relationship between variables was checked using the Kruskal-Wallis H test. The results of the analysis obtained were assumed to be statistically significant at a significance level of $p<0.05$.

2. Research results

The age of the pregnant women participating in the study ranged from 20 to 44 years (M = 31.76 years; SD = 5.28 years). The largest group (45%) were women aged between 29 and 35 years. An overwhelming proportion of the patients surveyed (88.6%) declared that they were married or in a relationship. As far as the level of education is concerned, the majority of the patients (64.3%) had a higher education degree. Exactly half of the women indicated that their finacial situation was very good, slightly fewer (45%) described it as good, while 5% as average. Detailed socio-demographic breakdown of the study group is presented in Table 1.

The majority of the women (82.9%) were in week 28-40 of pregnancy (the third trimester), 10% were in the second trimester (14-27 hbd), while 7.1% were under week 13 of pregnancy. 37.4% of the respondents were primiparous, slightly fewer (33.8%) were pregnant for the second time, while 28.8% were pregnant for the third and subsequent time. Pregnancy planning was declared by 68.8% of the women surveyed. Detailed obstetric data are given in Table 2.

The results of the analysis regarding the overall level of perceived stress in the women surveyed are presented in Figure 1.

More than half (54.3%) of the women experienced a low level of stress, one third (32.1%) experienced a high level, while in 13.6% the level of vperceived stress was moderate. The mean value of stress level of the women surveyed was 15.06 on the PSS-10 scale.

The relationship between the level of perceived stress and material situation is shown in Table 3. The statistical analysis showed that the mean value of the stress level in the women whose financial situation was very good was 13.06, i.e. statistically significantly lower ($p = 0.017$) than in the women whose situation was assessed as good (17.21) or average (16.29). The questionnaire-based part of our study showed that the financial situation conditioned the level of stress in the hospitalized pregnant women surveyed, which was higher in the women in good and average situation than in the women in a very good financial situation.

Table 4 shows the relationship between the level of perceived stress and the education of the pregnant women studied. The study showed that the mean stress value in pregnant women with vocational education was 19.4, which was significantly higher ($p = 0.031$) than in those with secondary education (16.03) or higher education (13.97). Our question-

Table 1. Socio-demographic data relating to the respondents

Socio-demographic data	Total	
	n	%
Age		
Below 29 years	41	29
29-35 years	63	45
Above 35 years	36	26
Place of residence		
Countryside	50	36
City	90	64
Marital status		
Single	16	11.4
Married/in a relationship	124	88.6
Level of education		
Secondary	29	20.7
Vociational	21	15
Higher	90	64.3

Table 2. Obstetric situation of the women surveyed

Obstetric situation	Total	
	n	%
Week of pregnancy		
1-13	10	7.1
14-27	14	10.0
28-40	116	82.9
Number of pregnancies		
1st	52	37.4
2nd	48	33.8
3rd and subsequent	40	28.8
Pregnancy planning (concerns current pregnancy)		
Planned	96	68.8
Unplanned	44	31.2

naire showed that the level of education conditioned the stress level of the women studied, which was highest in patients with vocational education.

The relationship between the stress level of the pregnant women and age is presented in Table 5. The study showed that the mean value of stress in women over 35 years of age was 15.25, which was

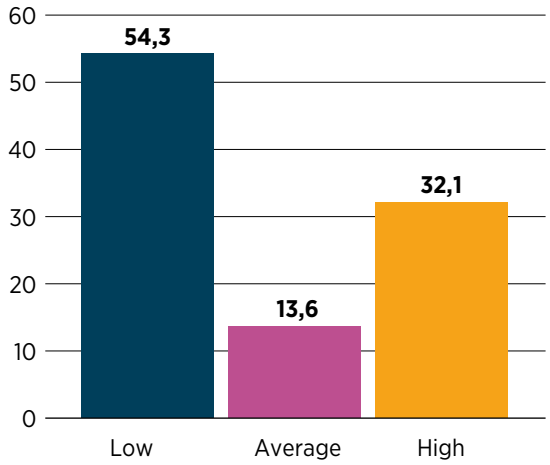

Figure 1. Level of perceived stress.

Table 3. Financial situation of the hospitalized pregnant women and the stress level

Financial situation	M	SD
Very good	13.06	8.35
Good	17.21	8.48
Average	16.29	9.27

Statistical analysis: p = 0.017

M – mean; SD – standard deviation

Table 4. The level of education and the level of stress in the women surveyed

Education	M	SD
Secondary	16.03	9.27
Higher	13.97	8.20
Vocational	19.40	9.03

Statistical analysis: p = 0.031

M – mean; SD – standard deviation

Table 5. The relationship between the age of the pregnant women surveyed and the level of perceived stress

Age	M	SD
Below 28 years	14.73	8.61
29-35 years	15.17	8.00
Above 35 years	15.25	9.82

Statistical analysis: p = 0.563

M – mean; SD – standard deviation

Table 6. The relationship between the place of residence of the women surveyed and their level of stress

Place of residence	M	SD
Countryside	14.86	8.64
City	14.90	8.29

Statistical analysis: p = 0.740

M – mean; SD – standard deviation

Table 7. The relationship between the women's marital status and their level of stress

Marital status	M	SD
Single	13.64	9.02
In a relationship	15.06	8.36

Statistical analysis: p = 0.745

M – mean; SD – standard deviation

higher than in those between 29 and 35 years of age (15.17), or in those under 28 years of age (14.73). In the questionnaire-based part of our study, no significant correlation was found between the level of perceived stress and age (p>0.05).

Table 6 shows the relationship between place of residence and stress levels of the hospitalized pregnant women. The statistical analysis showed that the mean value of the stress level in the women who lived in the countryside was 14.86, which was slightly lower than that of those who lived in the city (14.90). Thus, there was no significant relationship between the place of residence and the level of perceived stress (p>0.05). The questionnaire that we used showed that the place of residence did not condition the level of stress in hospitalized pregnant women.

The relationship between the women's marital status and their level of stress is shown in Table 7. On the basis of statistical analysis, the mean stress value in single women was 13.64, that is, those patients felt stress less frequently (p = 0.745) than respondents in a relationships (15.06). In the data we obtained from the questionnaire, there was no statistical significance between the level of perceived stress and marital status.

3. Discussion

Pregnancy is a period of emotional change that arises from psychological, social, and biological factors. The emotional state of the pregnant woman develops along with the development of the pregnancy. In the first trimester, there is acceptance of the new life, the woman's feelings are mixed from joy to anxiety concerning health and safety. In the second trimester of pregnancy, the woman is usually in a better mental and physical condition: she can feel positive emotions associated with the presence of the baby, can recognize his or her first movements, and makes contact with the baby. The third trimester, on the other hand, is a time of preparation for childbirth, when anxiety and uncertainty concerning the delivery can occur. The woman prepares both herself and her immediate environment for the presence of the child, a process known as „nesting" (Battulga, Benjamin, Chen, Bat-Enkh, 2021; Bjelica, Cetkovic, Trninic-Pjevic, Mladenovic-Segedi, 2018; Dragomir, Popescu, Jurca, Laza, Ivan Florian, Dragomir, Negrea, Craina, Dehelean, 2022; Semeia, Bauer, Sippel, Hartkopf, Schaal, Preissl, 2023; Wojaczek, 2012). Stressors that occur during physiological pregnancy are associated with changes in the woman's external appearance, but also with many other factors. Mikolajkow and Malyszczak (2022) report that there is a significant relationship between anxiety in pregnancy and hormonal changes in the pregnant woman. These changes include not only the regulation of the Hypothalamic-Pituitary-Adrenal (HPA) axis (responsible for stress responses) or thyroid functionality, but also, for example, oxytocin, prolactin and progesterone levels.

Another factor that increases the patient's stress level is the need for hospitalization due to the occurrence of irregularities in the course of pregnancy or other complications that pose risk to the health or life of the mother or child, including hypertension, gestational diabetes, premature outflow of amniotic fluid, or irregularities in cardiotocographic records or ultrasound examinations. It is particularly important for pregnant patients during hospitalization to receive support from relatives, but especially from medical staff (midwives and doctors). The psychological support received often improves well-being, leading

to reduced risk of stress (Alves, Cecatti, Souza, 2021; Koss, Rudnik, Bidzan, 2014; Lewicka et al., 2015; Musiała et al., 2018; Tałaj et al., 2012).

This study was conducted after considering a number of determinants of stress experienced by pregnant women, as well as its consequences for maternal and child health: its aim was to analyze stress levels in hospitalized pregnant women in relation to sociodemographic factors. More than half (54.3%) of the pregnant women experienced low levels of stress, 13.6% experienced moderate levels, while as many as 32.1% experienced high levels of stress. In a study conducted in Spain by Awad-Sirhan, Simo-Teufel, Molina-Munoz, Cajiao-Nieto, and Izquierdo-Puchol (2022), the mean stress level of pregnant women was calculated at 16.98. In that study, 67.3% of the respondents had low stress levels, while the remainder (32.6%) had high stress levels. A significantly higher mean level of stress (25.6) was is reported by Garcia-Silva et al. (2021) in a study conducted during the COVID-19 pandemic, which was likely a significant factor. In Lewicka et al. (2015), the mean level of stress in hospitalized pregnant women was shown to be 12.5±8.15. The study reported that just over 6% of the women surveyed had severe and very severe stress symptoms. Mild and moderate symptoms were found in 15.74% and 13.44% patients respectively. In contrast, up to 63.93% of women were found to have no stress symptoms. However, in a study conducted by Alves et al. (2021) in a group of 1,500 pregnant women, high levels of stress were found in 6% of the subjects, 78% experienced low or moderate stress, while a stress-free pregnancy occurred in only 16%.

There are many reports in the current literature on the influence of sociodemographic factors on the occurrence of stress in pregnant women (Alves et al. 2021; Babu, Murthy, Singh, Nath, Rathnaiah, Saldanha, Deppa, Kinra, 2018; Chanduszko-Salska, Kossakowska, 2018; Effati-Daryani, Somayeh, Mohammadi, Hemati, Yngyknd, Mirghafourvand, 2020; Ghaffar, Iqbal, Khalid, Saleem, Hassali, Baloch, Ahmad, Bashir, Haider, Bashaar, 2017; Kanadys, Tyrańska, Lewicka, Sulima, Bucholc, Wiktor, 2018; Kicia, Skurzak, Korżyńska-Piętas, Palus, Iwanowicz-Palus, 2021; McLeod, Ebeling, Baatz, Shary, Mulligan, Wagner, 2021; Morylowska-Topolska, Makara-Studzińska, Kotarski, 2014). Most reports from research conducted both in Poland and other countries indicate higher levels of stress in pregnant women with lower material status. This corresponds with the results of the present study. In the discussion that follows, the issue of the influence of sociodemographic factors on stress levels is highlighted in more detail.

On the basis of our study, we found that the determinants of high stress levels of hospitalized pregnant women were education and financial situation. Respondents with vocational education and those in an average or good financial situation exhibited significantly higher levels of stress. On the other hand, place of residence, marital status, and age did not condition the level of stress in the pregnant women surveyed.

A study by Kanadys et al. (2018), an analysis of stress levels in pregnant women with a risk of preterm birth, showed that education significantly correlated with experiencing negative emotions, while age, financial situation, or occupational status did not determine stress levels. Similarly, Sulima et al. (2014) showed that in women with a risk of preterm birth, education significantly correlated with both positive and negative emotions, while positive emotions also increased, to a statistically significant degree, with age. In those studies, no correlation was found between the marital status of the women and the positive or negative emotions they experienced. In contrast, Ghaffar et al. (2017), in a study involving 750 pregnant women, found a significant correlation between age and anxiety or depression, which were more common in women aged 36-41 years. In contrast, a study by Kicia et al. (2021) also showed correlation between age and elevated stress levels in women after miscarriage: higher levels of stress were found in patients up to 25 and 30-35 years of age, compared to women between 26 and 30 years of age. Furthermore, Bhat, Hassan, Shafiq, Sheikh (2015) found that anxiety was higher in pregnant women under 30 years of age, compared to those above 30 years of age. Also, the level of income had an impact on the occurrence of anxiety in the participants of the study: the lower the income, the higher

the level of anxiety. Similar findings were obtained by Andhavarapu et al. (2021), who report that only the financial situation, but not age, marital status or the level of education, had an impact on perceived stress in pregnant women. The results obtained by Dembinska and Wichara (2016) even indicate that the anxiety experienced by pregnant women was not dependent on their age, education, place of residence, or financial security. However, in a study conducted in Iran with the aid of DASS-21, Effati-Daryani et al. (2020) showed that the occurrence of elevated stress levels in pregnant women was influenced by the partner's education, work, income, level of support and satisfaction with marital life. In contrast, a patient's age or education, or the age of her partner, had no significant effect on the levels of perceived stress, anxiety, or depression.

In conclusion, sociodemographic variables such as age, education, place of residence, marital status and financial situation are important factors shaping the level of perceived stress in pregnant women. Our own research showed that the factors determining the level of stress were education and financial situation of the pregnant women surveyed. In contrast, no significant correlation was observed between stress and their age, place of residence, or marital status. Therefore, special psychoprophylactic care should be offered to pregnant women with vocational education and average financial situation.

The level of stress in hospitalized pregnant women may be influenced by many variables, such as a difficult obstetric history (problems with conception, the trimester of pregnancy, the number and course of pregnancies and deliveries, previous complications), general health status including psychiatric disorders, the fact of hospitalization and the conditions in hospital (multi-bed rooms, medical examinations and procedures), support from the medical staff, the relationship with the father of the child, or anxiety about the health of the child. However, these issues will be investigated in future research.

The results obtained here indicate a need for further research on stress levels in pregnant women, as well as strategies for coping with stress during the perinatal period. Greater awareness of the medical staff concerning the determinants of stress and the methods of coping with stress by pregnant, parturient, or postpartum women can have a positive impact on the quality of perinatal care.

4. Limitations of the study

Firstly, limitations of this research may arise from the fact that the study group included pregnant women hospitalized in one hospital in the Lubelskie Voivodeship, and therefore may not be representative of the entire population of hospitalized pregnant women. The second limitation may result from the lack of analysis of hospital records (the patients' medical history), so that the picture of the health situation of the respondents may be incomplete, which may influence the results obtained.

Conclusions

1. Nearly one in three pregnant women experienced high levels of stress during hospitalization.
2. The very fact that the health of the child and/or her own health is jeopardized is already a source of stress for the woman.
3. Higher levels of stress were statistically significant for mothers with vocational education and average financial situation.
4. Data from literature reports indicate that stress during pregnancy can negatively affect the health of the psychophysical mother-child dyad.
5. Further research in this area is needed, together with possible measures to promote psychophysical well-being of hospitalized pregnant women.

Bibliography

Alves, A.C., Cecatti, J.G., Souza, R.T. (2021). Resilience and stress during pregnancy: a comprehensive multidimensional approach in maternal and perinatal health. *The Scientific World Journal*, 1-7. https://doi.org/10.1155/2021/9512854

Andhavarapu, M., Orwa, J., Temmerman, M., Musana J.W. (2021). Maternal sociodemographic factors and antenatal stress. *International Journal of Environmental Research and Public Health, 18*(13), 6812. https://doi.org/10.3390/ijerph18136812

Awad-Sirhan, N., Simo-Teufel, S., Molina-Munoz, Y., Cajiao-Nieto, J., Izquierdo-Puchol, M.T. (2022). Factores asociados al estrés prenatal y la ansiedad en gestantes durante el COVID-19 en España. *Enfermería Clínica, 32*, S5-S13. https://doi.org/10.1016/j.enfcli.2021.10.006

Babu, G.R., Murthy, G.V.S., Singh, N., Nath, A., Rathnaiah, M., Saldanha, N., Deppa, R., Kinra, S. (2018). Sociodemographic and Medical Risk Factors Associated with Antepartum Depression. *Frontiers in Public Health, 6*, 1-6. https://doi.org/10.3389/fpubh.2018.00127

Battulga, B., Benjamin, M.R., Chen, H., Bat-Enkh, E. (2021). The Impact of Social Support and Pregnancy on Subjective Well-Being: A Systematic Review. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.710858

Bhat, N.A., Hassan, R., Shafiq, M., Sheikh, S. (2015). Sociodemographic factors: A major predictor of anxiety and depression among pregnant women. *Delhi Psychiatry Journal, 18*(1), 86-94.

Bjelica, A., Cetkovic, N., Trninic-Pjevic, A., Mladenovic-Segedi, L. (2018). The phenomenon of pregnancy — a psychological view. *Ginekologia Polska, 89*(2), 102–106. https://doi.org/10.5603/GP.a2018.0017

Brodowska, E., Bąk-Sosnowska, M. (2020). Wpływ ciąży na zdrowie I samopoczucie psychiczne kobiet. (W:)A. Knapik, P. Beňo, J. Rottermund: (red.) *Zdrowie człowieka w ontogenezie – aspekty biomedyczne i psychospołeczne. Studia badaczy polskich, słowackich i czeskich. T. 2. Aspekty psychospołeczne*, 15-22, Katowice: Śląski Uniwersytet Medyczny w Katowicach.

Chanduszko-Salska, J., Kossakowska, K. (2018). Stres a objawy depresji i sposoby radzenia sobie u kobiet z niepłodnością i kobiet w ciąży wysokiego ryzyka. *Folia Psychologica, 22*, 73-96. https://doi.org/10.18778/1427-969X.22.05

Chudzik, R., Jarosz, K., Gołębiowska, M., Gołębiowska, B. (2017). Stres choroba XXI wieku? *Journal of Education, Health and Sport*, *7*(8), 20-26, https://doi.org/10.5281/zenodo.839685

Dembińska, A., Wichary, E. (2016). Wybrane psychospołeczne korelaty lęku przedporodowego – znaczenie dla praktyki położniczej. *Sztuka Leczenia, 1*, 43–54.

Dragomir, C., Popescu, R., Jurca, M.A., Laza R., Ivan Florian, R., Dragomir, I., Negrea, R., Craina, M., Dehelean, C.A. (2022). Postpartum Maternal Emotional Disorders and the Physical Health of Mother and Child. *Psychology Research and Behavior Management, 15*, 2927–2940. https://doi.org/10.2147/prbm.s382073

Effati-Daryani, F., Somayeh, Z., Mohammadi, A., Hemati, E., Yngyknd, S.G., Mirghafourvand, M. (2020). Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. *BMC Psychology, 8* (99), 1-10. https://doi.org/10.1186%2Fs40359-020-00464-8

Gajda, E., Biskupek-Wanot, A. (2020). Stres i jego skutki. (W:) A. Biskupek-Wanot, B. Wanot, K. Kasprowska-Nowak (red.), *Aktywność fizyczna i problematyka stresu*, 84-93. Częstochowa: Wydawnictwo Naukowe Uniwersytetu Humanistyczno-Przyrodniczego im. Jana Długosza. http://dx.doi.org/10.16926/afips.2020.07

Garcia-Silva, J., Caracuel, A., Lozano-Ruiz, A., Alderdice, F., Lobel, M., Perry, O., Caparros-Gonzalez, R.A. (2021). Pandemic-related pregnancy stress among pregnant women during the COVID-19 pandemic in Spain. *Midwifery, 103*, 103163, 1-7. https://doi.org/10.1016/j.midw.2021.103163

Ghaffar, R., Iqbal, Q., Khalid, A., Saleem, F., Hassali, M.A., Baloch, N.S., Ahmad, F.D., Bashir, S., Haider, S., Bashaar, M. (2017). Frequency and predictors of anxiety and depression among pregnant women attending tertiary healthcare institutes of Quetta City, Pakistan. *BMC Women's Health, 17*, 51, 1-8. https://doi.org/10.1186/s12905-017-0411-1

Huras, H., Radoń–Pokracka, M. (2016). Wewnątrzmaciczne zahamowanie wzrastania płodu — schemat diagnostyczny i postępowanie. *Ginekologia i Perinatologia Praktyczna, 1*(3), 107–114.

Jośko-Ochojska, J. (2016). Traumatyczne przeżycia matki ciężarnej a zdrowie jej dziecka. *Dziecko Krzywdzone. Teoria, badania, praktyka, 15*(3), 117 – 129.

Juczyński, Z., Ogińska-Bulik, N. (2012). *Narzędzia pomiaru stresu i radzenia sobie ze stresem*. Warszawa: Polskie Towarzystwo Psychologiczne Pracownia Testów Psychologicznych.

Kaczmarska, A., Curyło-Sikora, P. (2016). Problematyka stresu – przegląd koncepcji. *Hygeia Public Health, 51*(4), 317 – 321.

Kanadys, K., Tyrańska, I., Lewicka, M., Sulima, M., Bucholc, M., Wiktor, H. (2018). Analiza poziomu stresu ciężarnych z zagrażającym porodem przedwczesnym zależnie od czynników socjodemograficznych. *Medycyna Ogólna i Nauki o Zdrowiu, 24*(2), 133–137. https://doi.org/10.26444/monz/92144

Kicia, M., Skurzak, A., Korżyńska-Piętas, M., Palus, A., Iwanowicz-Palus, G.J. (2021). Assessment of the relationship between socio-demographic factors and intensity of perceived stress in a group of women hospitalized due to miscarriage. *Medycyna Ogólna i Nauki o Zdrowiu, 27*(3), 285-290. https://doi.org/10.26444/monz/140310

Koss, J., Rudnik, A., Bidzan, M. (2014). Doświadczanie stresu a uzyskiwane wsparcie społeczne przez kobiety w ciąży wysokiego ryzyka. Doniesienie wstępne. *Family Forum, 4*, 183–201.

Lewicka, M., Wójcik, M., Sulima, M., Makara-Studzińska, M. (2015). Nasilenie negatywnych emocji u kobiet ciężarnych w okresie hospitalizacji. *Annales Academiae Medicae Silesiensis, 69*, 177-183. https://doi.org/10.18794/aams/36771

Makara-Studzińska, M., Zwierz, K., Madej, A., Wdowiak A. (2015). Coping with stress by women in early postpartum. *Journal of public health, nursing and medical rescue, 4*, 38-43.

McLeod, C., Ebeling, M., Baatz, J., Shary, J.R., Mulligan, J.R., Wagner, C.L. (2021). Sociodemographic factors affecting perceived stress during pregnancy and the association with immune-mediator concentrations. *Journal of Perinatal Medicine, 50*(2), 192-199. https://doi.org/10.1515/jpm-2021-0227

Mikołajków, A., Małyszczak, K. (2022). Czynniki biologiczne I skutki zaburzeń lękowych specyficznych dla ciąży – aktualny stan wiedzy. *Psychiatria Polska, 56*(6), 1289-1314. https://doi.org/10.12740/PP/144138

Morylowska-Topolska, J., Makara-Studzińska, M., Kotarski, J. (2014). Wpływ wybranych zmiennych socjodemograficznych i medycznych na nasilenie objawów lękowych i depresyjnych w poszczególnych trymestrach ciąży. *Psychiatria Polska, 48*(1), 173-186.

Musiała, N., Hołyńska-Iwan, I. Olszewska-Słonina, D. (2018). Kortyzol – nadzór nad ustrojem w fizjologii i stresie. *Diagnostyka Laboratoryjna, 54*(1), 29-36. https://doi.org/10.5604/01.3001.0013.7553

Semeia, L., Bauer, I., Sippel, K., Hartkopf, J., Schaal, N. K., Preissl, H. (2023). Impact of maternal emotional state during pregnancy on fetal heart rate variability. *Comprehensive Psychoneuroendocrinology, 14*, 100181. https://doi.org/10.1016/j.cpnec.2023.100181

Sowa, J., Hess, G. (2015). Stres a plastyczność mózgu. *Wszechświat, 116*, 15-21.

Sulima, M., Makara-Studzińska, M., Lewicka, M., Wiktor, K., Kanadys, K., Wiktor, H. (2014). Analiza uczuć kobiet z ciążą zagrożoną porodem przedwczesnym. *Annales Academiae Medicae Stetinensis, 60*(1), 65-74.

Szydełko, J., Szydełko, M., Piątek, D., Tuzim, K., Boguszewska-Czubara, A. (2016). Wpływ chronicznego stresu u kobiet w ciąży na kształtowanie się zachowań żywieniowych u ich potomstwa w życiu postnatalnym. *Medical Review, 14*(1), 83-92. https://doi.org/10.15584/medrev.2016.1.7

Tałaj, A., Fischer, B., Kupcewicz, E. (2012). Potrzeby i oczekiwania hospitalizowanych ciężarnych z patologii ciąży. *Problemy Pielęgniarstwa, 20*(2), 228-232. https://doi.org/10.5603/PP.2015.0076

Wojaczek, M. (2012). Kształtowanie się zmian i percepcja poczętego dziecka w poszczególnych etapach ciąży. *Pielęgniarstwo i Zdrowie Publiczne, 2*(1), 73-77.

Yildiz, P.D., Ayers, S., Phillips, L. (2017). The prevalence of posttraumatic stress disorder in pregnancy and after birth: A systematic review and meta-analysis. *Journal of Affective Disorders, 208*, 634-645. https://doi.org/10.1016/j.jad.2016.10.009

Zietlow, A.L, Nonnenmacher, N., Reck, C., Ditzen, B., Müller, M. (2019). Emotional Stress During Pregnancy – Associations With Maternal Anxiety Disorders, Infant Cortisol Reactivity, and Mother–Child Interaction at Pre-school Age. *Frontiers in Psychology*, vol 10, Article 2179, 1-10. https://doi.org/10.3389/fpsyg.2019.02179

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Techniques used during the labour to encourage optimal fetal position and improve the process of delivery.[1]

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Abstract: The course of labour is influenced by many factors, only some of which are under the control of the woman in labour and/or the medical staff. The conditions for efficient movement of the head in the birth canal, including the anatomy of the pelvis and soft tissues, uterine contractility, fetal positioning and the attitude of the birthing women, are crucial. This article describes techniques and methods to improve the movement of the fetus through the birth canal in the case of suboptimal condition of childbirth.
Keywords: malposition, optimal mother position, optimal fetal position

Introduction

We are currently observing changes in midwifery characterized by an increasing rate of cesarean sections (CS) instrumental labours and a significant medicalization of childbirth. It reflects the needs for an impact and control during the labour, presented by both medical staff and parents preparing for parenthood. However, their influence on the birth process is very limited. The factors determining the progress of labour, referred to as the 4 P law, include: power–contraction activity, passenger–fetal position, passage–pelvis and pelvic floor, psyche–mental attitude of the birthing women. An important factor determining the progress of labour is both uterus activity and the mental health condition of the woman giving birth. Due to the need to minimize the negative experience of difficult childbirth, there is a need to for research for techniques that would improve this process. Based on close observations of experienced midwives, there are two trends described the aim of which is to support the physiological course of childbirth. Originally formulated principle of Optimal Fetal Position (OFP) and the second added later, Optimal Maternal Position (OMP). These two trends complement each other and describe efforts to create optimal space in the pelvis encouraging the fetus to obtain optimal position. Midwives' ability to promote physiological birth can be enhanced by implementing this knowledge. Supportive techniques can be used to improve birth outcomes and contribute to a positive birth experience. When midwives work effectively with the birthing woman and her partner, their work can also be experienced as more stimulating and contributing to a new understanding of childbirth (Sirviö and Ohlsson, 2021).

1 Article in polish language: Techniki stosowane w trakcie porodu w celu korekty pozycji płodu i usprawnienia jego przebiegu: https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Wit.pdf

1. Optimal Fetal Position (OFP)

The term 'Optimal Fetal Position' has been used in midwifery since 1995 thanks to Jean Sutton, a midwife working with women in the perinatal period in New Zealand. Based on her own observations, she concluded that the position of the fetus in the uterus and the way of engagement to the pelvis have a significant impact on the process of the birth. She defined the OFP as the longitudinal cephalic presentation, left position, in which the back of the baby is turned towards the left front of the uterus (LOA–Left Occiput Anterior) (Sutton, 2001). According to her observations, the proportions of this setting in the population have decreased over recent years, which was the result of civilization changes and changes in the lifestyle of pregnant women (Sutton, 2001), and consequently resulted in the need for increased medicalization.

In order to encourage the OFP, a new approach has been created called Spinning Babies®. It includes workshops for parents in the antenatal period and training for medical staff supporting women in the perinatal period. This method, described by midwife Gail Hart, is based on the recognition that a significant factor determining the progress of labour is the position of the fetus. Gravity, balance and movement are natural forces that are used to achieve optimal fetal positioning at the end of pregnancy or during labour that is not progressing as expected. Spinning Babies® techniques based on the natural forces of nature and the potential of the woman's body should therefore support physiological childbirth, in which medical interventions are minimalised (Tully, 2015). Spinning Babies® is based on "Fantastic Four" approach, which means: 1. Using Rebozo to encourage fascia and deep muscles relaxation, 2. Inversion with forward leaning to create space in the lower uterus and compensate for any anatomical asymmetries, 3. Sidelying release to increase space in the pelvis and relieve tension in the pelvic floor muscles; 4. Standing Release–relieving the pressure on the sacrum and surrounding ligaments through a standing position, enabling its mobility and thus increasing the capacity of the pelvis (Spiteri, 2019). However, no reliable scientific research has been conducted so far to confirm the validity and effectiveness of these techniques. Information regarding the use of the Spinning Babies® technique can be found in midwives' case studies and professional journals, but not in peer-reviewed scientific journals (Tully, 2012; Waechter, 2018; Morales, 2019; Wainer, 2019). There are also records of negative opinions of midwives related to the use of this technique (Tritten, 2017).

So far in the research comparing the OFP with other anterior positions there is no significant differences found in the frequency of normal vaginal births or instrumental and operational labour (Ahmad et al., 2014).

2. Optimal Maternal Position (OMP)

Restricted impact of the actions of medical staff on the position of the fetus both in antenatal and intrapartum led Ginny Phang-Davey to create the trend called Optimal Mother's Position (OMP). The foundation of this theory assumes that the mobility and position of the woman giving birth, not the position of the fetus, can help achieve optimal pelvic capacity. Positioning the woman giving birth in a specific position to facilitate vaginal labour is more important than ensuring that the fetus is optimally positioned in the pelvis. According to this trend, the term 'abnormal fetal position' is avoided, recognizing that the baby's position is consistent with the structure of the pelvis (ie. the OP position is not treated as an abnormality, but as a variety of normal). According advocates of the theory, the fetus engages into the pelvis and passes through it in a way that is most optimal for it considering the given shape of the pelvis. In many cases, this process may differ significantly from the textbook mechanism of childbirth which is characteristic only for gynecoid pelvis (Brittany Sharpe McCollum). It is not recommended the use of internal rotation of the fetus from the OP position if the patient is diagnosed with an anthropoid pelvis. The shape of the pelvic brim in this case is in harmony with the shape of the head engaged in this way (Barth Jr, 2015). This theory is consistent with the modern model of thinking present in other areas, expressed in the existence of a continuum, considering differences not as abnormal, but only less common.

3. Optimal relaxation of the woman in labour

An indirect form of influence on the fetal position is elimination of the emotional and muscular tension of the woman in labour. The technique aims to minimize or eliminate labour pain, which is the source of this tension. This pain may be perceived as unphysiological and unacceptable, especially in the case of abnormal fetal position. This is a type of positive feedback. Obtaining relaxation of soft tissues (ligaments, fascia, pelvic floor muscles) by eliminating pain in the sacrum area may lead to proper fetal rotation. If the reason for the unusual positioning of the fetus in the pelvis is excessive tension of the soft tissues, whether it is primary or caused by pain, then after applying techniques that eliminate pain or eliminate tension, the position of the fetus should change. Techniques that help improve the mental and anatomical condition include all natural methods of pain relief, ie. TENS, water immersion, manual techniques and the methods included in the Spinning Babies® approach like: rebozo scarf or side lying realise, shaking the thighs and buttocks. A more invasive method is the use of intradermal injections of a water for injection into the sacrum area. These methods still do not have reliable scientific studies confirming their effectiveness.

4. Techniques used to correct fetal position and achieve optimal pelvic capacity

Engagement of the fetal head, previously considered as atypical, or the atypical shape of the pelvis may be associated with prolonged labour. It often requires greater involvement of medical personnel and the use of appropriate supportive techniques. Assistive techniques used in case of difficult labour (especially long labour) are intended not only to enable natural childbirth, but also to protect the mother from traumatic experience.

It is advised that labour suite professionals use accessible techniques to assist in the labour process. One of the easiest and natural methods is the use of the vertical position, especially in the second stage of labour. According to the OMP theory, women are encouraged to remain in almost not natural positions, to which the body is not accustomed, in order to open particular bone structures by pulling the ligaments strongly (Calais-Germain and Vives Parés, 2009). However, this requires the medical personnel to carefully identify the engagement of the head in the birth canal, and to precisely determine in which plane the head is located. This knowledge allows you to use the appropriate position to open a specific pelvic space. Even a subtle adjustment to typical birthing positions can have a significant effect when done at the right time. For the woman in labour and for the staff member, these activities do not require much effort or physical fitness, because they are usually associated with changing the angle of the foot, proper rotation of the femur or the angle of the torso in relation to the pelvis. They can also be performed in a situation where the woman in labour is lying down all the time due to a strong effect of epidural or the need for constant fetal monitoring. Changing the birthing position is much easier to achieve than changing the position of the fetus. However, this requires the trust of the medical staff that there is a certain regularity in the way the fetus moves through the pelvis and the focus should be on maximally opening the passage through which the child has to pass. The advantage of these techniques is also the fact that they do not qualify as interventions that would involve any risk and they are not associated with side effects.

In the case of suboptimal fetal positioning, in particular OP position, there are additional corrective techniques available. The assessment of techniques aimed at correcting the malposition of the fetus, used in intrapartum setting, does not indicate their high effectiveness (Table 1). The use of methods such as turning the woman to the position on all fours, using the rebozo sling, using birthing ball, laying in the side lateral position significantly improve the comfort of the woman in labour, but very rarely lead to the desired rotation of the fetus to the optimal position (Kariminia et al., 2004; Cohen and Thomas, 2015). Manual fetal rotation performed during vaginal examination in the second stage of labour seems to be the

Tab. 1. Techniques used to correct fetal malposition

Position on all fours *(Hands-and-knees position)* Two recent systematic reviews assessing the use of this position to improve fetal positioning did not confirm its effectiveness in achieving an optimal vertex rotation, both immediately after the intervention and in the second stage of labour. There was also no effect on reducing rates of cesarean section (CS), use of epidural, severe perineal trauma, maternal satisfaction and Apgar scores less than seven in five minutes.	(Barrowclough et al., 2022; Levy et al., 2021)
Side lateral position Based on the studies included in the review, use of this position may have little or no effect on reducing rates of CS, instrumental births and maternal satisfaction, but this evidence is uncertain and further research is needed.	(Barrowclough et al., 2022)
Manual internal rotation A review by Burd et al. (2022) shows that prophylactic manual rotation of the fetus from the occipitoposterior (OP) or occipitotransverse (OT) position, confirmed by ultrasound (USS), did not increase the rate of spontaneous vaginal labour compared with no manual rotation. Manual vertex rotation from a OP position during the early second stage of labour was associated with a significant 12.8-minute reduction in length, without changes in maternal and fetal outcome. No difference were found for vertex rotated from an OT position or for a combination of those positions. Berthold et al. (2022) in the review found that manual rotation was associated with an increased rate of spontaneous vaginal delivery: 64.9% vs 59.5% (RR, 1.09; 95% CI, 1.03-1.16; P =.005; 95% prediction interval, 0.90-1.32). Manual rotation was associated with spontaneous vaginal labour only for the OP position (RR, 1.08; 95% CI, 1.01-1.15). Additionally, it was associated with a reduction in OP or OT position at labour (RR, 0.64; 95% CI, 0.48-0.87) and the rates of episiotomy (RR, 0.84; 95% CI, 0.71- 0.98). The groups did not differ significantly in the rates of CS, instrumental labours and neonatal outcomes.	(Bertholdt et al., 2022; Burd et al., 2022)
Lithotomy position *(Classic delivery position)* This systematic review found no significant association between lithotomy position and fetal rotation from OP to occipitoanterior (OA) position during the first stage of labour.	(Lee et al., 2021)
Sims position *(Lateral recumbent position)* In labours where womens' chosen position was the Sims position, fetus with vertex in OP position rotated to the OA in 50.8% of cases, while in the free position group rotation occurred in 21.7% of cases (p=.001). The rate of vaginal labour was significantly higher in the Sims group compared to the free position group (84.7% vs 68.3%, p= .035).	(Bueno-Lopez et al., 2018)
Rebozo Technique The research contains a description of techniques offered to woman in labour to correct fetal malposition. However, no clinical studies have been conducted to assess the effectiveness of this technique. Authors advices, additional research is needed to continue to explore the traditional use of this tool and compare its effectiveness with other fetal positioning interventions during labour.	(Cohen and Thomas, 2015)
Birthing ball and Peanut ball The use of the peanut ball increase the comfort and imitate vertical positioning by widening the pelvic outlet for women giving birth. A recent research found that the use of a birthing ball in labour significantly reduces maternal pain in labour by 1.7 points on a standard 1 to 10 visual analogue scale (MD, -1.70 points; 95% CI, -2.20 to–1.20). The use of the birthing ball did not significantly affect the mode of completion of the birth or frequency of the other obstetric events. There is a need for further research assessing the effectiveness of using a birthing ball to encourage optimal fetal positioning.	(Grenvik et al., 2023)
Walcher's position A technique described at the end of the 19th century, used in difficulties in descending of the head into the birth canal. The woman giving birth is shuffled to the edge of the bed and her legs are hanging freely so that the weight of the legs can relieve the symphysis pubic and allow the fetal head to enter the pelvis. However, there is a lack of scientific research confirming the effectiveness and safety of this method.	(Tully, 2016)
Acupuncture and moxibustion Compared to the control group, moxibustion significantly increased the possibility cephalic presentation at birth (RR = 1.39; 95% CI = 1.21-1.58). The effect of acupuncture in correction of breech position after sensitivity analysis was inconsistent compared to control group. The evidence of the outcome in using moxibustion and acupuncture was synergistic in correcting breech position (RR = 1.53; 95% CI = 1.26-1.86).	(Liao et al., 2021)

p–statistical significance, RR–relative risk, MD–mean difference

most effective technique, but invasive. Its legitimacy is also undermined due to the fact that a significant number of foetuses' approaching into the pelvis in the OP position rotate spontaneously to the OA position in the plane of the greatest pelvic dimension (Broberg and Caughey, 2021; Burd et al., 2022).

Summary

Is it justified to change fetal position?

The decision to manipulate fetal position requires careful diagnostics. It is necessary to analyse whether delayed progress of labour actually results from malposition of the fetus in the birth canal or from other factors determining the progress of labour like uterus activity, consistency of soft tissues or maternal excessive stress and tension. It should be noted that these factors are in constant relationship with each other. Changing or improving the functioning of one of the factors will affect the others. However, it is unlikely to be possible to identify the factor that originally caused the cascade of events.

An ability to identify by the midwife or the doctor of whether a given method of fetal head engagement will cause obstruction and lack of progress in labour or is it the favourable option for the shape of a pelvis requires knowledge, extensive experience and still there is no certainty that the diagnosis will be accurate. In the absence of evidence based confirmation of the effectiveness of methods for correcting the position of the fetus and the lack of experience or knowledge in labour mechanism itself, it would be advised to accept such a position and direct actions towards optimizing the functioning of other factors determining the progress of labour.

Therefore, it is beneficial to use non-invasive techniques and encourage birthing woman to obtain position, in which the pelvis increase its capacity in various plans, depending on the stage of labour.

The emotional state of a woman during the labour is also an important factor determining its progress, all actions aimed at reducing pain and lowering anxiety can bring positive effects visible in the anatomical area. This is related to the strong correlation between mental tension and muscle tension.

Redirecting the actions of medical professionals to improve the position of the fetus or the position of the mother to facilitate optimal relaxation of the woman in labour, both in the emotional and myofascial area, can lead to satisfactory progress of labour, as well as a positive experience of the woman.

In antenatal education and medical staff training, it is important to determine the scope of human influence. Awareness of limitations in this area helps build an attitude of acceptance towards the processes taking place during childbirth. The attention and direction of activities of people responsible for creating maternity care systems should be aimed at facilitating conditions for the implementation of the above-mentioned optimizations.

Despite the lack of scientific evidence indicating the effectiveness of the above-mentioned techniques, it is worth using them because they are safe, non-invasive methods that do not cause any side effects. Additionally, women are placed in the centre of care, which is an important element in a positive childbirth experience.

When communicating with a woman in labour who has been diagnosed with a suboptimal fetal position, it should be avoided using the terms indicating an abnormality. When estimating a long, difficult labour, the focus should diverse towards activities aimed at creating conditions to build a positive experience, ie. "one to one" care, appropriate pain management, using the support of a doula, presence of birthing partner, meeting the essential needs of the woman giving birth, labour ward staff familiar with the above-mentioned techniques, etc.

In case of prolonged labour, it is crucial for midwife to identify when and how to support the mental condition of the woman giving birth, and encourage methods to optimize the fetal position and pelvic space.

An awareness of the natural moments of slowdown in labour or even lack of progress in labour is essential (Weckend, Davison and Bayes, 2022). It is advisable to accept situations in which not action solves the problem, but the time and patience. Accepting not everything can be controlled in labour protects against excessive interventions, even if they are non-invasive.

Bibliography

Ahmad, A. *et al.* (2014). Association between fetal position at onset of labor and mode of delivery: a prospective cohort study. *Ultrasound in Obstetrics & Gynecology, 43*(2), 176–182. https://doi.org/10.1002/uog.13189

Barrowclough, J.A. *et al.* (2022). Maternal postures for fetal malposition in labour for improving the health of mothers and their infants. *The Cochrane Database of Systematic Reviews*, *8*(8),CD014615. https://doi.org/10.1002/14651858.CD014615

Barth Jr, W.H. (2015). Persistent occiput posterior. *Obstetrics & Gynecology*, 125(3), 695–709.

Bertholdt, C. *et al.* (2022). Manual rotation of occiput posterior or transverse positions: a systematic review and meta-analysis of randomized controlled trials. *American Journal of Obstetrics and Gynecology, 226*(6), 781–793. https://doi.org/10.1016/j.ajog.2021.11.033

Broberg, J.C. and Caughey, A.B. (2021). A randomized controlled trial of prophylactic early manual rotation of the occiput posterior fetus at the beginning of the second stage vs expectant management. *American Journal of Obstetrics & Gynecology MFM, 3*(2),100327. https://doi.org/10.1016/j.ajogmf.2021.100327

Bueno-Lopez, V. *et al.* (2018). Efficiency of the modified Sims maternal position in the rotation of persistent occiput posterior position during labor: A randomized clinical trial. *Birth (Berkeley, Calif.), 4*5(4), 385–392. https://doi.org/10.1111/birt.12347

Burd, J. *et al.* (2022). Prophylactic rotation for malposition in the second stage of labor: a systematic review and meta-analysis of randomized controlled trials. *American Journal of Obstetrics & Gynecology MFM, 4*(2),100554. https://doi.org/10.1016/j.ajogmf.2021.100554

Calais-Germain, B. and Vives Parés, N. (2009). *Preparing for a Gentle Birth: The Pelvis in Pregnancy*. Rochester: Healing Atrs Press.

Cohen, S.R. and Thomas, C.R. (2015). Rebozo Technique for Fetal Malposition in Labor. *Journal of Midwifery & Women's Health, 60*(4), 445–451. https://doi.org/10.1111/jmwh.12352

Grenvik, J.M., Coleman, L.A. and Berghella, V. (2023). Birthing balls to decrease labor pain and peanut balls to decrease length of labor: what is the evidence?. *American Journal of Obstetrics and Gynecology*, S0002-9378(23)00115–1. https://doi.org/10.1016/j.ajog.2023.02.014

Kariminia, A. *et al.* (2004). Randomised controlled trial of effect of hands and knees posturing on incidence of occiput posterior position at birth. *British Medical Journal, 328*(7438),490. https://doi.org/10.1136/bmj.37942.594456.44

Lee, N. *et al.* (2021). Maternal positioning with flexed thighs to correct foetal occipito-posterior position in labour: A systematic review and meta-analysis. *Midwifery, 9*9,103008. https://doi.org/10.1016/j.midw.2021.103008

Levy, A.T. *et al.* (2021). Hands-and-knees posturing and fetal occiput anterior position: a systematic review and meta-analysis. *American Journal of Obstetrics & Gynecology MFM*, *3*(4),100346. https://doi.org/10.1016/j.ajogmf.2021.100346

Liao, J.-A. *et al.* (2021). Correction of Breech Presentation with Moxibustion and Acupuncture: A Systematic Review and Meta-Analysis. *Healthcare, 9*(6),619. https://doi.org/10.3390/healthcare9060619

Morales, N. (2019). First Stage: The Division of a Labor. *Midwifery Today*, 21 March. (From:) https://www.midwiferytoday.com/mt-articles/first-stage-the-division-of-a-labor/ (Access: 16 April 2023).

Sirviö, R. and Ohlsson, M. (2021). Barnmorskors erfarenheter av att tillämpa Spinning Babies vid förlossning: En kvalitativ intervjustudie.' (From:) https://www.diva-portal.org/smash/get/diva2:1518054/FULLTEXT01.pdf (Access: 16 April 2023).

Spiteri, G. (2019). The Spinning Babies® Approach. *Malta Midwives Journal, 14*, 17–19.

Sutton, J. (2001). *Let Birth be Born Again!: Rediscovering & Reclaiming Our Midwifery Heritage*. Birth Concepts UK.

Tritten, J. (2017). On Posterior Conversations from Facebook. *Midwifery Today, 121*, 24–26.

Tully, G. (2012). Arm behind the back: a shoulder dystocia complication. *Midwifery Today with International Midwife*, *103*, 18–19, 69.

Tully, G. (2015). Posterior Perspective. *Midwifery Today with International Midwife, 114*, 8–11.

Tully, G. (2016). Opening the Pelvic Brim with Walcher's Position. *Midwifery Today with International Midwife, 117*, 26–27.

Waechter, M. (2018). Labor: Short and Long; Physical and Mental. *Midwifery Today, 1* June. (From:) https://www.midwiferytoday.com/mt-articles/labor-short-and-long-physical-and-mental/ (Access: 16 April 2023).

Wainer, N. (2019). Leaving the Farmhouse: Musings on the First Stage of Labor. *Midwifery Today*, 26 March. (From:) https://www.midwiferytoday.com/mt-articles/leaving-the-farmhouse/ (Access: 16 April 2023).

Weckend, M., Davison, C. and Bayes, S. (2022). Physiological plateaus during normal labor and birth: A scoping review of contemporary concepts and definitions. *Birth, 49*(2), 310–328. https://doi.org/10.1111/birt.12607

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Respecting the rights of breastfeeding women in Poland. Survey results[1]

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Abstract: Poland has a fairly well-constructed law which supports and protects breastfeeding women. It appears, however, that it is not adequately respected, with the exception of break time for nursing mothers at work. The goal of the conducted research was to evaluate whether Polish women are aware of their rights during breastfeeding and how well respected their rights are in reality.
The research was correlated with an educational campaign entitled "Karmię! Mam prawo!" („I breastfeed! I have the right!") conducted in April and May 2023. As many as 3183 mothers participated in the research, of whom 97% (3089) were breastfeeding. It turned out that 1/3 of women knew, but also 1/3 of women didn't know, that they have rights as breastfeeding mothers. As many as 47.2% (1502) of surveyed women were refused certain medical services due to breastfeeding their child. 22.2% (708) of mothers felt discriminated because of breastfeeding, 53% (1702) were recommended an elimination diet, while 46.7% (1488) were suggested to stop breastfeeding without important reasons. Medical care in hospitals was insufficient for 39.4% (1155) of women. 69.5% (2211) of children were additionally fed with breast milk substitutes in hospitals and 25.1% (799) of their mothers were not asked for consent for this intervention. 69.7% (2219) of mothers have seen advertisements of formula, mostly in hospitals and healthcare centres. Although many women's rights are not respected, almost 67.5% (2150) of mothers declare that they would not know what to do or would decline to act in order to assert their rights or claim compensation for the harms suffered. The educational campaign led by the Centre for Lactation Science (polish Centrum Nauki o Laktacji) aims to raise awareness among women about their rights, leading to more assertiveness in claiming them. By empowering women with this knowledge, we can effectively put pressure on medical institutions to abide by the law. Ultimately, this will lead to improved public health in general.
Keywords: breastfeeding, women's rights, eduacation of women

Introduction

Poland has a well-constructed law which supports and protects breastfeeding women. However, it does not seem to be adequately respected, with the exception of the right to take breaks from work to breastfeed a child. The latter is guaranteed in the Labour Code, and other rights related to breastfeeding are mainly enshrined in regulations and proffessional codes. Different legal frameworks may explain such difference in respecting the law. It happens quite often that breastfeeding women are not treated equally

1 Article in polish language: Przestrzeganie praw kobiet karmiących piersią w Polsce. Wyniki badania ankietowego https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Nago.pdf

with other mothers: they are denied certain benefits because of breastfeeding; they are subjected to outdated, non-evidence-based medical practices e.g., elimination diets or forceful breast massages. Perinatal care is not fully implemented according to the provisions of the law either, hospital and primary care is often inadequate, and specialized lactation care is not reimbursed or readily available. Mothers are sometimes encouraged to feed their children with breastmilk substitutes without specific indications, and those who feed their children for more than a year are often subject to critical remarks from family and medical staff. Considering the value of breastfeeding for public health, the Centre for Lactation Science (polish: Centrum Nauki o Laktacji – CNoL) attempted to assess the situation of Polish mothers in the context of awareness and respect for their rights, and at the same time conducted an educational campaign among mothers.

1. Aims, materials, and methods

The survey aimed to assess whether women in Poland know what their rights are during breastfeeding and what the reality is in respecting those rights. The survey was conducted in April and May 2023 by anonymous questionnaire shared online on the Internet – including the Centre for Lactation Science website and in groups for breastfeeding mothers on social media. A total of 3183 women living in Poland responded, of whom 97% (3089) had breastfed any of their children, and 2.9% (91) had attempted to do so after giving birth. Most of the respondents were aged 32-40 (48.5% – 1,544), 39.5% (1,258) were aged 27-31, 7.3% (231) of the respondents were under 26, and the least numerous were women over 42 (4.7% – 150).

The study was dominated by female residents of rural areas (27.1% – 862) and urban agglomerations with a population of at least 500 thousand (26% – 826). The remaining women resided in small cities (less than 50 thousand residents) – 17.3% (550), medium-sized cities (50-100 thousand residents) – 11.7% (373), and large cities (100-500 thousand residents) – 18% (572). This distribution of place of residence gives grounds for considering the survey group as representative of the country.

All the questions in the survey were based on the legal acts in force in Poland, which cover women in the perinatal period as well as all patients and citizens. Among other things, women were asked about the observance of their rights under the Regulation of the Minister of Health, on the Organizational Standard of Perinatal Care, Act of Food and Nutrition Safety, Act on Patient's Rights and the Patient's Rights Ombudsman, so called Act on Equal Treatment[2], Act on the Profession of medical doctor and dentist, the Constitution of the Republic of Poland, the Medical Code of Ethics, the Code of Ethics for Professional Nurses and Midwives of the Republic of Poland, and the Labour Code.

2. Results

Among the 3183 mothers surveyed, 26% (828) do not know that they have any specific rights when breastfeeding their child. 29.2% (931) of women declare that they know their rights well and 44.7% (1424) know only some of their rights. 67.5% (2150) of mothers declare that they do not know what they would do or that they would not take action to claim their right or compensation for harm suffered. Some laws are well respected, but there are areas where the laws are being notoriously broken.

2.1. The right to medical treatment

"Either we treat you and you wean your baby or we don't treat you". – This is a phrase that breastfeeding women have heard for decades. It was putting the patient in front of a difficult choice, and in some conditions, such as breast inflammation or depression, acting to worsen the course of the disease. Although knowledge is now readily available and recommendations

2 We are referring to the Act of December 3, 2010 on the implementation of certain provisions of the European Union on equal treatment (Journal of Laws 2010 No. 254 item 1700).

from scientific societies have changed, old practices unfortunately persist. As many as 47.2 percent (1,502) of the mothers surveyed had heard a denial of some service because they were breastfeeding their child. This was mainly concerning prescribing a medicine or undertaking a treatment, performing a cosmetic or dental procedure, and in a small percentage, but performing a surgical procedure or a protective vaccination. Surprisingly, 192 women (6%) were not allowed to have an imaging examination, which is also necessary in breast conditions during lactation.

We know that the vast majority of medicines and medical procedures are safe for breastfed babies and do not require breastfeeding to be interrupted. Sometimes the disease affects the mammary gland and the problem needs to be diagnosed quickly to undertake appropriate treatment. Also, preventive examinations should be carried out as normal, without delay. A doctor who has any doubts about the treatment of a breastfeeding woman has the opportunity, indeed the duty, to seek up-to-date knowledge on the subject.

Many times, the ease of the proposal to 'wean the baby' is due to a lack of awareness of the risks associated with such a process. The cessation of lactation can be a difficult process to rebuild. In addition, it is detrimental to the baby's health – the sudden introduction of other foods based on antigenically foreign proteins is not optimal for infant nutrition. For the mother, on the other hand, it is a major stress and risk, including stasis, breast inflammation, or weakened lactation. If it is necessary to temporarily stop breastfeeding (although the vast majority of pharmacological measures do not require this), it is necessary to maintain lactation by expressing milk and feeding the baby with milk that has been stored previously, e.g. from a period of excessive milk production (home milk bank).

Breastfeeding women have the same rights to diagnosis, treatment, and prevention as any other citizen of the Republic of Poland. This is stated in the Medical Code of Ethics [Resolution of the Extraordinary Second National Congress of Physicians of 14 December 1991 on the Code of Medical Ethics Art.3. – Lekarz.1991.12.14]: "A doctor, both in time of peace and in time of war, should perform their duties with respect for human beings regardless of age, sex, race, genetic endowment, nationality, religion, social affiliation, material situation, political views or other conditions."

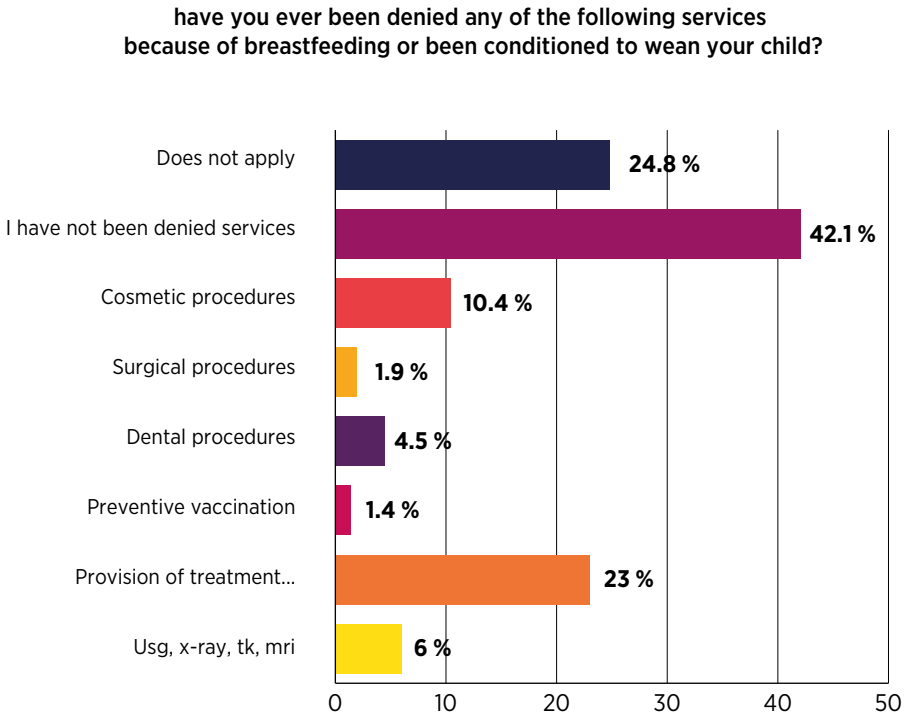

Figure 1. Breastfeeding and denial of benefits.

In addition, according to Article 6 of the Act on Patient's Rights and the Patient's Rights Ombudsman (Act of 6 November 2008 on Patient's Rights and the Patient's Rights Ombudsman – Art.6 – Journal of Laws 2022.0.1876), the patient has the right to health services corresponding to the requirements of current medical knowledge. If a doctor or any member of the medical staff refuses to perform an examination, medical procedure, or treatment on a woman, they should give a justification for their decision supported by scientific research and propose an alternative procedure that is safe for both mother and child. If, on the other hand, "the scope of these [professional] activities exceeds the skills of the doctor, then they should turn to a more competent colleague" (Resolution of the extraordinary Second National Congress of Physicians of 14 December 1991 on the Medical Code of Ethics – Art.11 – Lekarz.1991.12.14).

"A doctor must not use methods considered by science to be harmful" – reads the KEL (Resolution of the Extraordinary Second National Congress of Physicians of 14 December 1991 on the Medical Code of Ethics – Art.59). Unfortunately, the practice of forcible massage of inflamed breasts, taken from veterinary medicine, was present in Polish gynecology and obstetrics textbooks for years. However, worldwide data did not confirm its effectiveness, and Polish studies proved its high harmfulness (almost 50% increase in the risk of breast abscess) (Żukowska-Rubik, Raczek-Pakuła, 2015). Despite the absence of such recommendations for decades, this erroneous management of lactation disorders still occurs. The use of forceful breast massage is a violent procedure, not used in Western medicine and leads to serious complications, (Mitchell, Johnson, Rodríguez, Eglash, Scherzinger, Zakarija-Grkovic, Cash, Berens, Miller, 2022). Unfortunately, Polish breastfeeding mothers subjected to this procedure, which is incompatible with current medical knowledge, still end up in the offices of physicians and lactation consultants – the performance of painful breast massage was reported by 130 women (4.1%) in a survey of the Centre for Lactation Science.

2.2. The right to equal treatment

Polish mothers experience discrimination in many areas of their lives. Based on the results of the CNoL survey, it is known that 22.2% (708) of mothers felt discriminated against because of breastfeeding and 14.5% (463) experienced verbal abuse or unpleasant comments on the Internet. For long-feeding mums, data show that criticism and unpleasant comments are experienced by more than 60% of women – mainly from family, friends, and health professionals.[3]

Article 32 of the Constitution of the Republic of Poland (Constitution of the Republic of Poland of 2 April 1997 Art.32 – Journal of Laws 1997 R. NR 78, POZ. 483) states clearly: "All are equal before the law. Everyone has the right to equal treatment by public authorities. No one shall be discriminated against in political, social or economic life for any reason". There is no direct reference to breastfeeding women in Polish law[4], however, according to the article mentioned above, the mother should also be treated equally and fairly by public authorities.

Breastfeeding is a natural process, beneficial both for the health of the mother and the child and, in the long term, from a public health perspective, for society as a whole. Current Polish legislation does not place sufficient emphasis on the legal protection of breastfeeding women, in contrast to the UK's The Equality Act (The Equality Act 2010, Section 13.6a), the provisions of which prohibit discrimination against

3 Nehring-Gugulska, M., Bębenek, D. *Długie karmienie piersią. Zanim coś powiesz, spójrz spokojnie na wyniki badań.* (From:) https://cnol.kobiety.med.pl/pl/karmie-dlugo/ (access: 09.07.2023).

4 It is noteworthy at this point that Article 68(3) of the Polish Constitution proclaims that it is among the special duties of the state to take care of the health of pregnant women and children. Although, as noted, Polish statutory provisions do not directly point to the "right to breastfeed," it is nevertheless necessary to emphasize that the Polish legislator explicitly refers to a woman's special rights both during the period of awaiting a child and after its birth. In addition to the constitutional norm cited here, it is necessary to draw attention to Article 34(2) of the Law on Patients' Rights and the Ombudsman for Patients' Rights, which stipulates that "The additional nursing care referred to in paragraph 1 is understood to be care that does not consist in the provision of health care services, including care provided to a minor patient or a patient with a certificate of significant disability, and to a patient in the conditions of pregnancy, childbirth and postpartum."

women on the grounds of breastfeeding without time limitation and specify in detail that breastfeeding women must not be humiliated, criticized, denied services or treated less favourably, and indicate where to claim their rights and what body is responsible for it. Importantly, private entities are also covered by the prohibition of discrimination against breastfeeding mothers regardless of the age of the child and are liable in case of violations. The Ombudsman receives cases of discriminated mothers and expresses a clear position condemning such actions (the case of the breastfeeding policewoman in 2016, the case of the breastfeeding mother in a restaurant in 2017).

2.3. The right to breastfeed in public spaces

According to the CNoL survey, 7.6% (241) of breastfeeding women have experienced rude comments in a public place, 7.3% (231) have been offered to feed their baby in the toilet and 2.4% (76) have heard a suggestion to leave the place or have been prohibited from feeding in public. Separating the long-feeding mothers from this group, it can be seen that 60% of them declared that they feed their children wherever they want, with no restrictions of place.[5]

Women in Poland have the right to breastfeed in public places. This is the position of the Government Plenipotentiary for Equal Treatment: "A woman has the right to breastfeed freely in public places. The provisions of Polish law do not prohibit breastfeeding in a public place (restaurant, shopping centre, or public transport). A trader who puts pressure on a breastfeeding woman to change her place of breastfeeding is acting unlawfully. A breastfeeding mother who is asked out has the right to claim compensation from the owner of the establishment under the provisions of the Act of 3 December 2010 on the implementation of certain provisions of the European Union on equal treatment, as such behaviour may be considered a manifestation of gender discrimination. The provision of Articles 12 and 13 of the same Act stipulates that in the case of violations of the principle of equal treatment (...), there is a claim for compensation."[6]

Furthermore, in the Ombudsman's assessment: "shaming a mother who feeds her child in a public place is an unlawful form of unequal treatment on grounds of sex. Breastfeeding in a place and at a time convenient for mother and child is not only lawful but advisable for the health of the child. According to the recommendations of the World Health Organisation, it is advisable to breastfeed a child for up to 6 months and continue until the child is 2 years old and beyond. The Ministry of Health makes it clear that breastfeeding in public is part of social life. Making women believe that breastfeeding is something to be ashamed of, that they cannot breastfeed at a place and time convenient for themselves and their child, can lead to women's participation in society being restricted or to their feeding time being reduced".[7]

2.4. The right to high-quality perinatal care

The right to perinatal care is guaranteed by the Regulations of the Minister of Health on the organizational standard of perinatal care (SOOO) (Regulation of the Minister of Health of 16 August 2018 on the organizational standard of perinatal care Journal of Laws. 2018 item 1756). The results of the CNoL survey show that, on the one hand, these rights are not fully respected in Poland and, on the other hand, only 1/3 of women declare that they would take action if their right to breastfeed was being violated.

The SOOO guarantees the following rights concerning lactation care:

2.4.1. Before labour

Every pregnant woman has the right to free antenatal education organized in the form of individual or group classes. Its program should include in-

5 Nehring-Gugulska, M., Bębenek, D. *Długie karmienie piersią. Zanim coś powiesz, spójrz spokojnie na wyniki badań*. (From:) https://cnol.kobiety.med.pl/pl/karmie-dlugo/ (access: 09.07.2023).

6 *Oświadczenie pełnomocnika rządu do spraw równego traktowania w sprawie karmienia piersią w miejscach publicznych*. (From:) https://topfreedom.pl/karmienie-piersia/ (access: 9.07.2023).

7 *Zawstydzanie matki karmiącej dziecko w miejscu publicznym jest niezgodną z prawem formą nierównego traktowania - wyrok w sprawie do której przyłączył się RPO*. (From:) https://bip.brpo.gov.pl/pl/content/zawstydzanie-matki-karmi%C4%85cej-dziecko-w-miejscu-publicznym-jest-niezgodn%C4%85-z-prawem-form%C4%85-nier%C3%B3wnego (access: 09.07.2023).

formation on breastfeeding and lactation support, including solutions to lactation problems (SOOO IV.5.2). The questionnaire asked, "Did you receive information on breastfeeding in the birthing school or antenatal education from the midwife?" 79.5% (2,531) of the women had attended antenatal classes, of whom half felt well prepared for breastfeeding. 202 women (7.9%) testified that the topic of natural breastfeeding was not addressed there at all. Despite attending the antenatal classes, half of the mothers therefore did not feel prepared for breastfeeding. Antenatal care is funded by healthcare contributions – it is reasonable to require key issues to be addressed.

2.4.2. At the hospital

After childbirth, mothers should be provided with skin-to-skin contact with their baby within the first 2 hours and, during this time, with the help of the staff, breastfeed the baby (SOOO XIII.1.8). The mother should also be instructed in the correct position and method of breastfeeding the baby (SOOO XIII.3.2). In the CNoL study, breastfeeding mothers were asked the question: "In the hospital after delivery, did the staff show you how to properly breastfeed your baby?" The majority of women received such instruction (70.6%. – 2220), but despite this, 52% (1155) of the mothers in this group still had problems with accessioning. 22.8% (718) of mothers were not shown how to properly breastfeed their baby, despite the reported need.

2.4.3. After leaving the hospital

After leaving the hospital, the woman should be under the care of a midwife who "shall make no fewer than 4 visits (the first visit taking place no later than 48 hours after the midwife receives notification of the birth of the child) (SOOO XIV.8)". During this visit, the midwife, among other things, "encourages the mother to breastfeed naturally, provides lactation advice including assessment of the anatomy and physiology of the mother's breast and the baby's mouth, assessment of feeding technique, suckling skills and effectiveness of feeding and risk factors for lactation failure, and assists in solving lactation problems" (SOOO XIV.4.10.7). 79.8% (2540) of the mothers surveyed had lactation difficulties and needed help. As many as 74.9% (1,903) of them obtained it. Of those who received help from a midwife for their lactation problems, 61.2% (1165) testified that it was effective. In 38.8% (738) it was insufficient.

The main purpose of the SOOO is to provide every pregnant woman with the highest level of safety and health care. It is advisable to know its objectives in order to be aware of one's rights and to ask for them to be fulfilled.

2.5. The right to refuse formula feeding

Available research shows that at least half of Polish newborns are fed infant formula in the hospital (Nehring-Gugulska, Sztyber, Żukowska-Rubik et al., 2015). In turn, according to a CNoL study, this applies to up to 69.5% (2211) of newborns – while a maximum of some dozen percent of newborns require it for medical reasons (Walker, 2014).

Even if supplemental feeding is necessary, infant formula should not be the food of first choice. The Organisational Standard of Perinatal Care (SOOO) indicates appropriate practice: "If ineffective breastfeeding is identified, the problem should be diagnosed based on an assessment of suckling skills and procedures should be implemented following current knowledge of lactation to enable the newborn to be successfully fed with breast milk from the mother's breast and, if this is not possible, with pumped breast milk." (SOOO XIII 3.4)

If a newborn needs to receive additional feedings, hospital staff is required to provide lactation assistance, including pumping and administering breast milk (including colostrum). The assistance guaranteed to mothers by SOOO concerns:

- Education on proper breastfeeding practices,
- instruction on manual colostrum pumping in the first few days (especially in the first day of life, a newborn needs only a few millilitres of food per serving, and in a situation where the baby does not attach to the breast or is separated from the mother, this need can usually be met by pumping colostrum),

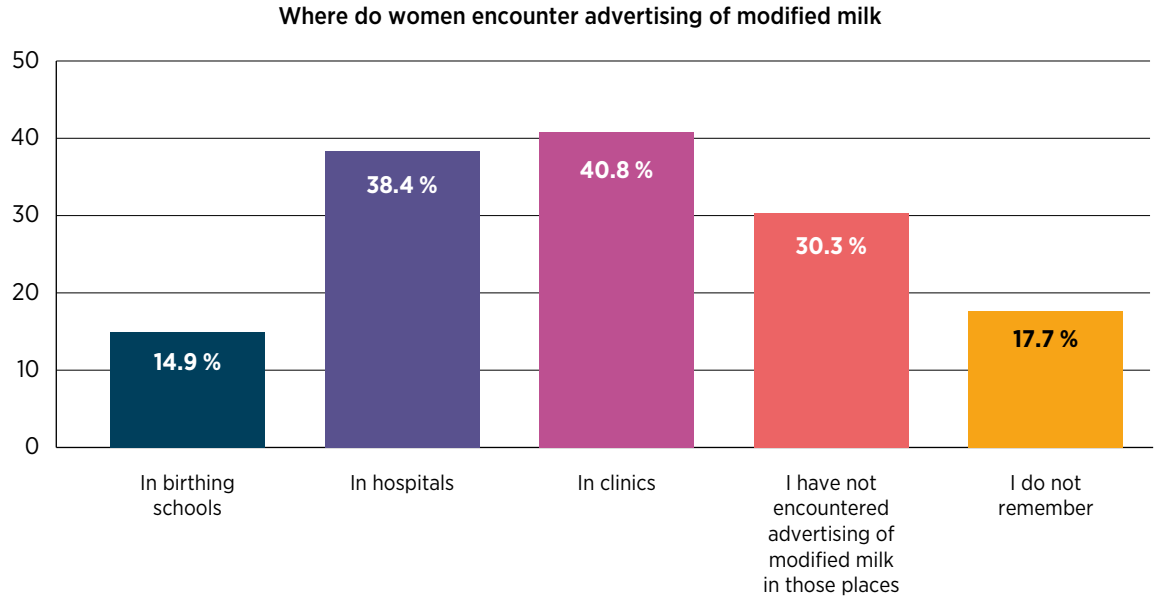

Figure 2. Advertisements for modified milk in medical facilities.

- provision of appropriate equipment for expressing milk and assistance in its use,
- provision of milk from a human milk bank for newborns born prematurely.

When, despite taking proper measures to initiate and stimulate lactation, feeding is ineffective and there is a shortage of expressed breast milk, a premature and sick baby should receive milk from a milk bank. If a healthy and term newborn, based on a doctor's decision, needs to be fed with modified milk, the staff is obliged to provide the mother with information about this and record this fact in the medical record. (SOOO XIII 3.5)

Medical personnel must not give formula without providing information to the child's caregiver and without medical justification. The CNoL survey found that 36.1% (799) of mothers were not asked permission to give formula to their baby, 37% (1177) felt encouraged to give formula, and 20.3% (645) of mothers were told that they do not have enough milk.

The obligation to provide information also stems from general norms, namely the Act on Patient's Rights and the Patient's Rights Ombudsman (Act of November 6, 2008 on Patients' Rights and the Patient's Rights Ombudsman – Art.9(2) – Journal of Laws 2022.0.1876): "a patient, including a minor who is 16 years of age or older, or his/her legal representative, has the right to obtain from a physician accessible information about the patient's health condition, diagnosis, proposed and possible diagnostic and therapeutic methods, foreseeable consequences of their application [...]". What does this mean in the context of lactation? The mother of a newborn who needs additional feeding should be told by the staff for what reason this is happening, what measures are proposed, and what the consequences will be. Once the caregiver is informed – she can decide under Article 16: "The patient has the right to consent to the provision of certain health services or to refuse such consent, having been informed to the extent specified in Article 9." In the case of a newborn, of course, the reference is to parental consent.

Polish mothers see advertisements of infant formula in clinics (40.8% – 1299), in hospitals (38.4% – 1223), and in antenatal classes (14.9% – 473). Following the European Commission Directive 2006/141/EC implemented into Polish law in 2006 (Act of August 25, 2006 on food and nutrition safety Art. 25.2 Dz.U.2022.2132) and with the Regulation of the Ministry of Health on special-purpose foodstuffs (Regulation of the Minister of Health of September 16, 2010 on special-purpose foodstuffs Chapter 2 §15-20- Dz.U. 2010 No. 180 item 1214), advertising of infant

formula products is severely restricted. In addition, the SOOO prohibits such practices on the premises of facilities providing prenatal education and care for women during pregnancy, after childbirth, and for newborns. Parents, therefore, should not be given infant formula milk-related leaflets, samples, or paraphernalia at antenatal classes, clinic, or hospital. Unfortunately, 28.8% (917) of mothers get them in the hospital.

Why should it be necessary to fight for the right to feed newborns and infants with mother's milk and to limit supplementation with breast milk substitutes as much as possible?

- If you do not stimulate lactation with a breast pump during formula feeding, the chance of successful lactation decreases
- For the mother, there is an increased risk of lactation disruption and failure with all the consequences: among others, a lack of health benefits of breastfeeding for mother and child, an increased risk of postpartum depression (Pope, Mazmanian, 2016) an economic burden due to the cost of modified milk (Eidelman, Schanler, et al., 2012)
- According to recent reports, feeding modified milk in the first week of a baby's life increases the risk of developing IgE-mediated allergies in breastfed infants. According to the recommendations of the European Academy of Allergy and Clinical Immunology, this practice should be avoided and efforts should be made to feed infants only breast milk (Meyer, Chebar Lozinsky, Fleischer, Vieira, Du Toit, Vandenplas, Dupont, Knibb, Uysal, Cavkaytar, Nowak-Wegrzyn, Shah, Venter, 2020).

2.6. The right to a diverse and balanced diet

It would seem that the right to eat what you like is a basic human right. Unfortunately, it is denied to breastfeeding mothers, and all too often. Eliminating products from the diet of a breastfeeding mother is a very popular recommendation, and not based on any scientific rationale. According to a survey conducted by the Centre for Lactation Science (Żukowska-Rubik, Nehring-Gugulska, 2016-2018), half of nursing mothers heard the recommendation to avoid certain products already in the hospital after delivery. Diets are also readily recommended by midwives (50%), paediatricians (43%) and family doctors (21%). As a result, according to a study by Karcz and Lehman (Karcz, Lehma, Królak-Olejnik, 2020), as many as 29% of women follow an elimination diet while breastfeeding. Mothers often eliminate up to a dozen products. What are the reasons for introducing such a diet?

- Concern about lactose from dairy products
- Baby's colic
- Food allergy prevention
- Unsubstantiated suspicion of food allergy (often based on harmless phenomena related to the child's development, such as skin changes with a hormonal basis, physiological food volatilization, stool colouring and mucus admixture without clinical significance, and child anxiety).

It is important to be aware that breast milk is formed in the breasts de novo and is the best possible food for the infant. Lactose consumed by the woman (this milk sugar is formed in the mammary gland regardless of how much cow's milk and its products are consumed by the breastfeeding woman) does not penetrate the breast milk, nor does it contain the gases produced by the mother's intestines after eating so-called bloating products. There is also no indication for the use of diet or food allergy prevention, on the contrary, it is harmful (Halken, Muraro, de Silva, Khaleva, Angier, Arasi, Arshad, Bahnson, Beyer, Boyle, du Toit, Ebisawa, Eigenmann, Grimshaw, Hoest, Jones, Lack, Nadeau, O'Mahony, Szajewska, Venter, Verhasselt, Wong, 2021). Minimal amounts of digested foreign proteins, such as cow's milk or egg proteins, can be found in breast milk (Kosmeri, Rallis, Kostara, Siomou, Tsabouri, 2022). Their presence is likely to be beneficial for the child, as through contact with them (under the cover of breast milk, which has a beneficial effect on the child's gut and immune system), the child's body has a chance to develop immune tolerance (Chinthrajah, Hernandez, Boyd et al., 2016) . Mean-

while, according to a recent survey conducted by the Centre for Lactation Science, 39.1% (1,143) of women were advised to avoid allergenic products, and just under 35.9% (1,143) were told to avoid bloating foods and lactose.

The latest Global Allergy and Asthma European Network guidelines (Muraro, de Silva, Halken, Worm, Khaleva, Arasi, Dunn-Galvin, Nwaru, De Jong, Rodriguez Del Rio, Turner, Smith, Begin, Angier, Arshad, Ballmer-Weber, Beyer, Bindslev-Jensen, Cianferoni, Demoulin, Deschildre, Ebisawa, Fernandez-Rivas, Fiocchi, Flokstra-de Blok, Gerdts, Gradman, Grimshaw, Jones, Lau, Loh, Alvaro Lozano, Makela, Marchisotto, Meyer, Mills, Nilsson, Nowak-Wegrzyn, Nurmatov, Pajno, Podest`a, Poulsen, Sampson, Sanchez, Schnadt, Szajewska, Van Ree, Venter, Vlieg-Boerstra, Warner, Wong, Wood, Zuberbier, Roberts, 2020) emphasize that elimination diets should only be introduced for breastfeeding mothers in exceptional, very severe cases. Even mothers of allergy sufferers usually should not avoid allergenic foods, and "infants with IgE-dependent allergies are rarely so sensitive as to respond to very low levels of allergens in breast milk. The harms of avoiding foods during breastfeeding may outweigh the benefits of controlling the infant's allergies."

According to the Medical Code of Ethics, a physician is obligated to act following contemporary medical knowledge (Resolution of the Extraordinary Second National Congress of Physicians of December 14, 1991 on the Medical Code of Ethics Art.4. – Lekarz.1991.12.14). The patient, in turn, has the right to "health care services corresponding to the requirements of current medical knowledge" (Act of November 6, 2008 on Patient's Rights and Patient's Rights Ombudsman Art.6.1. Journal of Laws.2022.0.1876). Importantly, a patient has every right to expect a medical professional to perform actions toward him in a manner that correlates with the ethical principles of the profession. One cannot forget at this point the content of Article 4 of the Act on the Profession of medical doctor and dentist, according to which "A physician is obliged to practice his profession following the indications of current medical knowledge, the methods and means available to him for the prevention, diagnosis, and treatment of diseases, following the principles of professional ethics and with due diligence." This provision, as it were, describes the axiological foundation of the activities to which a doctor is obliged, combining the principles of ethics and law (Act of December 5, 1996 on the professions of medical doctor and dentist Journal of Laws 2023.1516, i.e.). Thus, summing up this part of the consideration and analysis, a breastfeeding mother has the right to up-to-date and reliable information about her health and the health of her child. Moreover, the guidelines of scientific societies are unequivocal on the issue of elimination diets.

2.7. The right to breastfeeding breaks

Breastfeeding mothers are entitled to a break for feeding their child according to Art. 187 of the Labour Code (Act of June 26, 1974 Labour Code Art.187 OJ.2022.1510). An employee who breastfeeds a child is entitled to two 30-minute breaks included in working time. A female employee breastfeeding more than one child is entitled to two breaks of 45 minutes each. If the employee works less than 4 hours – she is not entitled to the break, if works 4 – 6 hours – only one break is possible.

The CNoL survey found that 60% (901) of mothers who returned to work used such a break. Unfortunately, 6.7% (101) did not know that they could request it from their employer.

Some employers ask mothers for a breastfeeding certificate from a doctor. Others only need an application with a statement from the employee that she is breastfeeding her child. The need to provide a certificate concerns 19.8% (297) of mothers, although there is no such requirement under the employmentlaw, it is the employers' initiative without a legal basis. The survey also shows that the employer did not approve (and therefore violated employment law) a break for breastfeeding in 6.1% (92) cases of respondents.

Breastfeeding break is the so-called lactation break, that is, it is related to lactation occurring in the woman. And while breastfeeding a one-year-old

child is unlikely to raise objections, an older one usually does. Therefore, the older the child, the more difficult it is for employees to exercise their rights.

A breastfeeding break according to Article 87 of the Labour Code is granted to an employee in the legal sense and not in the colloquial sense (Act of June 26, 1974 Labour Code Art.87 OJ.2022.1510). Article 2 of the Labour Code defines the concept of an employee as a person employed under a contract of employment, nomination, election, appointment, or cooperative employment contract (Act of June 26, 1974 Labour Code Art.2 OJ.2022.1510). Thus, a person who is employed under another contract, such as an apprenticeship or a civil law contract (for work or commission), is not an employee within the meaning of the Labour Code and cannot exercise the right to feeding specified in Article 187 of the Labour Code (ACT of June 26, 1974 Labour Code Art.187 Dz.U.2022.1510). In this case, granting feeding breaks would only be an expression of the employer's very goodwill.

Sometimes the employee herself gives up the entitlement for economic reasons, if, for example, she is overlooked for rewards, despite the fulfilment of her job duties.

A breastfeeding break can be used in a variety of ways, depending on the individual needs of oneself, the child, and the nature and system of work that the employee performs. You can use two breaks together, you can come to work later, leave earlier, use breaks on the premises of the workplace, feed the baby at the workplace or in a nearby area (as long as the baby's caregiver can carry them out for the feeding time), you can also express milk in a restroom (or other) located on the premises of the workplace, or you can arrange with the employer to use breaks still in another system when lactation requires it, such as for expressing milk during work time.

Naturally breastfeeding employees are entitled to a breastfeeding break, but this does not mean that they have to use it. If they don't need such a break, and their children are doing just fine without them (despite being breastfed) – they can safely work full time, take overtime, or go on business trips, as long as they agree to it (Act of June 26, 1974 Labour Code Art.178(2) Journal of Laws 2022.1510). However, it should be emphasized here that the employer may not employ women in work that is particularly arduous or harmful to health (a detailed list of work is specified in the Ordinance). On the other hand, in the case of a breastfeeding employee, regardless of the degree of exposure to harmful health or dangerous factors, the employer is obliged to transfer the employee to other work, and if this is not possible, release her for the time necessary from the obligation to provide work. In certain circumstances, the employer is obliged to adapt the working conditions to the requirements of the regulations (Act of June 26, 1974 Labour Code Art.179 §2. Journal of Laws 2022.1510). Such a situation may arise, for example, in the case of female health care workers.

2.8. The right to decide on the duration of breastfeeding

The World Health Organization (WHO) recommends exclusive breastfeeding until the child is six months old and continued breastfeeding until the child is two years old or more (WHO. Global Strategy for infant and young child feeding. 2002). What does "more" mean? As long as the needs of mother and child dictate, according to a statement by the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN Committee on Nutrition; Agostoni, Braegger, Decsi, Kolacek, Koletzko, Michaelsen, Mihatsch, Moreno, Puntis, Shamir, Szajewska, Turck, van Goudoever, 2009).

Unfortunately, daily practice falls short of the recommendations. About 50,000 women in Poland breastfeed for more than a year, i.e. they meet the definition of long-term breastfeeding (DKP) (Zagórecka, Motkowski, Stolarczyk, Socha, Piotrowska-Jastrzębska, Socha, 2007). Mothers who have chosen this method of feeding often face incomprehension and critical comments, both from those around them and from medical personnel. According to the CNoL survey, as many as 46.7% (1,488) of women have been suggested to stop breastfeeding earlier than planned without valid reasons. As many as 39.8% (1,266) of women were told that their milk no longer

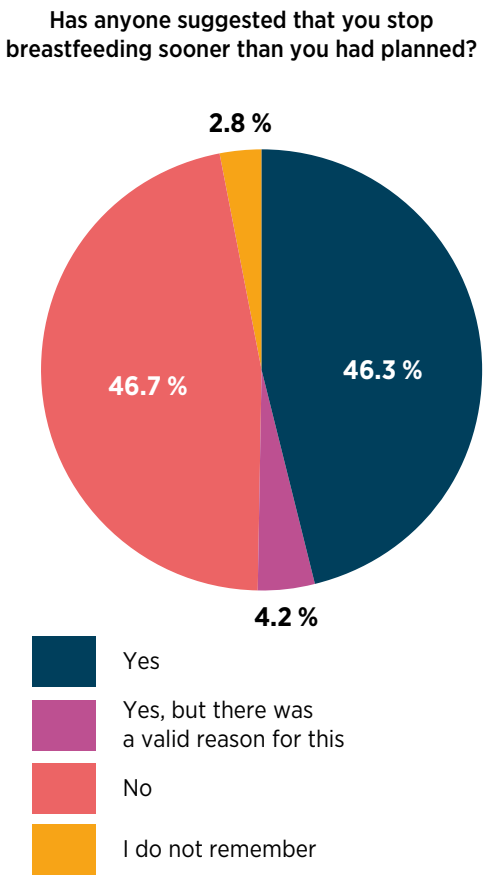

Figure 3. Suggestion to end breastfeeding.

had any value. 22.6% (720) of women – that they were already feeding only for their pleasure. 20% (636) – that she is "disturbing the baby's psyche" by feeding for a long time.

What are the facts? Long breastfeeding is completely normal for our species – globally, children are breastfed for 3.8 years (Lawrence, Lawrence, 2005). It is also very beneficial in terms of health – for the baby, but also the mother. There is evidence of the effect of long breastfeeding on reduced risk of, among other things:

- Obesity, type 2 diabetes, malocclusion, infections in children.
- Breast cancer, ovarian cancer, cardiovascular disease, osteoporosis in moms.[8]

In addition, the food of nursing mothers of children over 1 year of age changes composition to adapt to the needs of the growing child – it contains more protein and fat and has a higher energy value (Mandel, Lubetzky, Dollberg, Barak, Mimouni, 2005).

"Breastfeeding is inextricably linked to human rights, both in the context of the mother and the child. Children have a right to life [...], to development, and the highest attainable standards of health – and breastfeeding is an integral part of this, as are safe and nutritious foods. Women have the right to the accurate and unbiased information needed to make informed choices about breastfeeding. [...] They also have the right to adequate maternal protection in the workplace and to a welcoming environment and appropriate conditions for breastfeeding in public places – essential elements to ensure breastfeeding success." – This is the position of the United Nations, which also very pertinently applies to prolonged breastfeeding.[9]

The decision to breastfeed for a long time is an element of child custody (Act of February 25, 1964. -the Family and Guardianship Code Articles 95 and 96 – Journal of Laws 2020.1359, i.e.) as part of the exercise of parental authority. Questioning the custody exercised over a child is possible only in exceptional situations, especially for the sake of the child's welfare. Therefore, it is worth educating the public, and informing them of the WHO's recommended length of feeding and its health benefits.

3. Who to approach in situations of rights violations

It seems that if women are aware of their rights, it is easier for them to fight for them to be respected. The CNoL survey found that as many as 26% (828) of respondents do not know that they have any rights

8 Nehring-Gugulska, M., Bębenek, D. *Długie karmienie piersią. Zanim coś powiesz, spójrz spokojnie na wyniki badań*. (From:) https://cnol.kobiety.med.pl/pl/karmie-dlugo/ (access: 09.07.2023).

9 *Joint statement by the UN Special Rapporteurs on the Right to Food, Right to Health, the Working Group on Discrimination against Women in law and in practice, and the Committee on the Rights of the Child in support of increased efforts to promote, support and protect breast-feeding.* (From:) https://www.ohchr.org/en/statements/2016/11/joint-statement-un-special-rapporteurs-right-food-right-health-working-group (access: 09.06.2023).

related to breastfeeding, and if they were violated, more than half do not know if they would take any action. This fact was not influenced by the mother's place of residence. How to increase this awareness and how to influence the behaviour of Polish women to demand more for themselves and their children? What influences such a passive attitude of mothers? The campaign entitled "I feed! I have the right!", which was organized by the Centre for Lactation Science with social partners under the auspices of the Patient's Rights Ombudsman, was a response to these diagnosed problems and aimed to educate in two areas: what rights are women entitled to and how to demand them. Women who participated in the campaign received detailed information on how to report violations.

First of all, women should calmly inform the person who violates their rights. If they are ineffective, they can file a complaint – for example, to the management of the institution or the manager of the restaurant or other facility where the situation occurred. In the case of violations on the part of medical personnel, the situation can be described in the reviews of medical care in a given institution in the Internet Patient Account (IKP), a complaint can be written to the management of the medical institution, a report can be made to the ombudsman for professional responsibility of doctors at the district medical chamber to which the doctor belongs – if the response of the director of the institution where the doctor works is not accepted; to the ombudsman for professional responsibility of nurses and midwives at the district chambers of nurses and midwives – if the response of the director of the institution where the nurse or midwife works is not accepted. In the case of serious violations related to the provision of medical services, a notice can be filed with the prosecutor's office or a lawsuit for damages or compensation can be filed in civil court. In certain cases, an application may also be filed with the Provincial Commission for Adjudication of Medical Events. Taking advantage of these paths requires individual analysis.

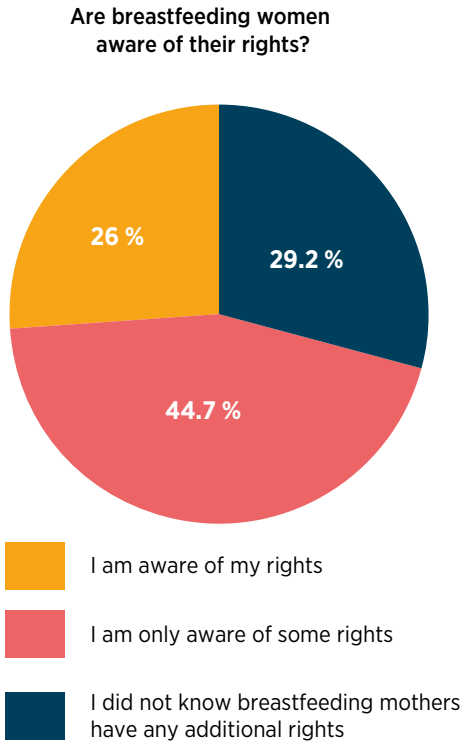

Figure 4. Awareness of breastfeeding women's rights.

Moreover, some non-governmental organizations provide support, information, and legal advice – including the Rodzić Po Ludzku Foundation[10], the Mlekiem Mamy Foundation[11] and the Centre for Lactation Science[12]. You can also seek assistance from the Patient's Rights Ombudsman, the Commissioner for Civil Rights Protection[13], or the Ombudsman for Children. In extreme cases, a lawsuit can be filed in court for compensation for harm suffered. If the violation relates to breastfeeding breaks (or other aspects of employment law), you can file a complaint against the employer addressed to the relevant District Labour Inspectorate.

10 www.rodzicpoludzku.pl
11 www.mlekiemmamy.pl
12 www.cnol.kobiety.med.pl
13 Referring to itself as the Commissioner for Humans Rights.

Summary

The promotion of knowledge about the rights of breastfeeding women is needed to raise awareness of both mothers and society as a whole.

Women should first learn about their rights so that they can inform others about them and thus help others respect these rights. The CNoL survey shows that the following rights are most often violated in Poland: 69.5% (2211) of children are artificially fed in the hospital, 69.7% (2219) of women have encountered advertising of modified milk in a medical facility or by medical personnel, 53% (1702) of mothers have been recommended an elimination diet while breastfeeding, 46.3% (1474) of women have been suggested to stop breastfeeding without valid reasons, and 47.2% (1502) of mothers have been denied services or benefits because of breastfeeding their child.

The greater the public awareness, the greater the acceptance of breastfeeding and protection from discrimination.

Bibliography

Chinthrajah, R.S., Hernandez, J.D., Boyd, S.D., Galli, S.J., Nadeau, K.C. (2016). Molecular and cellular mechanisms of food allergy and food tolerance. *Journal of Allergy and Clinical Immunology, 137*(4), 984-997. https://doi.org/10.1016/j.jaci.2016.02.004

Eidelman, A.L., Schanler, R.J., Johnston, M., Landers, S., Noble, L., Szucs, K., Viehmann, L. (2012). Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics, 129*(3), 827-41.

Agostoni, C., Braegger, C., Decsi, T., Kolacek, S., Koletzko, B., Michaelsen, K.F., Mihatsch, W., Moreno, L.A., Puntis, J., Shamir, R., Szajewska, H., Turck, D., van Goudoever, J. (2009). Breastfeeding: A commentary by the ESPGHAN Committee on Nutrition. *Journal of Pediatric Gastroenterology and Nutrition, 49*(1), 112-25. https://doi.org/10.1097/MPG.0b013e31819f1e05

Halken, S., Muraro, A., de Silva, D., Khaleva, E., Angier, E., Arasi, S., Arshad, H., Bahnson, H.T., Beyer, K., Boyle, R., du Toit, G., Ebisawa, M., Eigenmann, P., Grimshaw, K., Hoest, A., Jones, C., Lack, G., Nadeau, K., O'Mahony, L., Szajewska, H., Venter, C., Verhasselt, V., Wong, G.W.K., Roberts, G. (2021). EAACI guideline: Preventing the development of food allergy in infants and young children (2020 update). *Pediatric Allergy and Immunology, 32*(5), 843-858. https://doi.org/10.1111/pai.13496.

Joint statement by the UN Special Rapporteurs on the Right to Food, Right to Health, the Working Group on Discrimination against Women in law and in practice, and the Committee on the Rights of the Child in support of increased efforts to promote, support and protect breast-feeding. (From:) https://www.ohchr.org/en/statements/2016/11/joint-statement-un-special-rapporteurs-right-food-right-health-working-group (access: 09.06.2023).

Karcz, K., Lehman, I., Królak-Olejnik, B. (2020). Foods to Avoid While Breastfeeding? Experiences and Opinions of Polish Mothers and Healthcare Providers. *Nutrients, 12*, 1644

Konstytucja Rzeczypospolitej Polskiej z dnia 2 kwietnia 1997 r. uchwalona przez Zgromadzenie Narodowe w dniu 2 kwietnia 1997 r., przyjęta przez Naród w referendum konstytucyjnym w dniu 25 maja 1997 r., podpisana przez Prezydenta Rzeczypospolitej Polskiej w dniu 16 lipca 1997 r. Art.32 – Dz.U. 1997 R. NR 78, POZ. 483.

Kosmeri, C., Rallis, D., Kostara, M., Siomou, E., Tsabouri, S. (2022). Characteristics of Exogenous Allergen in Breast Milk and Their Impact on Oral Tolerance Induction. *Frontiers in Pediatrics*. https://doi.org/10.3389/fped.2022.830718. Erratum in: *Frontiers in Pediatrics*. 2022 Apr 14;10:898795

Lawrence, R.A., Lawrence, R.M. (2005). *Breastfeeding. A guide for the medical profession.* Elsevier Mosby

Mandel, D., Lubetzky, R., Dollberg, S., Barak, S., Mimouni, F.B. (2005). Fat and energy contents of expressed human breast milk in prolonged lactation. *Pediatrics, 116*(3), 432-5. https://doi.org/10.1542/peds.2005-0313

Meyer, R., Chebar Lozinsky, A., Fleischer, D.M., Vieira, M.C., Du Toit, G., Vandenplas, Y., Dupont, C., Knibb, R., Uysal, P., Cavkaytar, O., Nowak-Wegrzyn, A., Shah, N., Venter, C. (2020). Diagnosis andmanagement of Non-IgE gastrointestinal allergies in breastfed infants-An EAACI PositionPaper. *Allergy*. 75(1), 14-32. https://doi.org/10.1111/all.13947

Mitchell, K.B., Johnson, H.M., Rodríguez, J.M., Eglash, A., Scherzinger, C., Zakarija-Grkovic, I., Cash, K.W., Berens, P., Miller, B. (2022). Academy of Breastfeeding Medicine. Academy of Breastfeeding Medicine Clinical Protocol #36: The Mastitis Spectrum, Revised 2022. *Breastfeedicine Medicine*, 17(5):360-376. https://doi.org/10.1089/bfm.2022.29207.kbm. Erratum in: *Breastfeeding Medicine*. 2022 Nov;17(11):977-978.

Muraro, A., de Silva, D., Halken, S., Worm, M., Khaleva, E., Arasi, S., Dunn-Galvin, A., Nwaru, B.I., De Jong, N.W., Rodriguez Del Rio, P., Turner, P.J., Smith, P., Begin, P., Angier, E., Arshad, H., Ballmer-Weber, B., Beyer, K., Bindslev-Jensen, C., Cianferoni, A., Demoulin, C., Deschildre, A., Ebisawa, M., Fernandez-Rivas, M.M., Fiocchi, A., Flokstra-de Blok, B., Gerdts, J., Gradman, J., Grimshaw, K., Jones, C., Lau, S., Loh, R., Alvaro Lozano, M., Makela, M., Marchisotto, M.J., Meyer, R., Mill,s C., Nilsson, C., Nowak-Wegrzyn, A., Nurmatov, U., Pajno, G., Podesta, M., Poulsen, L.K., Sampson, H.A., Sanchez, A., Schnadt, S., Szajewska, H., Van Ree, R., Venter, C., Vlieg-Boerstra, B., Warner, A., Wong, G., Wood, R., Zuberbier, T., Roberts, G. (2022). Managing food allergy: GA^{2}LEN guideline 2022. *World Allergy Organization Journal, 15*(9), 100687. https://doi.org/10.1016/j.waojou.2022.100687

Nehring-Gugulska, M., Bębenek, D. Długie karmienie piersią. Zanim coś powiesz, spójrz spokojnie na wyniki badań. (From:) https://cnol.kobiety.med.pl/pl/karmie-dlugo/ (access: 09.07.2023)

Nehring-Gugulska, M., Sztyber, B., Żukowska-Rubik, M. i wsp. (2015). Karmienie piersią w Polsce. Raport Centrum Nauki o Laktacji w ramach kampanii Mleko Mamy Rządzi. (From:) https://cnol.kobiety.med.pl/wp-content/uploads/2019/01/Raport_Karmienie_Piersia_w_Polsce_20151.pdf, (access: 09.07.2023).

Oświadczenie pełnomocnika rządu do spraw równego traktowania w sprawie karmienia piersią w miejscach publicznych. (From:) https://topfreedom.pl/karmienie-piersia/ (access: 9.07.2023).

Pope, C.J., Mazmanian, D. (2016). Breastfeeding and Postpartum Depression: An Overview and Methodological Recommendations for Future Research. *Depression Research and Treatment. 2016.* https://doi.org/10.1155/2016/4765310

Rozporządzenie Ministra Zdrowia z dnia 16 sierpnia 2018 r. w sprawie standardu organizacyjnego opieki okołoporodowej (Dz.U. 2018 poz. 1756).

The Equality Act 2010. (From:) https://www.gov.uk/guidance/equality-act-2010-guidance (access: 09.07.2023).

Uchwała nadzwyczajnego II krajowego zjazdu lekarzy z dnia 14 grudnia 1991 r. w sprawie Kodeksu Etyki Lekarskiej na podstawie art. 33 pkt 1 w związku z art. 4 ust. 1 pkt 2 ustawy z dnia 17 maja 1989 r. o izbach lekarskich (Dz.U. Nr 30, poz. 158, z 1990 r. Nr 20, poz. 120 – Lekarz.1991.12.14)

Ustawa z dnia 6 listopada 2008 r. o prawach pacjenta i Rzeczniku Praw Pacjenta (Dz.U.2022.0.1876).

Ustawa z dnia 25 sierpnia 2006r o bezpieczeństwie żywności i żywienia Art. 25.2 (Dz.U.2022.2132).

Ustawa z dnia 26 czerwca 1974 r. Kodeks pracy (Dz.U.2022.1510).

Walker, M. (2014). *Breastfeeding Management for the Clinician using the evidence. 3rd edition.* Jones and Burtlett Learning

Zagórecka, E., Motkowski, R., Stolarczyk, A., Socha, P., Piotrowska-Jastrzębska, J., Socha, J. (2007). Karmienie naturalne w żywieniu niemowląt z wybranych miast Polski Centralnej i Wschodniej. *Pediatria Polska, 82*(7), 538-549.

Zawstydzanie matki karmiącej dziecko w miejscu publicznym jest niezgodną z prawem formą nierównego traktowania - wyrok w sprawie do której przyłączył się RPO. (From:) https://bip.brpo.gov.pl/pl/content/zawstydzanie-matki-karmi%C4%85cej-dziecko-w-miejscu-publicznym-jest-niezgodn%C4%85-z-prawem-form%C4%85-nier%C3%B3wnego (access: 09.07.2023).

Żukowska-Rubik, M., Nehring-Gugulska, M. (2016). *Czy Polska jest krajem przyjaznym matce karmiącej i jej dziecku? Raport z badania Centrum Nauki o Laktacji. Wizyty u lekarza pediatry, pobyt w szpitalu z chorym dzieckiem, miejsce pracy. Część 1.* (from:) https://cnol.kobiety.med.pl/wp-content/uploads/2018/12/Polska_krajem_przyjaznym_matce.pdf, (access: 09.07.2023).

Żukowska-Rubik, M., Nehring-Gugulska, M. (2017). *Czy Polska jest krajem przyjaznym matce karmiącej i jej dziecku? Wizyty położnej środowiskowej i u lekarza ginekologa położnika. Raport z badania Centrum Nauki o Laktacji. Część 2,* (from:) https://cnol.kobiety.med.pl/wp-content/uploads/2018/12/raport_2017.pdf, (access: 09.07.2023).

Żukowska-Rubik, M., Nehring-Gugulska, M. (2018). *Czy Polska jest krajem przyjaznym matce karmiącej i jej dziecku? Wizyty położnej środowiskowej i u lekarza ginekologa położnika. Raport z badania Centrum Nauki o Laktacji. Część 3.* (from:) https://cnol.kobiety.med.pl/wp-content/uploads/2019/01/Raport_karmienie_w_Polsce_2018.pdf, (access: 09.07.2023).

Żukowska-Rubik, M., Raczek-Pakuła, K. (2015). Jak prowadzić pacjentkę z ropniem piersi w czasie laktacji. Z doświadczeń poradni laktacyjnej Szpitala św. Zofii w Warszawie. *Skutecznie o laktacji i karmieniu piersią*. Warszawa: Oficyna Wydawnicza Warszawskiego Uniwersytetu Medycznego.

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Maternal expectations and paternal self-efficacy as factors associated with the occurrence of depressive symptoms in parents after childbirth

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Abstract: Depressive symptoms with onset after the birth of a child can affect both parents. The aim of the presented study was to determine whether fathers and mothers differ in terms of postpartum depression symptoms and such variables as the sense of parental competence and the prenatal expectations of discrepancy, and whether these variables are related to the occurrence of postpartum depression symptoms in women and men. 271 people, including 165 women and 106 men, who became parents in the last 12 months, were examined. The Edinburgh Postnatal Depression Scale (EPDS), Parental Sense of Competence Scale (PSOC) and Prenatal Expectations Scale (PES) was used. The results indicate differences between mothers and fathers in postpartum depressive symptoms, parental competencies, and prenatal expectations discrepancy as well. While maternal depression symptoms are determined by failure to meet prenatal expectations, depressive symptoms in new fathers are associated with a low sense of paternal competence.
Keywords: postpartum depression symptoms, mothers, fathers, prenatal expectations, parental competency

Introduction

With the birth of a child, many changes occur in the lives of parents, especially first-time parents. For many of them first-time parents were not prepared. Adaptation to the new role and the resulting challenges is therefore a challenge for both mothers and fathers, and in the postpartum period they may be accompanied by mental health problems. Postpartum depression (PPD) is the most prevalent psychological condition following childbirth, and it can have adverse effects on the social, emotional, and cognitive well-being of parents, infants, and the family. The reported prevalence of maternal PPD is 10–20% (O'Hara and Swain, 1996) but depending on the adopted diagnostic criteria, measurement methods, and finally sociogeographical factors, such as income in a geographic region, this percentage may be higher (Wang et al. al., 2021).

Although paternal postpartum depression (PPPD) has received less attention, research by Ballard et al. (1994) almost three decades ago indicated that more than 10% of fathers suffer from psychiatric morbidity in the postnatal period. In recent years, there has been an increased interest in the mental health of fathers during the perinatal period, leading to more studies on the occurrence of postpartum depression in men (cf. Ayinde et al., 2019; Fletcher et al., 2008; Koch et al., 2019; Segre et al., 2019). Thus, the postpartum period is increasingly recognized as a critical phase not only for mothers but also for fathers, as both parents experience significant changes during this time while adapting to their new roles and responsibilities as caregivers for their newborn child.

Prevalence rates of paternal depression are slightly lower, but it also depends on factors such as the method of measurement, or cultural bias. A meta-analysis of 43 studies with more than 28 thousand participants by Paulson and Bazermore (2010) found that symptoms of depression occurred in about 26% of fathers

during the period from the 3rd to the 6th month postpartum, while a meta-analysis by Cameron et al. (2016) pointed to 13%.

The symptoms of postpartum depression include low mood, anxiety, sense of guilt, decreased interests, lower self-esteem of one's competences, fatigue, concentration disorders, sleep, and appetite disorders typical for a major depressive episode (APA, 2013). There may also be an inadequate fear for the child's health and life, excessive worrying about the situation and excessive concern for one's own health (Wasilewska-Pordes, 2000). However, the above-mentioned symptoms are considered more typical of maternal PPD, which is dominated by depressed mood and apathy, while PPPD is additionally accompanied by aggressiveness, irritability, indecisiveness, and restricted range of emotion (Madsen & Juhl, 2007) or isolation from the environment (Leśniewska et al., 2021) and resorting to substance use as well (Dhillon et al., 2022).

The etiology of maternal PPD is complex. Risk factors include previous episodes of depression, low self-esteem, childcare stress, prenatal anxiety, stressful life experiences, lack of social support, conflicted marital relationships, child's temperament, baby blues, single motherhood, low status economic and unplanned and/or unwanted pregnancy (Beck, 2001). Among the risk factors associated with PPPD confirmed in the studies, the most considered is prenatal and postnatal maternal depression (Albicker et al., 2019), but also poor interpersonal relations with spouse and inadequate social support (Dhillon et al., 2022), and history of severe depression in the past, prenatal depression/anxiety, educational level, paternal unemployment, or marital conflicts (Wang et al., 2021).

The negative impact of unmet unrealistic expectations about motherhood and fatherhood on depressive symptoms in new parents was also found by Biehle and Mickelson (2012), but this variable was analyzed in few studies (*cf.* Bielawska-Batorowicz-Kossakowska-Petrycka, 2006; Staneva and Witkowski, 2013). Nicolson (1986) also indicates that one of the causes of childbirth-related depression may be the overload resulting from the additional responsibilities imposed on parents. In such a situation, much depends on the individual's sense of parental competence, which, if high, will facilitate coping with new challenges and responsibilities, and if low, may affect the occurrence of depression symptoms. This is confirmed by the results of recent study (Dlamini et al., 2023). However, it has not been checked so far whether the relationship between these two variables and postpartum depression is similar for both mothers and fathers.

Due to the negative impact of postpartum depressive disorders in fathers and mothers, affecting the behavioral, emotional, cognitive, and physical development of the child (Parsons et al., 2012; Ramchandani et al., 2005), it is imperative to recognize factors associated with both paternal and maternal depression. This recognition is essential to implement appropriate activities aimed at protecting against these consequences.

The present study

The study aimed to assess: 1) whether first-time mothers and fathers differ in postpartum depression scores? 2) whether there are differences in such factors as the sense of parental competence and 3) the discrepancy of prenatal expectations depending on the parent's sex? and 4) whether the above-mentioned factors are related to the symptoms of postpartum depression in mothers and fathers alike. The last research objective was exploratory in nature; therefore, no directional hypothesis was formulated. However, the following research hypotheses addressed to the first three objectives of the study were formulated:

H1: First-time fathers and mothers differ in the postpartum depression scores.
H2: Fathers and mothers differ in their sense of parental competence.
H3: Fathers and mothers differ in terms of the discrepancy between prenatal expectations and reality after the child is born.

1. Method

1.1. Procedure and participants

The research was cross-sectional. The data comes from two different studies on factors related to postnatal depression symptoms in mothers and fathers, collected between July 2017 and December 2019. Participants were recruited through advertisements on social media platforms such as Facebook and Instagram, which were devoted to family life, parenting, fatherhood/motherhood, or childcare. Additionally, information was distributed at birth classes or pediatric clinics, and participants' friends and relatives were included through snowball sampling. New mothers and fathers interested in participating in the study first contacted the researcher via email (the email address was provided in the recruitment advertisement). Participants completed either a paper-pencil or electronic version of the survey based on their preferences or the recruitment method. For instance, some participants were directly recruited by a research assistant during the distribution of a leaflet with an invitation to the study at health clinics and were given the opportunity to make an appointment for survey completion.

Irrespective of the data collection method, each participant had to provide their consent to participate by signing a paper or electronic informed consent form. Subsequently, they received a set of questionnaires or a personalized link to the web-based survey. The research procedure adhered to the principles of the Helsinki Declaration of Human Rights (WMA, 2013) and received approval from the university advisory board. Participants were fully informed about the purpose, risks, and benefits of the survey, and they were assured that they could withdraw from the study at any time and for any reason without facing any consequences.

Only primiparous mothers or fathers were eligible to participate and the inclusion criteria were as follows: Polish nationality, aged at least 18 years, birth of a child in the last 12 months, living in a stable marriage/relationship, lack of past or current diagnosis of any psychiatric illness including depression, uncomplicated course of pregnancy, childbirth without medical-obstetrics complications and the birth of a healthy infant.

The sample consisted of 271 new parents (including 165 mothers, 69%) aged 19 to 51 (M = 29.9, SD = 4.9). Their relationship duration was from 1 to 20 years (M = 5.8, SD = 3.7) and from 4 to 48 weeks since birth (M = 15.7, SD = 7.3). Most new parents declared planned pregnancy (n = 219, 80.8%), without pregnancy complications (N = 211, 77.9%), previous fertility problems (n = 243, 89.7%), or miscarriages (N = 219, 80.8%). In the majority, the birth was natural (n = 167, 61.7%). Among newborns, a slight majority were girls (n = 141, 52%). A more detailed description with a distinction between mothers and fathers is presented in Table 1.

1.2. Study tools

1.2.1. The Sociodemographic and gynecological-obstetric status survey

The Sociodemographic and gynecological-obstetric status survey collected information including parental age, and relationship duration. The participants were also asked to provide *yes/no* answers to questions concerning the following: planned or unplanned last pregnancy, previous miscarriages, last pregnancy complications, and fertility difficulties. They were also surveyed about type of delivery (vaginal/instrumental/cesarean and sex of infant (male/female) and finally, about psychiatric history: had ever been clinically diagnosed with depression (*yes/no*) or other mental illness (*yes/no*) and whether felt depressed during pregnancy and if they have, they used medication for depression or other mental illnesses in the last 12 months (*yes/no*). Psychiatric history data were collected to identify participants who entered the study despite not meeting the inclusion criteria.

1.2.2. The Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden & Sagovsky, 1987) consists of 10 statements describing mental state in the last 7 days. Participants check one of the four possible answers which comes closest to them. The answers are scored from 0 to 3. The overall score is the sum of scored

Table 1. Study sample characteristic of first-time mothers and fathers (*N* = 271)

Variable		Mothers *n* = 165		Fathers *n* = 106	
		M	SD	*M*	SD
Age		29.5	4.6	30.5	5.3
Marriage/relatiosnhip duration (in years)		6.3	3.4	5.1	4.1
Time since birth (in weeks)		18.8	6.8	10.7	4.7
		n	%	*n*	%
Current pregnancy complications	Yes	41	24.8	19	17.9
	No	124	75.2	87	82.1
Previous fertility problems	Yes	23	13.9	5	4.7
	No	142	86.1	101	95.3
Previous miscarriages	Yes	37	22.4	15	14.2
	No	128	77.6	91	85.8
Planned pregnancy	Yes	127	77.0	92	86.8
	No	38	23.0	14	13.2
Child's gender	Male	92	55.8	38	35.8
	Female	73	44.2	68	64.2
Type of delivery	Natural	93	56.4	74	69.8
	Caesarean section	72	43.6	32	30.2

points (max. 30 points). A higher score indicates higher postpartum depressive symptoms. The EPDS was originally developed for screening postpartum depression symptoms in mothers, however it was also used in research concerning depression in fathers during the first postpartum year (*c.f.* Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Cameron et al., 2016; Pinto et al., 2016). In the present study the EPDS was administered both to fathers and mothers. The cut-off score of 13 was proposed originally by Cox et al. (1987) for mothers. However, a lower cut-off score (9-10 points) on the EPDS for fathers has been suggested by Mathey et al. (2001) as for EPDS contains items being more relevant to mothers such as an endorsement of tearfulness or crying. In the current study, first, the originally recommended cut-off score of 13 was used to detect a depressive symptomatology both in new fathers and in mothers. However, also EPDS total score ≥ 10 has been evaluated for both parents, similarly as in other studies investigated PPD and parental morbidity (Edhborgh 2008; Figuereido & Conde 2011). The Polish EPDS shows satisfactory psychometric parameters; the reliability of the scale is 0.85 to 0.91 (Bielawska-Batorowicz, 1995; Kossakowska, 2013).

1.2.3. Parenting Sense of Competence Scale (PSOC)

Parental competencies were assessed using the Polish language version of the Parenting Sense of Competence Scale (PSOC; Gibaud-Wallston & Wandersman, 1978; Johnston & Mash, 1989; Kossakowska, 2017). The PSOC is a self-reporting scale consisting of 17 items assessed on a six- point scale ranging from 1 (*strongly agree*) to 6 (*strongly disagree*) which addresses the competence, problem-solving ability, and capability of the parents in their parental's role. Higher scores indicate higher competencies. The PSOC shows satisfactory psychometric parameters; Cronbach's alpha coefficient was found to be 0.79 and 0.86 for the original and Polish total scores respectively (Johnston & Mash 1989; Kossakowska 2017).

1.2.4. Prenatal Expectation Scale (PES)

Prenatal Expectation Scale (PES; Kossakowska, 2002) was administered to assess in what extent prenatal expectations concerning life after the baby is born are similar or different from postpartum reality. PES consists of 18 items rated on a 10-point scale, where a score of 1 indicates that prenatal expectations were confirmed and 10 indicates that prenatal expectations were completely different. PES consists of the three following subscales: 1) Expectations towards the child – PES Child (concerning contact with a baby), 2) Expectations towards social functioning – PES Social (concerning time for social life), and 3) Expectations towards a partner – PES Partner (concerning changes in the marital/partner relationship). The total scores range from 18 to 180 points, and higher scores indicate a greater discrepancy between expectations and postpartum experiences. Psychometric properties of PES in samples of Polish new parents were found to be satisfactory, with internal consistency coefficients from 0.94 to 0.95 (Kossakowska & Śliwerski, 2023; Piwińska, 2019).

1.3. Data analysis

Statistical analyses were conducted using SPSS 27. Descriptive statistics, including frequency, percentage, mean and standard deviation, were used to describe demographic and gynecological-obstetric characteristics. The independent t-test was used to determine whether the postpartum depression scores differed significantly between men and women. Also, the independent t-test was used to compare parental competencies and prenatal expectations scores between mothers and fathers. Finally, multivariate linear regression with a stepwise approach in both directions was used to estimate the relationship between postpartum depression symptoms (dependent variable) and parental competencies and prenatal expectations (independent variables). Regression analyses were performed separately for mothers and fathers. For each regression model, the VIF (Variance Inflation Factor) value and its tolerance to detect multicollinearity in the regression analysis were determined. A VIF of 1 indicates no predictors of collinearity. The higher the value of VIF, the more significant the correlation of the outcome variable with other variables. An a priori power analysis using G*Power 3.1. software (Faul et al., 2007) performed to establish the sample size for t-tests, ANOVA, and regression analysis with two predictors, indicated that with a medium effect size ($\alpha = 0.05$, a standard power level of 0.95), a required minimum sample size for all types of analyses was attained (i.e., 128 participants for t-test, 107 for regression analysis). The level of statistical significance for the study was set at $p < 0.05$.

2. Results

2.1. Postpartum depression symptoms in new mothers and fathers

The mean postpartum depression score obtained from all participants was 11.55 (SD = 5.25; range 0-27). Significantly higher mean postpartum depression symptoms scores ($t(269) = 8.226$; $p < 0.001$) were observed in mothers (M = 13.44; SD = 4.53; range 6-27) compared to fathers (M = 8.62; SD = 4.96; range 0-19); the strength of the effect was high (Cohen's d = 1.28). When the cut-off score of 10 was used, symptoms of postpartum depression affected as many as 82.4% of mothers (n = 136) and 39.6% of fathers (n = 42). However, based on the original recommendation the cut-off score of 13, PPD symptoms were reported in 50.9% of mothers (n = 84) and 25.5% of fathers (n = 27).

2.2. Parental competencies in new mothers and fathers

The mean parental competencies scores obtained by all participants was 66.75 (SD = 10.95) which, assuming a range of 36 to 92 points, can be considered as being in the middle of the scale. Significantly higher mean parental competencies scores ($t(269) = -20.603$; $p < 0.001$) were observed in fathers (M = 77.42; SD = 7.74; range 66-92) compared to mothers (M = 59.89; SD = 6.18; range 36-73) and the strength of the effect was high (Cohen's d = 2.50).

Table 2. Comparison of the discrepancy of prenatal expectations and reality between mothers and father measured by PES

Variable	Mothers		Fathers		t	p-value	Cohen's d
	M	SD	*M*	SD			
PES Total	76.04	32.15	68.03	18.45	2.331	0.010*	0.2
PES Child	20.20	11.88	18.16	5.74	1.648	0.050*	0.2
PES Social	24.27	12.85	20.34	7.32	1.634	0.052	NA
PES Partner	31.58	12.74	29.33	7.67	2.717	0.004**	0.2

*$p < 0.05$; **p<0.01; NA – not applicable

2.3. Discrepancy between prenatal expectations and reality among new mothers and fathers

The mean prenatal expectations discrepancy total scores obtained by all participants was 72.91 (SD = 27.85; range 19-143). A statistically significant differences between mothers and fathers were found. Women showed higher discrepancy between prenatal expectations and reality in the total scores, PES Child scores and PES Partner scores (see: Table 2). There were no statistically significant differences in PES Social scores however, the means scores were higher among mothers, as well.

2.4. Predictors of postpartum depression symptoms among new mothers and fathers

The multiple linear regression analysis was used to determine predictors of postpartum depression for both, mothers, and fathers, separately. Before it was performed, Pearson's correlation analyses were conducted in the total sample to determine the relations between the variables considered for inclusion in regression analysis. For the postpartum depression (EPDS scores), the negative relationships were found between EPDS and parental competencies, and positive between EPDS and prenatal expectations discrepancy. The results indicate that a lower level of parental competencies and higher discrepancy between prenatal expectation discrepancy are linked to higher intensity of postpartum depression symptoms. However, the correlate's coefficients indicated a weak relationship. Table 3 shows the relationships between the EPDS, the parental competencies and prenatal expectations total scores.

Table 3. Correlation matrix for the variables in the regression analysis (*N* = 271)

Variable	1	2
1. Prenatal depression (EPDS)	1	
2. Parental competencies (PSOC)	-0.44**	1
3. Prenatal expectations (PES)	0.32**	-0.32**

**p < .001

Multiple linear regression optimized by the stepwise method was conducted separately for mothers and fathers to assess the predictors of postpartum depression (outcome variable). In both analyses, explanatory variables introduced into the regression equation included parental competencies and prenatal expectation discrepancy.

Based on regression analysis results, it was found that the model proposed to predict postpartum depression in the mothers' group was proven significant ($F(2,162) = 11.212$; $p < 0.001$). Only prenatal expectations discrepancy was significant in this model (adjusted $R2 = 0.111$, $p < 0.01$). The results of regression analysis for mothers are presented in Table 4.

For fathers, it was found that the model proposed to predict postpartum depression in the was proven significant (F (2,103) = 5.442; p < 0.01). In the first step also prenatal expectation discrepancy was found significant (β = 0.218, *p* < 0.05*)*. However, adding paternal competencies variable in the second step to the regression analysis found paternal competencies ceasing to be a significant predictor of EPDS score (see: Table 5). Finally, for fathers only paternal competencies was significant in this model (adjusted R2 = 0.096, p < 0.01).

3. Discussion

The first aim of the study was to assess whether first-time fathers and mothers differ in postpartum depression scores. As expected, higher severity of postpartum depression symptoms was found in mothers. This finding is consistent with Goodman (2008), who reported significantly higher depression scores on the EPDS at 2 to 3 months postpartum for mothers compared to fathers in her study. Similar results were also obtained by Kiviruusu et al. (2020) and Matthey et al. (2003). However, in these studies,

Table 4. Summary of the regression analysis for variables predicting postpartum depression among new mothers (N = 165)

Variable in the equation	*B*	*SE B*	*β*	*t*	*p-value* [LL; HL 95% CI]	*VIF*
Step 1						
Prenatal expectations (PES)	0.047	0.010	0.336	11.468	< 0.001 [0.027; 0.068]	1.000
Step 2						
Prenatal expectations (PES)	0.053	0.011	0.373	4.706	<0.001 [0.030; 0.075]	1.158
Maternal competencies (PSOC)	0.072	0.048	0.099	1.248	0.214 [-0.042; 0.187]	1.158

Note: *B* – non-standardized regression coefficients; *SE B* – non-standardized regression coefficients error; *β* – standardized regression coefficient.

Table 5. Summary of the regression analysis for variables predicting postpartum depression among new fathers (N = 106)

Variable in the equation	*B*	*SE B*	*β*	*t*	*p-value* [LL; HL 95% CI]	*VIF*
Step 1						
Prenatal expectations (PES)	0.059	0.026	0.218	2.281	< 0.05 [0.008; 0.110]	1.000
Step 2						
Prenatal expectations (PES)	0.037	0.027	0.139	1.396	0.166 [-0.016; 0.091]	1.131
Paternal competencies (PSOC)	-0.149	0.064	-0.233	-2.336	0.214 [-0.276; -0.023]	1.131

Note: *B* – non-standardized regression coefficients; *SE B* – non-standardized regression coefficients error; *β* – standardized regression coefficient.

depression measurement tools other than EPDS (e.g., Center for Epidemiologic Studies Depression Scale or the Diagnostic Interview Schedule–Depression and Anxiety modules) were used to assess postpartum depression symptoms. Therefore, it is not possible to directly compare their results with the findings of the current research.

The choice of measurement tool appears to play a crucial role in recognizing postpartum depression symptoms, particularly among fathers. The Edinburgh Postnatal Depression Scale was originally developed as a screening instrument for mothers (Cox et al., 1987), but it has also been utilized in many cross-sectional and longitudinal studies involving men (e.g., Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Cameron et al., 2016; Edmonson et al., 2010; Figuereido & Conde, 2011; Pinto et al., 2016). Using the EPDS to measure postpartum depression symptoms in men offers the advantage of questionnaire statements that do not include references to somatic symptoms typically associated with biological and hormonal changes in postpartum women.

On the other hand, as suggested by Martin et al. (2013) fathers may express their depressive symptoms differently and due to a masculinity roles and expectations, they may demonstrate less tearfulness and rather more anger and irritability (Caldberg et al., 2018; Rutz et al., 1995; Martin et al., 2013). This could have influenced the answers given by men, and a lower total score does not necessarily mean low depressiveness, so the results should be interpreted with caution. Nevertheless, regardless of the measurement tool used, in current, as in other previous studies, attention is drawn to the average values of postpartum depression symptoms, which are higher among mothers compared to fathers. It is worth noting that the prevalence rate of postpartum depression symptoms in current study are also higher for mothers than for fathers.

The next two objectives served to determine whether fathers and mothers differ in terms of the discrepancy between prenatal expectations and reality after the child is born and their sense of parental competences. These differences occur in the case of both analyzed variables.

First, higher parental competencies were observed in fathers compared to mothers. This result is surprising. Rather, either no difference was expected, as in the Portuguese (Nunez et al., 2023) or Australian (Gilmore & Cuskelly, 2008) studies, because the participants were first-time parents, so both mothers and fathers had no prior experience in childcare. Because the parenting sense of competence measured in the current study referred to the judgments that parents hold about their abilities as caregivers, it may be that lower maternal scores are associated with greater severity of postpartum depressive symptoms, as described above. Such a relationship was noticed in previous studies (Huang et al., 2023; Kossakowska, 2017). However, to correctly interpret these results, factors that were not analyzed and controlled in the present study should be considered. These factors include methods of coping with parental stress or difficulties related to the child's temperament or health, as well as social support. For instance, in studies with Chinese mothers and fathers, maternal competence, also measured by PSOC, was found to have a positive correlation with spouse support (Yang et al., 2020).

Secondly, in the study, first-time mothers obtained a stronger prenatal expectation discrepancy compared to first-time fathers for total scores and in two areas of expectations: concerning a child and a partner, but not for social functioning. The transition to parenthood is associated with numerous challenges that can affect the functioning of family and social roles (Lavesque et al., 2020). The promoted vision of parenthood often presents an unrealistic picture of the family after the child is born, which may influence the formation of unrealistic expectations. Confronting this idealized vision with reality reveals that the functioning of a family with an infant is associated with numerous difficulties for which first-time parents were not prepared. As mothers are more involved in caring for children, especially up to 1 year of age (i.e., due to breastfeeding), they can confront this discrepancy between expectations and reality to a greater extent, as shown by the obtained results. The lack of differences in terms of expectations regarding social functioning is also worth commenting on. The PES Social subscale refers to

the social functioning of new parents, including their ability to find free time for themselves and ask friends for help. It contains statements such as "In spite of many duties, I am able to find some time for meetings with my friends," "After the birth of my child, I am as much an attractive social partner as before delivery for my friends," or "I can call on my friends for help." The lack of differences in this factor between the surveyed mothers and fathers can be explained in two ways. On the one hand, fathers may not experience significant discrepancies because they are probably less affected by limitations in leading a social life. Fathers are more likely to remain professionally active after having a child, while mothers take maternity leave (The European Labor Force Survey, 2006). Professional activity, in turn, is associated with social contacts, which may serve as a counterbalance for the feeling of loneliness and isolation typical of the first period of parenthood, when most activities revolve around childcare and social activity is reduced. On the other hand, it can be assumed that women preparing for the first period of motherhood are focused primarily on issues related to the child and the functioning of the family, including their relationship with the infant's father. Therefore, their expectations relate to a lesser extent to social life, and thus they experience less disappointment in this area.

Finally, the findings concerning identifying the best predictors of postpartum depressive symptoms for first-time mothers and fathers indicate that there are differences in each group. In the case of mothers, the symptoms of postpartum depression were solely conditioned by the prenatal expectations of discrepancy, and the level of parental competencies did not change this relationship. Previously, the discrepancy between prenatal expectations and postnatal reality was found to be a predictor of vulnerability to postpartum distress and depression for women by Marshall (1993).

A positive relationship between prenatal expectation discrepancy and postpartum depression symptoms was also found in fathers, but it ceased to exist if they had a high sense of parental competence at the same time. It seems, therefore, that this failure to meet expectations from the prenatal period in relation to postnatal reality is particularly burdensome for the mental health of new mothers. The arrival of a child brings about many changes in the current way of life. If the mother was not cognitively prepared for the challenges of caring for an infant, the accompanying sleep deprivation, and emotional and physical overload, the experience of such an unforeseen new reality may increase stress, anxiety, and eventually lead to the appearance of depressive symptoms. Then, the sense of parental competence, which generally correlates negatively with postpartum depression (Dlamini et al., 2023; Kossakowska, 2017), seems to lose its protective meaning.

On the other hand, another characteristic seems to accompany men in the early stages of fatherhood. Unfulfilled expectations from the prenatal period coexist with symptoms of postpartum depression, but if, additionally, paternal sense of competence is low, the discrepancy of expectations ceases to have a significant impact on depressive symptoms, and it has the entire share in their occurrence. Since the relationship between depressive symptoms and the discrepancy in prenatal expectations is bidirectional, the results can also be interpreted in a positive perspective. In this case, a high sense of competence among fathers seems to protect against depression symptoms. It is probably easier for fathers to adapt to the challenges of the new role and cope with potential difficulties. In addition, if a parent feels competent, they are more likely to engage in activities related to childcare, and greater involvement is beneficial for paternal mental health. In a study by Bamishigbin et al. (2020), fathers who spent more time with their infants declared higher paternal self-efficacy and had lower depressive symptoms one year after the child was born.

The results described above seem to be of practical importance. Professionals dealing with expectant and brand-new parents should consider the gender of the parent in dedicated interventions and preventive actions. For example, childbirth school programs should include issues related to expectations related to the transition to motherhood, with particular emphasis on information that the socially created and promoted image of motherhood, including on social media, is not always problem-free. In turn, medical

personnel (gynecologists-obstetricians, midwives, pediatricians) should provide greater support to fathers in their decisions and actions, as it enhances their sense of effectiveness as parents. Encouraging paternal involvement and offering resources tailored to the specific needs and experiences of both mothers and fathers can contribute to improved mental well-being during the early stages of parenthood.

Study limitations and conclusions

Despite the relevance of the current findings and their practical implications, the study has certain limitations that should be considered. First, the cross-sectional nature of the study precludes drawing causal conclusions, and prospective longitudinal studies seem to be necessary to explore the nature of the relationship between the variables. Additionally, this study should be repeated with larger, more representative samples to examine whether certain sociodemographic and child-related factors, such as parents' education, household income, or infant gender and temperament, influence the occurrence of postpartum depression symptoms. In further research, it is worth considering the use of a measurement tool other than the EPDS for assessing symptoms of postpartum depression in men. In addition to self-report measures, a structured clinical interview should also be used to confirm the presence of depression symptoms.

However, the results of the presented study confirm that the symptoms of postpartum depression affect not only mothers but also fathers. The factors accompanying these symptoms in mothers differ from those in fathers, which suggests that preventive and supportive activities for mothers and fathers at risk or experiencing postpartum depression should be appropriately tailored and matched to their specific needs and experiences.

Bibliography

Albicker, J., Hölzel, L.P., Bengel, J., Domschke, K., Kriston, L., Schiele, M.A., & Frank, F. (2019). Prevalence, symptomatology, risk factors and healthcare services utilization regarding paternal depression in Germany: study protocol of a controlled cross-sectional epidemiological study. *BMC Psychiatry, 19*(1), 289. https://doi.org/10.1186/s12888-019-2280-7

American Psychiatric Association, APA (2013). *Diagnostic and statistical manual of mental disorders. Fifth edition. Washington DC.*

Ayinde, O., Lasebikan, V.O. (2019). Factors associated with paternal perinatal depression in fathers of newborns in Nigeria. *Journal of Psychosomatic Obstetrics & Gynecology, 40*(1), 57-65. https://doi.org/10.1080/0167482X.2017.1398726

Ballard, C.G., Davis, R., Cullen, P.C., Mohan, R.N., & Dean, C. (1994). Prevalence of postnatal psychiatric morbidity in mothers and fathers. *The British Journal of Psychiatry: The Journal of Mental Science, 164*(6), 782–788. https://doi.org/10.1192/bjp.164.6.782

Bamishigbin, O.N., Wilson, D.K., Abshire, D.A., Mejia-Lancheros, C., Dunkel Schetter, C. (2020). Father Involvement in Infant Parenting in an Ethnically Diverse Community Sample: Predicting Paternal Depressive Symptoms. *Frontiers in Psychiatry, 11*. https://doi.org/10.3389/fpsyt.2020.578688

Beck, ChT. (2001). Predictors of postpartum depression. An update. *Nursing Research, 50* (5): 275-285.

Biehle, S.N., Mickelson, K.D. (2011). Personal and co-parent predictors of parenting efficacy across the transition to parenthood. *Journal of Social and Clinical Psychology, 30*(9), 985-1010.

Bielawska-Batorowicz, E., Kossakowska-Petrycka, K. (2006) Depressive mood in men after the birth of their offspring in relation to a partner's depression, social support, fathers' personality and prenatal expectations, *Journal of Reproductive and Infant Psychology, 24*(1), 21-29, https://doi.org/10.1080/02646830500475179

Cameron, E.E., Sedov, I.D., Tomfohr-Madsen, L.M. (2016). Prevalence of paternal depression in pregnancy and the postpartum: An updated meta-analysis. *Journal of Affective Disorders, 206*, 189–203. https://doi.org/10.1016/j.jad.2016.07.044

Carlberg, M., Edhborg, M., Lindberg, L. (2018). Paternal Perinatal Depression Assessed by the Edinburgh Postnatal Depression Scale and the Gotland Male Depression Scale: Prevalence and Possible Risk Factors. *American Journal of Men's Health, 12*(4), 720–729. https://doi.org/10.1177/1557988317749071

Cox, J.L., Holden, J.M., Sagovsky, R. (1987) Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry, 150*, 782-786.

Dhillon, H.S., Sasidharan, S., Dhillon, G.K., Babitha, M. (2022). Paternal depression: "The silent pandemic". *Industrial Psychiatry Journal*, *31*(2), 350–353. https://doi.org/10.4103/ipj.ipj_236_20

Dlamini, L.P., Hsu, Y.-Y., Shongwe, M.C., Wang, S.-T., Gau, M.-L. (2023), Maternal Self-Efficacy as a Mediator in the Relationship Between Postpartum Depression and Maternal Role Competence: A Cross-Sectional Survey. *Journal of Midwifery and Womens Health [online first version]*. https://doi.org/10.1111/jmwh.13478

Duan, Z., Wang, Y., Jiang, P., Wilson, A., Guo, Y., Lv, Y., Yang, X., Yu, R., Wang, S., ... and Runsen, Ch. (2020). Postpartum depression in mothers and fathers: a structural equation model. *BMC Pregnancy Childbirth, 20*, 537. https://doi.org/10.1186/s12884-020-03228-9

Edhborg, M. (2008). Comparisons of different instruments to measure blues and to predict depressive symptoms 2 months postpartum: a study of new mothers and fathers. *Scandinavian Journal of Caring Sciences, 22*(2), 186–195. https://doi.org/10.1111/j.1471-6712.2007.00512.x

Edmondson, O.J., Psychogiou, L., Vlachos, H., Netsi, E., Ramchandani, P.G. (2010). Depression in fathers in the postnatal period: assessment of the Edinburgh Postnatal Depression Scale as a screening measure. *Journal of Affective Disorders, 125*(1-3), 365–368. https://doi.org/10.1016/j.jad.2010.01.069

Faul, F., Erdfelder, E., Lang, A.G., Buchner, A. (2007). G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. https://doi.org/10.3758/bf03193146

Figueiredo, B., Conde, A. (2011). Anxiety and depression in women and men from early pregnancy to 3-months postpartum. *Archives of Women's Mental Health, 14*(3), 247–255. https://doi.org/10.1007/s00737-011-0217-3

Fletcher, R., Vimpani, G., Russell, G., Sibbritt, D. (2008). Psychosocial assessment of expectant fathers. *Archives of Womens Mental Health, 11*(1), 27-32.

Gibaud-Wallston, J., Wandersman, L.P. (1978). *Development and utility of the parental sense of competence*. Paper presented at the meeting of the American Psychological Association, Toronto.

Gilmore, L., Cuskelly, M. (2009). Factor structure of the Parenting Sense of Competence Scale using a normative sample. *Child: Care, Health and Development, 35*(1), 48–55. https://doi.org.10.1111/j.1365-2214.2008.00867

Goodman, J.H. (2008). Influences of maternal postpartum depression on fathers and on father–infant interaction. *Infant Mental Health Journal, 29*(6), 624–643. https://doi.org/10.1002/imhj.20199

Huang, L., Wang, Xj., Liu, Gh., Li, Xt., Zhang, Yh., Zhao, By., Hu, Rf. (2023). Parenting sense of competence among chinese parents of premature infants: a cross-sectional study. *BMC Pregnancy Childbirth, 23,* 399. https://doi.org/10.1186/s12884-023-05703-5

Johnston, C., Mash, E.J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology, 18,* 167-175.

Kiviruusu, O., Pietikäinen, J.T., Kylliäinen, A., Pölkki, P., Saarenpää-Heikkilä, O., Marttunen, M., Paunio, T., Paavonen, E.J. (2020). Trajectories of mothers' and fathers' depressive symptoms from pregnancy to 24 months postpartum. *Journal of Affective Disorders, 260*, 629–637. https://doi.org/10.1016/j.jad.2019.09.038

Koch, S., De Pascalis, L., Vivian, F., Meurer Renner,. A., Murray, L., Arteche, A. (2019). Effects of male postpartum depression on father-infant interaction: The mediating role of face processing. *Infant Mental Health Journal, 40*(2), 263–276. https://doi.org/10.1002/imhj.21769

Kossakowska, K. (2002). *Depressive mood disorders in men after childbirth and their environmental and personality determinants*. Unpublished master's dissertation [in Polish], University of Lodz.

Kossakowska, K. (2013). Edinburgh Postnatal Depression Scale–psychometric properties and characteristics [in Polish]. *Acta Universitatis Lodziensis, Folia Psychologica*, *17*, 39–47.

Kossakowska, K. (2017). Psychometric properties and characteristics of Polish adaptation of the Parenting Sense of Competence Scale (PSOC-PL) – female version [in Polish]. *Acta Universitatis Lodziensis, Folia Psychologica, 21*, 9–95. https://doi.org/10.18778/1427-969X.21.06

Kossakowska, K., Śliwerski, A. (2023). Factors affecting mother-infant bonding in a Polish group of mothers. *Sexual & Reproductive Healthcare, 37*, 100880. https://doi.org/10.1016/j.srhc.2023.100880

Leśniewska, M., Budzyńska, J., Kozioł, I., Milanowska, J. (2021). Postpartum depression in men – a common but rarely understood problem. *Medycyna Ogólna i Nauki o Zdrowiu, 27*(3), 248-251. https://doi.org/10.26444/monz/138621

Levesque, S., Bisson, V., Charton, L., Fernet, M. (2020). Parenting and relational wellbeing during the transition to parenthood: Challenges for first-time parents. *Journal of Child and Family Studies*, *29*(7), 1938–1956. https://doi.org/10.1007/s10826-020-01727-z

Madsen, S.A.,& Juhl, T. (2007). Paternal depression in the postnatal period assessed with traditional and male depression scales. *The Journal of Men's Health Gender, 4*(1), 26–31. https://doi.org/10.1016/J.JMHG.2006.10.017

Marshall, F. (1993). *Coping with Postnatal Depression.* London: Sheldon Press.

Martin, L.A., Neighbors, H.W., Griffith, D.M. (2013). The experience of symptoms of depression in men vs women: analysis of the National Comorbidity Survey Replication. *JAMA Psychiatry, 70*(10), 1100–1106. https://doi.org/10.1001/jamapsychiatry.2013.1985

Matthey, S., Barnett, B., Howie, P., Kavanagh, D.J. (2003). Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety? *Journal of Affective Disorders, 74*(2), 139–147. https://doi.org/10.1016/s0165-0327(02)00012-5

Matthey, S., Barnett, B., Kavanagh, D.J., Howie, P. (2001). Validation of the Edinburgh Postnatal Depression Scale for men, and comparison of item endorsement with their partners. *Journal of Affective Disorders, 64*(2-3), 175–184. https://doi.org/10.1016/s0165-0327(00)00236-6

Nicolson, P. (1998). *Post-Natal Depression: Psychology, Science and the Transition to Motherhood*. Routledge Publishing.

Nunes, C., Ayala-Nunes, L., Ferreira, L.I., Pechorro, P., Freitas, D., Martins, C., Santos, R. (2023). Parenting Sense of Competence: Psychometrics and Invariance among a Community and an At-Risk Samples of Portuguese Parents. *Healthcare, 11*, 15. https://doi.org/10.3390/healthcare11010015

O'Hara, M.W., Swain, A.M. (1996). Rates and risk of postpartum depression—a meta-analysis. *International Review of Psychiatry, 8*(1), 37-54.

Parsons, C.E., Young, K.S., Rochat, T.J., Kringelbach, M.L., Stein, A. (2012). Postnatal depression and its effects on child development: a review of evidence from low- and middle-income countries, *British Medical Bulletin, 101*,(1), 57–79. https://doi.org/10.1093/bmb/ldr047

Paulson, J.F., Bazemore, S.D., Goodman, J.H., Leiferman, J.A. (2016). The course and interrelationship of maternal and paternal perinatal depression. *Archives of Womens Mental Health, 19*, 655–663. https://doi.org/10.1007/s00737-016-0598-4

Pinto, T.M., Figueiredo, B. (2022). Anxiety and Depressive Symptoms, and Positive and Negative Couple Interactions Among Postpartum Mothers and Fathers Before and During the COVID-19 Pandemic. *Families, Systems & Health*. Advance online publication. https://dx.doi.org/10.1037/fsh0000765

Piwińska, A. (2019). *Influence of the fatherhood on selected aspects of men's life.* Unpublished master's dissertation [in Polish], University of Lodz.

Ramchandani, P., Stein, A., Evans, J., O'Connor, T.G. (2005). Paternal depression in the postnatal period and child development: a prospective population study. *The Lancet, 365*(9478), 2201–5.

Rutz, W., von Knorring, L., Pihlgren, H., Rihmer, Z., Wålinder, J. (1995). Prevention of male suicides: lessons from Gotland study. *Lancet, 345*(8948), 524. https://doi.org/10.1016/s0140-6736(95)90622-3

Segre, G., Clavenna, A., Cartabia, M., NASCITA Working Group (2023). Postpartum depression screening in mothers and fathers at well-child visits: a feasibility study within the NASCITA cohort. *BMJ Open*, *13*: e069797. https://doi.org/10.1136/bmjopen-2022-069797

Staneva, A., Wittkowski, A. (2013). Exploring beliefs and expectations about motherhood in Bulgarian mothers: a qualitative study. *Midwifery, 29*(3), 260–267. https://doi.org/10.1016/j.midw.2012.01.008

The European Labor Force Survey (2006). Labour Force Survey in the EU, Candidate and EFTA countries. Available online at https://www.adp.fdv.uni-lj.si/podatki/ads/ads06_rm6_en_v1_r2.pdf (accessed 1 July, 2023).

Wang, Z., Liu, J., Shuai, H., Cai, Z., Fu, X., Liu, Y., xiao, X., Zhang, W., ... & Yang, B.X. (2021). Mapping global prevalence of depression among postpartum women. *Translational Psychiatry, 11*, 543. https://doi.org/10.1038/s41398-021-01663-6

Wasilewska-Pordes, M. (2000). *Depresja porodowa*. Wydawnictwo Radamsa.

World Medical Association. (2013). Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA, 310*, 2191–2194. https://doi.org/10.1001/jama.2013.281053

Yang, X., Ke, S., Gao, L.L. (2020). Social support, parental role competence and satisfaction among Chinese mothers and fathers in the early postpartum period: A cross-sectional study. *Women and birth: Journal of the Australian College of Midwives*, *33*(3), e280–e285. https://doi.org/10.1016/j.wombi.2019.06.009

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Family stressors and motivation to have a child as related to mothers' parental stress[1]

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Abstract: *Introduction:* Mothers differ greatly in their psychological adjustment to parenting, with some mothers being more stressed than others. This study aimed to determine the role of family life stressors related to the relationships with children and spouse and motivation to have children in predicting parental stress for mothers. The project is based on the parental stress theory and the self-determination theory (SDT). We examined whether motivation to have children played a mediating role in the relationship between family stressors and mothers' parental stress. Method: Parental stress was measured using the Parental Stress Scale (PSS; Berry, Jones, 1995). Motivation to have a child was measured using the Motivation to Have a Child Scale (MCS; Brenning, Soenens, Vansteenkiste, 2015). The intensity of difficult experiences in the relationships with the child and with the spouse (family stressors) was assessed using the Family Stressors Scale. The study involved 99 mothers who were in a relationship and had at least one child up to 7 years of age. There were between one and seven children in their families. Statistical analyses were performed using structural equation modeling (SEM). *Results:* It was found that difficult situations in relationships with children and spouse increased mothers' parental stress. Intrinsic motivation and amotivation mediated the effect that difficult situations in family relationships had on parental stress. Difficult situations in family relationships were negatively related to intrinsic motivation and positively related to amotivation. Intrinsic motivation to have a child was negatively related to parental stress, while amotivation was positively related to that stress. Extrinsic, identified, and introjected motivations were associated neither with parental stress nor with difficult situations in family relationships (family stressors). *Conclusions:* In confrontation with stressors, intrinsic motivation to have a child plays a protective role against the experience of parental stress in mothers, while amotivation intensifies this stress. The implications of the results for future research and clinical interventions are discussed.
Keywords: parental stress, motivation to have a child, self-determination theory, family stressors, mothers

Introduction

Parenthood is regarded as one of the most important sources of positive experiences in human life (Więsyk, Lachowska, 2020). Apart from studies supporting this thesis, however, there are plenty of those showing that the relationship between parenthood and well-being—not only parents' but also children's—is highly complex and ambiguous (Jazłowska, Przybyła-Basista, 2019; Nelson, Kushlev, Lyubomirsky, 2014; Piotrowski, Bojanowska, Szczygieł, Mikołajczak, Roskam, 2023; Woolf, Sallis, Munafò, 2023). Moreover, the results of previous research indicate that mothers differ in terms of their parenthood-related experiences (Qian, Mei, Tian, Dou, 2021). This suggests the need for research into this area, with various psychological variables included. The present study addressed issues relating to this area. It aimed to provide better knowledge of the factors explaining parenthood-related experiences, with a focus on parental stress experienced by mothers. Among the factors explaining mothers' parental stress, we analyzed difficult situations involved in the relationships with the child and spouse.

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1. The theoretical basis of the issues investigated

Parental stress is defined as a psychological response (distress) that appears when parents encounter demands associated with the parental role that they are unable to meet because they lack adequate resources, such as energy, time, or skills, which would make it possible to meet these demands (Chung, Lanier, Wong, 2020; Deater-Deckard, 2014; Holly, Fenley, Kritikos, Merson, Abidin, Langer, 2019). It is believed that the more demands associated with being a parent one is faced with and the less resources for effectively coping with these demands there are, the more severe the parental stress is (Pisula, Barańczuk, 2020). This means stress increases in connection with the experience of stressors (Rayce, Pontoppidan, Nielsen, 2020). Parental stress is assumed to be a key factor explaining parents' behaviors towards the child, particularly undesirable ones (Berry, Jones, 1995; Brown, Doom, Lechuga-Peña, Watamura, Koppels, 2020; Chung et al., 2020). It also has a negative effect on the child (Crnic, Gaze, Hoffman, 2005) and on the quality of the relationship with the partner (Baldoni, Giannotti, Casu, Luperini, Spelzini, 2020; Garthus-Niegel et al., 2018).

Parental stress is considered to be a universal phenomenon. It is experienced by parents of children at every age and in every culture (Louie, Cromer, Berry, 2017). The universality of parental stress and its great significance indicate the need for research that would offer better knowledge and understanding of the factors that explain it. The literature identifies different sources of parental stress (Pisula, Barańczuk, 2020). Apart from the child's characteristics (Szymańska, Aranowska, 2019), authors point to those of the social environment and the parents (Brenning, Soenens, Mabbe, Vansteenkiste, 2019). Authors emphasize that, when exploring parenthood, it is important to consider contextual factors (McGoron, Riley, Scaramella, 2020; Nachoum, Moed, Madjar, Kanat-Maymon, 2023). The damaging influence of this kind of stressors on family functioning, children's development, and parents' mental health is considered to be well-documented (Li et al., 2022). Belsky (cited in: Taraban, Shaw, 2018) points out that all relational contexts can be sources of stress or support, influencing parental resources. The present study concerned difficult situations of family life associated with the marital relationship and the mother – child relationship.

In the group of factors associated with parents' characteristics, the one that has recently received an increasing amount of researchers' attention is the significance of motivation to have a child (Nelson et al., 2014). The decision to have a child is regarded as one of the most important and meaningful decisions in human life and one of those that have far-reaching implications (Cowan, Cowan, 2000). This decision has a variety of consequences, but still little is known about why people decide to have children, and even less is known about the consequences of specific motivations (Nachoum, Moed, Madjar, Kanat-Maymon, 2021). In research aimed to determine why people decide to have a child, the frequently adopted theoretical basis is the self-determination theory (SDT) by Ryan and Deci (2000, 2019; Ntoumanis et al., 2021). The SDT is regarded as a macro-theory of human motivation with a multidimensional perspective on motivational processes in different life domains, including parenthood-related ones (Nachoum et al., 2023). This theory concerns not only whether but also why individuals decide to have a child (Ryan, Deci, 2000, 2017).

Ryan and Deci (2000, 2017) distinguish three types of motivation, which differ in the degree of internalization of the motives inducing action. Internalization is the process of interiorizing external factors that induce behavior. With regard to motivation, this means a transition from extrinsic motivation and amotivation to intrinsic motivation (Ryan, Deci 2017; Vansteenkiste, Aelterman, De Muynck, Haerens, Patall, Reeve, 2018). Each type of motivation is associated with specific regulation styles, located on a continuum that reflects increasing levels of internalization and autonomy (Ryan, Deci, 2000; Vansteenkiste et al., 2018). Intrinsic motivation is associated with intrinsic regulation. The regulation style opposite to intrinsic regulation is non-regulation, corresponding to amotivation. Finally, extrinsic motivation encompasses four regulation styles: external, introjected, identified, and integrated.

Non-regulation is marked by a total lack of autonomy (Deci, Ryan, 2000). The person is involved in the actions they perform, but these actions are entirely outside their will and are unrelated to their intention to act. External regulation is slightly more autonomous, but it is associated with the lowest level of internalization among all types of regulation corresponding to extrinsic motivation. Activities undertaken with this type of regulation are perceived as externally controlled or alien to the individual and causality is perceived as located outside the person. Actions are performed in order to achieve a reward or avoid punishment. The next form of regulation is introjection (Deci, Ryan, 2000). It consists in the internalization of external regulation in its original form. Actions undertaken as a result of it are still performed due to pressure, but the pressure comes from inside—from the person themselves. They are often performed in order to achieve a sense of pride or to minimize anxiety and guilt. Behaviors are still recognized as having an external locus of control and as unrelated to the self. They are only meant to strengthen the ego by allowing the person to show their abilities and maintain self-esteem (Deci, Ryan, 2000). The next form of regulation on the continuum illustrating the levels of internalization is identification. However, activity is still a means to an end rather than an end in itself. The last form of regulation that falls within the scope of extrinsic motivation is integration. It is the case when identified regulations are fully assimilated, which means they have been evaluated and found to be consistent with the individual's other values and needs. The actions undertaken are still regarded as external because they are oriented at certain external results and goals rather than at the very pleasure derived from activity (Deci, Ryan, 2000). They are similar to intrinsically motivated actions, but the regulation style fully corresponding to intrinsic motivation is intrinsic regulation. This kind of regulation is fully autonomous and internalized. Its aim is development, pleasure derived from activity, and the acquisition of new skills.

Thus defined, the types of motivation and the regulation styles corresponding to them are related to decisions on having a child (Brenning et al., 2015). Amotivation means a lack of desire to have a child. It is linked with perceiving desirable goals as unattainable, a sense of incompetence, and a sense of having no control over the situation. It may manifest itself through a pregnant woman's predictions that she will not cope with bringing up her child or through failure to perceive the values inherent in being a mother. External regulation, being a regulation style aimed at avoiding punishment, may be associated with a situation in which a woman decides to have a child in order to face up to pressure from others or to satisfy them. A decision to have a child made due to predictions that becoming a mother will increase self-esteem is a manifestation of introjection. The next regulation style, identification, is the case when a woman considers being a parent an important life goal and decides to get pregnant for this reason. Integrated regulation is when the value of being a mother, having a child, and getting pregnant are combined with other values cherished by a given person and when this gives rise to a decision to become a parent. Intrinsic regulation, which is equated with intrinsic motivation, is the case when a woman decides to become a mother because she believes that childcare will give her pleasure and that parenting will be an interesting challenge for her.

In the present study, we posed the question of how motivation to have a child and stressors associated with the mother–child relationship and with the marital relationship were related to mothers' parental stress. We also posed the question of whether motivation mediated the effect of stressors on the level of mothers' parental stress.

2. The present study

2.1. The conceptual model and research hypotheses

Based on the theoretical conception of parental stress, the concept of motivation to have a child, and the results of previous studies, we developed a conceptual model of relationships between the variables (Fig. 1).

In this model, it was assumed—in accordance with the parental stress theory—that family stressors (connected with the relationships with the child and spouse) impacted the level of parental stress experienced by mothers, contributing to its increase.

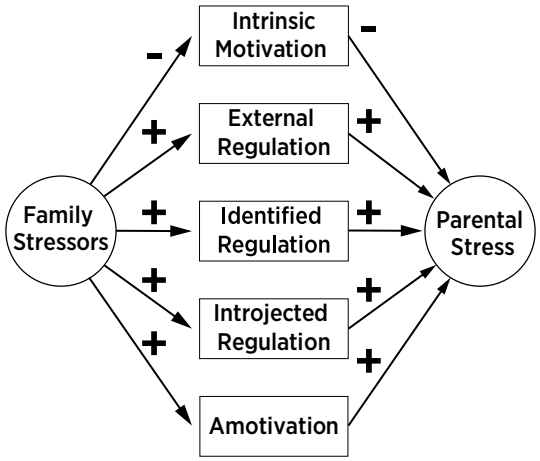

Figure 1. Theoretical model of dependencies between variables

It was also assumed in this model that the effect of stressors on mothers' parental stress was mediated by mothers' motivation to have a child. Therefore, the expectation was as follows:

H1. Mothers who experience more stressors associated with family relations will experience greater parental stress.

The self-determination theory distinguishes three types of motivation to have a child, which differ in the level of internalization. Research based on the SDT showed that more autonomous functioning was related to lower exposure to stress and better coping with challenging events (Van Der Kaap-Deeder et al., 2019), also in the prenatal period (Gugliandolo, Cuzzocrea, Costa, Soenens, Liga, 2021). More autonomous motivation led to better mental health (Ryan, Deci, 2017; Nachoum, Kanat-Maymon, 2018). It was also related to children's better adjustment (Nachoum et al., 2021). We therefore formulated the following expectation:

H2a. The higher the level of intrinsic motivation, the lower the level of parental stress.

Extrinsic motivation encompasses various regulation styles, with different levels of internalization: external, identified, and introjected. Each of these levels is lower than in the case of intrinsic motivation. The experience of external motivation can be accompanied by a sense of boredom, stagnation, reluctance to act, anger, reduced pleasure, lower interest, lower perseverance, lower creativity, and lack of satisfaction (Deci, Ryan, 2000). The above led to the following prediction:

H2b. The higher the level of external, introjected, and identified motivations, the higher the level of parental stress.

A motivation is a state of lack of motivation and intention to act, associated with a sense of incompetence and lack of control over the situation. Such feelings are one of the factors intensifying the experience of stress in parents (Pągowska, 2014). The expectation, therefore, was as follows:

H2c. The higher the level of amotivation, the higher the level of parental stress.

Another hypothesis in the conceptual model of relationships between the variables (Fig. 1) was as follows:

H3. The effect of family stressors on mothers' parental stress is mediated by the mothers' motivation to have a child.

2.2. Method

2.2.1. Measures

Parental stress was assessed using the Polish version of the Parental Stress Scale (PSS; Berry, Jones, 1995). The PSS is widely used and recognized measure of stress involved in being a parent (Lachowska, 2021; Matuszczak-Świgoń, Bakiera, 2023; Nielsen, Pontoppidan, Rayce, 2020). Higher scores on this scale are associated with lower parental sensitivity in the relationship with the child and with lower quality of the parent–child relationship (Berry, Jones, 1995). The original version is composed of 18 items, which the respondent rates on a 5-point Likert-type scale, indicating how

strongly they agree with the description provided in each item (1 = strongly agree to 5 = strongly agree). Scores range between 18 and 90. Higher scores indicate higher parental stress. The Polish version of the PSS has confirmed validity and acceptable reliability measured using Cronbach's alpha (in this study, $\alpha = .85$).

Motivation to have a child was assessed using the Motivation to Have a Child Scale (MCS; Brenning et al., 2015). It is a recognized and widely used measure (Gugliandolo et al., 2021; Nachoum et al., 2021). Its theoretical basis is the self-determination theory by Ryan and Deci (2017). The measure can be used both among women who are mothers and among women who have no children yet. It consists of 20 items, with four items in each of the five subscales: Intrinsic Motivation, Identified Regulation, Introjected Regulation, External Regulation, and Amotivation. The respondent indicates to what extent they agree with each of the items concerning the reasons for having a child. Answers are indicated on a Likert-type scale from 1 (do not agree at all) to 5 (agree very strongly). The possible score on each subscale ranges from 4 to 20. The higher the score, the higher the level of a given type of motivation. The MCS has confirmed validity and reliability. The reliability of specific subscales, measured using Cronbach's alpha, is acceptable in the present study: $\alpha = .89$ for Intrinsic Motivation, $\alpha = .86$ for Identified Regulation, $\alpha = .81$ for Introjected Regulation, $\alpha = .88$ for External Regulation, and $\alpha = .80$ for Amotivation.

The level of family stressors, associated with difficult experiences in the relationships with children and spouse, was assessed using the Family Stressors Scale. The measure consists of items concerning such situations (e.g., the child's illness, the child's learning difficulties, the child's difficulties in peer relations, conflicts in the relationship with the spouse, marital violence; Lachowska, 2021). For each item, the respondent indicates if they have experienced the situation described. A "yes" answer is coded as the occurrence of a given experience and scored 1. Added up, the responses yield a stressor score. The higher the score, the larger the number of a particular type of experiences.

3. Results

3.1. Demographic characteristics of the sample of mothers

The mean age of the women who took part in the study was M = 35.85 years (SD = 4.53) and the mean length of their relationship was M = 10.47 years (SD = 4.46). Nearly all women lived in formalized relationships (90.9%). The vast majority of the mothers were economically active (80.8%) and had higher education (90.9%). Most participants in the sample (83.8%) came from big cities, with a population exceeding 100,000. There were between one and seven children in the mothers' families, aged from 1.6 to 13 years. The children's mean age was M = 5.69 years (SD = 2.44), and there was at least one child up to 7 years of age in each family.

3.2. Results of bivariate correlation analyses

Table 1 presents descriptive statistics regarding the distribution of the variables and the values of Pearson's r correlations between these variables (Brzeziński, 2019).

Bivariate correlations indicate that parental stress was significantly positively and moderately related to amotivation and negatively related to intrinsic motivation. The level of difficult situations in family relations (family stressors) was negatively associated with intrinsic motivation. Intrinsic motivation was positively but weakly correlated with identified and introjected motivations. Extrinsic motivation was moderately positively correlated with introjected motivation and weakly positively correlated with amotivation. The relationship between identified and introjected motivation was positive.

3.3. Results of analyses using structural equation modeling

In the analyses, we used structural equation modeling (SEM) in accordance with the solution proposed in AMOS 28 (Arbuckle, 2019) in SPSS 28 package. SEM makes it possible to determine if an a priori model is supported by empirical data. It offers the

possibility of testing hypothetical cause-and-effect relationships between variable and testing indirect effects. The analyses tested a model based on theoretical knowledge (Fig. 1). Because the latent variables included in the model were measured using scales consisting of numerous items, aggregated measurement was treated as a manifest variable. We checked if the condition for the aggregation of items was met, namely, whether the items of each scale made up one dimension—in other words, we checked if they were measures of one construct. In the case of the scales used in this study, the results of analyses made it possible to assert that this condition was met. To assess model fit, we used discrepancy functions based on the chi2 statistic (CMIN, CMIN/df) and measures of model fit: SRMR (standardized root mean square residual) and RMSEA (root mean square error of approximation), which are recommended in the literature (Xia, Yang, 2019). Based on the literature, we assumed that values of RMSEA < .10 and SRMR < .10 indicated a good fit of a theoretical model to empirical data. We used the maximum likelihood (ML) method. In this study, we generated 600 bootstrap samples to obtain a bootstrap confidence interval.

The values of fit indexes (after the removal of statistically non-significant paths) allow for concluding that the model of relationships between family stressors and parental stress is well fitted to the variance and covariance matrix, which means it can be considered a good reflection of reality, $\chi^2(1) = .067$, $p = .796$; CMIN/df = 0.067, AGFI = .997, RMSEA < .001 [LL < .001, UL = .171], SRMR = .0065. Table 2 presents standardized path coefficients and 95% confidence intervals (Table 2).

The results of analyses showed that difficult situations associated with family relations (family stressors) had an indirect effect on mothers' parental

Table 1. Descriptive statistics of the distribution of variables and the value of correlation coefficients between variables

Variable	M	SD	Min-Max	1	2	3	4	5	6
1. Parental Stress	37.57	9.13	18-69	-	-	-	-		-
2. Intrinsic Motivation	16.58	4.34	4-20	-0.36***	-	-	-		--
3. Identified Regulation	14.29	4.71	4-20	-0.18	0.24*	-	-		
4. Introjected Regulation	8.48	4.26	4-19	-0.06	0.34***	0.44***	-		-
5. External Regulation	5.50	2.85	4-20	0.02	0.01	0.16	0.49***	-	-
6. Amotivation	4.75	1.97	4-15	0.48***	-0.15	-0.14	0.06	0.24*	-
7. Family Stressors	1.30	1.28	0-6	0.18	-0.25*	-0.09	-0.12	0.01	0.19

* p ≤ 0,05; ** p ≤ 0,01; *** p ≤ 0,001

Table 2. Standardized Direct, and Total Effects (Indirect Effects)

Effects:	Standardized β	Left-Bound 95% Confidence Interval	Right-Bound 95% Confidence Interval
Total Indirect Effect:			
Family stressors → Parental stress	0,16**	0,065	0,264
Direct Effect:			
Family Stressors → Intrinsic Motivation	-0.25*	-0.436	-0.036
Family Stressors → Amotivation	0.19**	0.048	0.351
Intrinsic Motivation → Parental Stress	-0.30**	-0.474	-0.143
Amotivation → Parental Stress	0.44**	0.198	0.633

* p ≤ 0,05; ** p ≤ 0,01; *** p ≤ 0,001

stress, mediated by the effect they had on intrinsic motivation and amotivation. The mothers who had more negative experiences in their relationships with children and spouse experienced greater parental stress (standardized total effect = 0.16, $p \leq .01$) when these experiences decreased their intrinsic motivation to have a child (standardized direct effect = -0.25, $p \leq .05$) and increased their amotivation (standardized direct effect = 0.19, $p \leq .01$). Negative experiences associated with family relationships impacted mothers' parental stress only indirectly, through the effect they had on intrinsic motivation and amotivation. We found no direct effect of these experiences on mothers' parental stress, independent of their effect on motivation. Intrinsic motivation had a negative effect on mothers' parental stress (standardized direct effect = -0.30, $p \leq .01$), while the effect of amotivation was positive (standardized direct effect = 0.44, $p \leq .01$). The effect of difficult situations in relations with family members on extrinsic motivation was significantly stronger than their positive effect on amotivation (critical quotient = 2.982). The effect of amotivation on parental stress was, in turn, significantly stronger than the effect of intrinsic motivation (critical quotient = 6.555). Negative experiences associated with family relations as well as intrinsic motivation and amotivation together explained 32% of the variance in parental stress.

Discussion

The study aimed to determine the significance of difficult situations linked to relationships with family members (children and the spouse) and motivation to have a child in explaining mothers' parental stress. We considered five types of motivation distinguished in the self-determination theory. As expected, mothers' negative experiences concerning their relations with family members had an effect on parental stress, contributing to its increase. As also predicted, this effect was mediated by motivation to have a child. We found that only intrinsic motivation and amotivation acted as mediators. The experience of difficult situations in relations with family members was associated with higher parental stress when it contributed to higher amotivation and to lower intrinsic motivation. We also found that amotivation fostered parental stress, while intrinsic motivation was related to lower parental stress. The present study revealed that, in confrontation with the demands of intra-family relationships, intrinsic motivation to have a child played a protective role against the experience of parental stress in mothers, while amotivation intensified this stress. The results are consistent with those of other studies (e.g., Nachoum, Kanat-Maymon, 2018), which confirmed the significance of intrinsic motivation as a protective factor in the face of difficult events.

Difficulties in relationships with family members had an effect on parental stress only through motivation to have a child: intrinsic motivation and amotivation. Contrary to expectations, the study did not support the effect of external, introjected, and integrated motivations on parental stress. The associations between these types of motivation and the experience of family stressors were not supported, either.

Research on motivation to have a child requires continuation. The results of recent studies suggest that not only the person's own but also their partner's motivation may be of significance (Nachoum, Kanat-Maymon, 2018).

The results of analyses indicate the considerable significance of motivation to have a child in explaining parental stress. This suggests the need for activities aimed at developing intrinsic motivation to have a child. Interventions designed to strengthen autonomous motivation are undertaken in different areas of human activity, bringing positive outcomes (e.g., Gillison, Rouse, Standage, Sebire, Ryan, 2019; Ntoumanis et al., 2021; Ryan, Ryan, Di Domenico, Deci, 2019). It is worth making use of these positive experiences in the area associated with motivation for parenthood.

Bibliography

Arbuckle, J.L. (2019). *IBM SPSS AMOS 26 User's Guide.* Amos Development Corporation. (from:) https: //www.ibm.com/docs/en/SSLVMB_26.0.0/pdf/amos/IBM_SPSS_Amos_User_Guide.pdf (access: 12.05.2023).

Baldoni, F., Giannotti, M., Casu, G., Luperini, V., Spelzini, F. (2020). A dyadic study on perceived stress and couple adjustment during pregnancy: The mediating role of depressive symptoms. *Journal of Family Issues, 41*(11), 1935–1955. https://doi.org/10.1177/0192513X20934834

Berry, J.O., Jones, W.H. (1995). The Pranetal Stress Scale: Initial psychometric evidence. *Journal of Social and Personal Relationship, 12*(3), 463-472. https://doi.org/10.1177/0265407595123009

Brenning, K., Soenens, B., Mabbe, E., Vansteenkiste, M. (2019). Ups and downs in the joy of motherhood: Maternal well-being as a function of psychological needs, personality, and infant temperament. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being, 20*(1), 229–250. https://doi.org/10.1007/s10902-017-9936-0

Brenning, K., Soenens, B., Vansteenkiste, M. (2015). What's your motivation to be pregnant?: Relations between motives for parenthood and women's prenatal functioning. *Journal of Family Psychology, 29*(5), 755–765. https://doi.org/10.1037/fam0000110

Brown, S.M., Doom, J.R., Lechuga-Peña, S., Watamura, S.E., Koppels, T. (2020). Stress and Parenting during the Global COVID-19 Pandemic. *Child Abuse and Neglect, 110*(2). https://doi.org/10.1016/j.chiabu.2020.104699

Brzeziński, J. (2019). *Metodologia badań psychologicznych.* Warszawa: Państwowe Wydawnictwo Naukowe.

Chung, G., Lanier, P., Wong, P.Y.J. (2020). Mediating effects of parental stress on harsh parenting and parent-child relationship during coronavirus (COVID-19) pandemic in Singapore. *Journal of family violence, 37*(5), 801-812. https://doi.org/10.1007/s10896-020-00200-1

Cowan, C., Cowan, P. (2000). *When partners become parents: The big life change for couples*. Mahwah, NJ: Erlbaum.

Crnic, K.A., Gaze, C., Hoffman, C. (2005). Cumulative parenting stress across the preschool period: Relations to maternal parenting and child behaviour at age 5. *Infant and Child Development, 14*(2), 117–132. https://doi.org/10.1002/icd.384

Deater-Deckard, K. (2014). *Parenting Stress: Current Perspectives in Psychology,* New Haven: Yale University Press.

Garthus-Niegel, S., Horsch, A., Handtke, E., von Soest, T., Ayers, S., Weidner, K., Eberhard-Gran, M. (2018). The Impact of Postpartum Posttraumatic Stress and Depression Symptoms on Couples' Relationship Satisfaction: A Population-Based Prospective Study. *Frontiers in psychology, 9*, 1728. https://doi.org/10.3389/fpsyg.2018.01728

Gillison, F.B., Rouse, P., Standage, M., Sebire, S.J., Ryan, R.M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review, 13*(1), 110–130. https://doi.org/10.1080/17437199.2018.1534071

Gugliandolo, M.C., Cuzzocrea, F., Costa, S., Soenens, B., Liga, F. (2021). Social support and motivation for parenthood as resources against prenatal parental distress. *Social Development, 30*(4), 1131–1151. https://doi.org/10.1111/sode.12521

Holly, L.E., Fenley, A.R., Kritikos, T.K., Merson, R.A., Abidin, R.R., & Langer, D.A. (2019). Evidence-Base Update for Parenting Stress Measures in Clinical Samples, *Journal of Clinical Child and Adolescent Psychology, 48*(5), 685-705.

Jazłowska, A., Przybyła-Basista, H. (2019). Doświadczanie stresu i odnajdywanie pozytywnych aspektów rodzicielstwa w kontekście wychowywania dziecka z niepełnosprawnością intelektualną. *Dziecko Krzywdzone. Teoria, badania, praktyka. 18* (2), 76-105.

Lachowska, B. (2021). The threat of coronavirus perceived by the mother and her experiences related to the pandemic versus her relationship with the child. *Quarterly Journal Fides et Ratio, 3*(47), 476-492. https://doi.org/10.34766/fetr.v47i3.919

Louie, A.D., Cromer, L.D., Berry, J.O. (2017). Assessing parenting stress: Review of the use and interpretation of the Parental Stress Scale. *The Family Journal, 25*(4), 359–367. https://doi.org/10.1177/106648071773134

Li, S., Xu, Q., Xie, J., Wang, L., Li, H., Ma, L., Xia, R. (2022). Associations of parenting daily hassles with parents' mental health during the COVID-19 school closure. *Social Science & Medicine, 311*, 115301. https://doi.org/10.1016/j.socscimed.2022.115301

McGoron, L., Riley, M.R., Scaramella, L.V. (2020). Cumulative socio-contextual risk and child abuse potential in parents of young children: Can social support buffer the impact?. *Child and Family Social Work, 25*(4), 865-874. https://doi.org/10.1111/cfs.12771

Matuszczak-Świgoń, J., Bakiera, L., (2023). Psychometric Properties of the Polish Version of the Parental Stress Scale. *Annals of Psychology, 26*(1), 23–46. https://doi.org/10.18290/rpsych2023.0002

Nachoum, R., Kanat-Maymon, Y. (2018). Spouses' prenatal autonomous motivation to have a child and postpartum depression symptoms. *Journal of Clinical Psychology, 74*(10), 1808–1819. https://doi.org/10.1002/jclp.22630

Nachoum, R., Moed, A., Madjar, N., Kanat-Maymon, Y. (2021). Prenatal childbearing motivations, parenting styles, and child adjustment: A longitudinal study. *Journal of Family Psychology, 35*(6), 715–724. https://doi.org/10.1037/fam0000826

Nachoum, R., Moed, A., Madjar, N., Kanat-Maymon, Y. (2023). Parents' childbearing motivations, parenting, and child adjustment: From pregnancy to 20-months postpartum. *Journal of Marriage and Family, 85*(4). https://doi.org/10.1111/jomf.12917

Nelson, S.K., Kushlev, K., Lyubomirsky, S. (2014). The pains and pleasures of parenting: When, why, and how is parenthood associated with more or less well-being. *Psychological Bulletin, 140*(3), 846-895. https://doi.org/10.1037/a0035444

Nielsen, T., Pontoppidan, M., Rayce, S.B. (2020). The Parental Stress Scale revisited: Rasch-based construct validity for Danish parents of children 2–18 years old with and without behavioral problems. *Health Qual Life Outcomes, 18*(1). https://doi.org/10.1186/s12955-020-01495-w

Ntoumanis, N., Ng, J.Y.Y., Prestwich, A., Quested, E., Hancox, J.E., Thøgersen-Ntoumani, C., Deci, E.L., Ryan, R.M., Lonsdale, C., Williams, G.C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review, 15*(2), 214–244. https://doi.org/10.1080/17437199.2020.1718529

Pągowska, M. (2014). Indywidualny dramat trudnego rodzicielstwa: Przebieg, objawy i radzenie sobie z wypalaniem sił u rodziców dzieci z autyzmem. *Człowiek-Niepełnosprawność-Społeczeństwo, 2*(24), 47-59. http://doi.org/10.5604/17345537.1126282

Piotrowski, K., Bojanowska, A., Szczygieł, D., Mikolajczak, M., Roskam, I. (2023). Parental burnout at different stages of parenthood: Links with temperament, Big Five traits, and parental identity. *Frontiers in Psychology*, *14*, 1087977. https://doi.org/10.3389/fpsyg.2023.1087977

Pisula, E., Barańczuk, U. (2020). Psychometric Properties of a Polish Version of the Parental Stress Index III (PSI III). *Journal of Developmental and Physical Disabilities, 32*, 455–475.

Qian, G., Mei, J., Tian, L., & Dou, G. (2021). Assessing Mothers' Parenting Stress: Differences Between One- and Two-Child Families in China. *Frontiers in Psychology, 11*, 609715. https://doi.org/10.3389/fpsyg.2020.609715

Rayce, S.B., Pontoppidan, M., Nielsen, T. (2020). Concordance within parent couples' perception of parental stress symptoms among parents to 1-18-year-olds with physical or mental health problems. *Plos One, 15*(12). https://doi.org/10.1371/journal.pone.0244212

Ryan, R.M., Deci, E.L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *The American Psychologist, 55*, 68-78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R.M., Deci, E.L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* New York: Guilford Publishing.

Ryan, R.M., Deci, E.L. (2019). Brick by brick: The origins, development, and future of self-determination theory. (In:) A.J. Elliot (red.), *Advances in Motivation Science: Volume 6*, (111–156). Elsevier Academic Press. https://doi.org/10.1016/bs.adms.2019.01.001

Ryan, R.M., Ryan, W.S., Di Domenico, S.I., Deci, E.L. (2019). The nature and the conditions of human autonomy and flourishing: Self-determination theory and basic psychological needs. (In:) R.M. Ryan (red.), *The Oxford handbook of human motivation,* 2nd ed., (89–110). New York: Oxford University Press.

Szymańska, A., Aranowska, E. (2019). The child's „difficult" temperament and its relation with parental stress in groups of parents bringing up boys and girls. *Psychiatria Polska*, *53*(2), 399-417. https://doi.org/10.12740/PP/94381

Taraban, L., Shaw, D.S. (2018). Parenting in context: Revisiting Belsky's classic process of parenting model in early childhood. *Developmental Review, 48*, 55–81. https://doi.org/10.1016/j.dr.2018.03.006

Van Der Kaap-Deeder, J., Soenens, B., Mabbe, E., Dieleman, L., Mouratidis, A., Campbell, R., Vansteenkiste, M. (2019). From daily need experiences to autonomy-supportive and psychologically controlling parenting via psychological availability and stress. *Parenting: Science and Practice, 19*(3), 177–202. https://doi.org/10.1080/15295192.2019.1615791

Vansteenkiste, M., Aelterman, A., De Muynck, G.J., Haerens, L., Patall, E., Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *Journal of Experimental Education*, *86*(1), 30–49. https://psycnet.apa.org/doi/10.1080/00220973.2017.1381067

Więsyk, S., Lachowska, B. (2020). Współpraca rodzicielska: Komunikacja pomiędzy rodzicami. *Kwartalnik Naukowy Fides et Ratio, 2*(42), 114-123. https://doi.org/10.34766/fetr.v42i2.246

Woolf, B., Sallis, H.M., Munafò, M.R. (2023). Exploring the lifetime effect of children on wellbeing using two-sample mendelian randomisation. *Genes, 14*(3), 716. https://doi.org/10.3390/genes14030716

Xia, Y., Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods, 51,* 409–428. https://doi.org/10.3758/s13428-018-1055-2

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Financial support for large families. Nature, forms, significance[1]

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Abstract: Large families remain a constant subject of exploratory research. The perspective of their functioning, positive aspects for the development and socialisation of the child, as well as the difficulties experienced and the need for support become the subject of the discourse around this particular category of families. The purpose of this article is to present individual as well as most important benefits and solutions that are aimed at supporting large families and their assessment to what extent they form a cohesive system, together with an indication of directions for its improvement. The characteristics of large families remain beyond broader exploratory research. Only selected aspects of this issue are presented. This also applies to the briefly outlined issue of family policy and its support for large families. To achieve this goal, the analytical and synthetic method of reviewing legal sources and literature was used. The available forms of support for large families in the form of various types of benefits, discounts and allowances are an important element of family policy that still requires improvement. There is also a need for permanent educational impact regarding issues related to large families, reflections related to their assessment, showing them truthfully in a positive light, without omitting what is difficult, troublesome and important for them.
Keywords: forms of support for large families, family policy, large family

Introduction

A challenge of contemporary Poland, as well as other European countries, is the low fertility rate. We have been dealing with such a situation since the 1990s. This state of affairs is getting worse every year, despite the efforts of the state. There are several reasons for it and they are of different types and gravity. To outline them, because a deeper analysis of them would go beyond the scope of this study, moreover, they are the domain of demographers and sociologists, first of all, social factors should be pointed out, in particular the uncertainty of young people as to their financial, professional and housing prospects, and consequently postponing parenthood. Secondly, the system of support for mothers in the labour market is insufficient, as they either have no chance of entering the labour market or are excluded from it due to the birth of a child or children. The third reason is that some young people place comfort, careers and living in the moment ahead of marriage and parenthood. The fourth reason is the insufficiently effective family policy, whose instruments, while supporting families with children, do not contribute to increasing the fertility rate.

Therefore, it is all the more important to support those families that contribute to increasing this rate. This is especially true for large families, that is families with three or more children. In these families, all financial needs related to the care and upbringing of children are necessarily greater in comparison to families with fewer children. However, it is not true that these families are primarily beneficiaries of social assistance, or that they are the main group benefiting from the "500+" programme. All the more inappropriate are the often-appearing claims that these benefits affect the procreative decisions of parents who decide to have more children than average, thus widening the scope of social pathologies.

1 Article in polish language: Wsparcie materialne rodzin wielodzietnych. Istota, formy, znaczenie https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Kraj.pdf

However, if the prospect of support has an impact on the fertility rate of the family, there is nothing wrong with it, on the contrary–after all, parents and future parents have the right to count on help regarding hardship, including financial, related to childcare, especially if there are more of them than the mentally and actually accepted model would indicate.

Large families are not "five hundred pluses", "parasites", "pathology", which are among the invectives that can unfortunately be heard at their address. While monthly benefits, allowances and rebates slightly improve their living situation, they do not improve their image in the eyes of society[2]. Family policy cannot be confused with social policy. It is also not true that the image of large families does not change for the better, which is also due to such families themselves, which function as well, and often better, than smaller families, and having many children is not an aggravating factor, but an integrating one, strengthening the family community based on love, responsibility and other attributes inherent in a properly functioning family.

The role of the state is to support the family financially, especially large families. This is based on Article 71 Section 1 of the Constitution of the Republic of Poland of April 2, 1997.[3] It states that "in its social and economic policy, the state takes into account the good of families. Families in a difficult financial and social situation, especially those with many children and single-parent families, have the right to special assistance from public authorities. Also the Charter of the Rights of the Family submitted by the Holy See in Article 3 states that "the family has the right to assistance from society in matters relating to the procreation and upbringing of children. Married couples with many children have the right to adequate assistance and must not be subjected to discrimination".[4] Financial support is one of the areas of support that also includes spiritual, informational and other areas.

The purpose of this elaboration is to present the individual and most important benefits and solutions, the essence of which is the financial support for large families, and the assessment of these solutions, to what extent they form a cohesive system, together with an indication of directions for its improvement. A detailed description of large families remains beyond exploratory research as it would require a more extensive elaboration since the literature on the subject is plentiful and presenting this issue is not the main goal of this article. The same applies to the issue of family policy and its support for large families, these issues are only briefly outlined. The article uses the analytical and synthetic method of reviewing legal and literary sources.

1. Select aspects of large family issues

The family is an environment that is conducive to shaping a system of values, norms, patterns of behaviour, the ability to make choices, make decisions and fulfil specific tasks. A large family, which remains embedded in a vast network of close and distant relatives, is not an isolated family. It fulfils the function of shaping a complete human being the more fruitful the relations prevailing in it are more positive, and the adults are people with a mature personality. The family is then a true school of social virtues such as diligence, thriftiness, the ability to live together and cooperate (Dyczewski, 1996, p. 22).

In Poland, a large family is now called a family with at least three children. From the point of view of demographics, a large family is one that ensures a slightly extended replacement of generations. In this approach, a large family is considered to be a family with at least four children. On the other hand, economic criteria indicate that having many children means a family with three children, because the moment of appearance of

2 Wojciechowski, K. *Family graded three with a plus. What life of large families in Poland is like*, https://praca.gazetaprawna.pl/artykuly/1447080,zycie-rodzin-wielodzietnych-w-polsce.html (access: June 26, 2023).
3 Constitution of the Republic of Poland of 2 April 1997 (Journal of Laws of 1997, Issue 78, Item 483 with later amendments).
4 Family Rights Charter, https://www.srk.opoka.org.pl/srk/srk_pliki/karta.htm (access: June 26, 2023)

the third child in the family significantly reduces the wealth of families compared to families with fewer children (Forma, 2016, p. 23-24).

Family researchers and familiologists point to a twofold, narrower and broader, understanding of having many children. The narrower approach refers to the individual, individual space of experiences, meanings and values, which is related to the factors and processes to which a child growing up in a family environment is subject. It is primarily about the upbringing space, socialisation and education. The second, broader approach defines having many children as a socio-cultural space in which the situations and social situation of children in various types of families with many children are described, i.e. differently educated, working and unemployed, well-off and in poor financial condition (Forma, 2016, p. 27-28).

A large family ensures proper socialisation of its offspring and is a source of Poland's demographic potential. This happens through greater involvement in home life, increased responsibility, implementation in certain social roles, stronger, deeper relationships, bonds between parents and children, as well as between siblings. Large families are also perceived in a negative way, that is as an environment that threatens proper socialisation due to the lack of financial resources necessary for the proper development and education of children (Forma, 2012, p. 23-24). Large family parents are perceived as irresponsible, unable to control procreation, having more children than they can raise and support, neglecting their children in the process of caring for them and their socialisation (Witkowska, 2022, p. 86-87).

It is necessary to point out a very important aspect of having many children, which is the bonding of the family. Numerous offspring encourage parents to strive for the durability of their relationship. In families with many children, divorce is a last resort, which is used only after exhausting other ways of solving family or marital problems. The priority is the welfare of children who would suffer if their parents divorced. In the event of a divorce, it would be more difficult for one of the parents to manage three or more children (Bonisławska, 2010, p. 18). Thus, children who grow up in families with many children have a greater guarantee of the presence of both parents and take from the family home many good models related to having a family, because they observe ways of resolving conflicts among spouses, responsibility for the family and the effort associated with having and raising children on a daily basis (Bebel, 2014, p. 281). There are also other positive aspects in a large family. Namely, it gives children the opportunity to observe a wide range of social behaviour and behavioural patterns. Due to the need to spread attention to a larger number of children, they can cope with activities of daily living faster. Thanks to the fact that there is always someone at home to play and talk with, the rules of life in society are quickly internalised. Cooperation, acting for the common good are everyday life in a large family. This may translate into increased flexibility and easier adaptation to changes (Kożuchowska, 2015, p. 11). Children from large families find it easier to establish contacts and cooperate with other people. These children quickly assimilate the norms applicable in the group and usually experience situations related to going to kindergarten or school less profoundly. Due to the greater scope of responsibilities, parents expect their children to be more independent. Often older siblings become a role model and it is easier to confide in an older brother or sister about the innermost secrets and problems (Ochojska, Marmola, Węgrzyn-Białogłowicz, 2015, p. 202).

The sibling position is considered to be one of the most fundamental and at the same time natural and relatively uncontrollable factors influencing the lives of children growing up in the environment of brothers and/or sisters. It is associated with long-term consequences for the individual development of the child, shaping his personality. The most important variable affecting the position in siblings seems to be the order of birth, followed by gender, age differences between siblings and their number. They are important not only for shaping the personality of an individual, but also for their experience and fulfilling various life roles in the future (Rusaczyk, 2021, p. 26). The birth of each new child affects the family system. Due to changing circumstances, different factors operating at a given time, individual characteristics of the child, each is treated differently and often in an unintended way. Typically, the first child in a family has experiences that subsequent children do not. The first child is the centre of at-

tention until the next baby arrives. The situation of the middle child, who for some time is the younger and then the older sibling, is quite specific. Usually, these children are not given as much attention as the oldest and youngest. They often have to compete for the attention of their guardians. The youngest children are most often influenced by both parents and older siblings, and it is more difficult for them to grow up, because family members expect them to behave like a child, are more protective, indulgent and less consistent in applying punishment (Ochojska, Marmola, Węgrzyn-Białogłowicz, 2015, p. 201-202).

Thus, a large family has many characteristics that are positive for the development of children brought up in it. It can in a very beneficial way shape the characteristics of a young person, prepare him for life in society, to fulfil various roles. Of course, it is also not devoid of difficult, embarrassing or conflict situations that parents and children have to solve.

2. Large family support as a constituent of family policy

Family policy is an element of social policy as activities of the state and other organisations aimed at shaping social relations, living and working conditions of the population, so that society can survive and develop. It includes those activities of the state which are aimed at the well-being and development of the family and which are undertaken in accordance with the principle of subsidiarity (Majkowski, 1999, p. 339-340). Pro-family policy is all activities, legal norms and measures launched by the state in order to create appropriate conditions for the life of the family, for its proper functioning and fulfilment of tasks that are important for the state. One of its goals is an appropriate approach to procreation, therefore the most important components of the pro-family policy should be activities aimed at encouraging women to bear children, social benefits related to the care and upbringing of children, activities ensuring health care for mothers and children, and benefits encouraging working parents to take care of child (Szlendak, 2011, p. 455). In the case of families with many children, this issue is of particular importance, because it is in such families that difficulties in performing the economic and care function are often observed, as well as limited opportunities to improve the financial situation by taking up paid work by the other spouse, who most often takes care of the children. Thus, the goal of family policy resounds exceptionally in relation to them, concerning the equalisation of unjustified and no-fault social differences between families, creating equal opportunities for them and securing life risks (Auleytner, Głąbicka, 2001, p. 184, 188). It is also important to introduce into the pro-family policy issues related to the protection of marriage and family, preparing young people to assume the roles of a spouse or parent, or shaping appropriate cultural attitudes related to family and having children (Przeperski, 2014, p. 53), which may translate into increasing the number of births, improving the demographic situation.

Family policy must be based on values. Guzewicz points to "four axiological anchors". The first is subjectivity, according to which the family is the subject and not the object of family policy. The second is dignity, because a family, just like an individual, has a dignity of its own and deserves respect and support by virtue of its existence. The third is freedom, which comes down to giving the family a choice and avoiding bureaucratic paternalism in activities for its benefit. Value is the last anchor, the essence of which is the assumption that the most valuable resource at the disposal of the state is an individual functioning in a family (Guzewicz, 2019, p. 36). Specific forms of support should correspond to these axiological assumptions, which also applies to families with many children.

Individual benefits and solutions are targeted at large families. They are based on specific legal regulations, the determination of which is not obvious. This is due to the lack of a separate legal act concerning large families and, as a consequence, the dispersion of provisions in this regard in many legal acts. Hence the need to extract them from the maze of regulations and include them in the perspective of procreation decisions and care for the quality of life and health in exceptional families, such as large families. The more so that not all these formal and legal solutions are widely known. It should be noted

that due to the limited scope of this study, the presentation of analyses in this regard is limited only to a general indication of individual forms of financial support for large families and an outline of their essence and importance without a detailed analysis.

3. Childcare benefit "500+"

The "500+" benefit operates on the basis of the Act of 11 February 2016 on state aid in raising children[5]. Formally, it is called an upbringing benefit, which, pursuant to Article 4 Section 1 of the Act, the purpose is to partially cover the expenses related to raising a child, including taking care of him and meeting his life needs. This is important for every Polish family, and certainly for most of them, but it is especially important for large families, some of which struggle with high costs of raising several children.

Article 5 Section 1 of the Act stipulates that persons are entitled to a childcare benefit in the amount of PLN 500.00 per child per month. It is independent of family income. The government plans to increase the amount of this benefit from PLN 500 to PLN 800, and this change would enter into force on January 1, 2024. The act providing for it after social consultations[6] has been signed by the President and the childcare benefit will be paid in a higher amount.

4. The "300+" benefit due in relation to school expenses

Article 187a Section 1 of the Act of 9 June 2011 on supporting the family and the foster care system[7] provides that the Council of Ministers may adopt a family support programme. Resolution 80 of the Council of Ministers of May 30, 2018 on the establishment of the government program "Good start"[8] a government program to support families with children in incurring expenses related to the start of the school year was established. This support consists in granting the "Good start" benefit in the amount of PLN 300 once a year for a child. This benefit is granted regardless of family income.

Issued on the basis of Article 187a Section 2 of this Act, Regulation of the Council of Ministers of May 30, 2018 on detailed conditions for the implementation of the government program "Good start"[9] clarifies all issues related to the entitlement to this benefit. It is due in connection with the beginning of the school year until the age of 20 by a child or student, and by a child or student 24 years of age–in the case of children or students with a disability certificate.

For large families, support under this program is important, due to increased school expenses. In particular, it concerns the purchase of school supplies, clothes and footwear required at school and during physical education classes.

5. Family allowance extension due to raising a child in a large family

The issue of family allowances and supplements to them is regulated by the Act of 28 November 2003 on family benefits[10]. According to its Article 4 Section 1 The family allowance is intended to partially cover child maintenance expenses. It is due if the family income per person or the income of a person studying does not exceed PLN 674.00 net, as provided for in Article 5 Section 1 of the Act, and Section 2 of this article provides that if a family member is a child with a certificate of disability or a certificate of moderate

5 Act of 11 February 2016 on state aid in raising children (Journal of Laws of 2023, Item 810 with later amendments).
6 https://www.portalsamorzadowy.pl/polityka-i-spoleczenstwo/800-plus-zamiast-500-plus-od-2024-r-co-z-warunkami-przyznawania-swiadczenia,470640.html (access: June 23 .2023).
7 Act of 9 June 2011 on supporting the family and the foster care system (Journal of Laws of 2022, Item 447 with later amendments).
8 Resolution 80 of the Council of Ministers of 30 May 2018 on the establishment of the government program "Good Start" (Official Gazette of the Republic of Poland, 2018, item 514)
9 Regulation of the Council of Ministers of 30 May 2018 on detailed conditions for the implementation of the government program "Good start" (Journal of Laws of 2018, Item 1061)
10 Act of 28 November 2003 on family benefits (Journal of Laws of 2023, Item 390, with later amendments).

or severe disability, the family allowance is due if the family income per person or the income of a person studying does not exceed amount of 764.00 PLN net.

The income criterion is a serious limitation of the right to this benefit, which results in the fact that only families in the most difficult financial situation receive such support, which also applies to families with many children. However, the "1 PLN for 1 PLN" principle applies, which results from Article 4 Section 3a of the Act, according to which, if the amount entitling a given family to a family allowance is exceeded, the family allowance and family allowance allowances are due in the amount of the difference between the total amount of family allowances with allowances and the amount by which the family income has been exceeded.

As stipulated in Article 6 Section 1 of the Act, the family allowance is payable to persons until the child turns 18 or attends school, but not longer than until the child reaches the age of 21, or until the age of 24 if the child continues education at school or university and holds a certificate of moderate or severe disability. According to Section 1a of this article, the family allowance is payable to a person studying at a school or a higher education institution, but not longer than until reaching the age of 24.

Article 6 Section 2 of the Act indicates that the amount of the family allowance is PLN 95.00 per month for a child up to the age of 5, PLN 124.00 for a child over the age of 5 up to the age of 18 and PLN 135.00 for a child over the age of 18 until the age of 24.

Based on Article 8 of the Act, various supplements are payable to the family allowance. Namely, in the statutory order, these are allowances for childbirth, childcare during the period of childcare leave, single parenthood, raising a child in a large family, education and rehabilitation of a disabled child, start of the school year, starting school by a child outside the place of residence. All of them are important for families with many children, as regards the childbirth allowance or the allowance for the beginning of the school year, because they provide funds that are so much needed by families in general, and large families in particular, but for these families there is an allowance for bringing up children children in it.

According to Article 12a Section 1 and 2 of the Act, such an allowance is payable to the mother or father, the child's actual guardian or the child's legal guardian in the amount of PLN 95.00 per month for the third and subsequent children entitled to the family allowance. Article 3(16a) of the Act defines a large family as a family bringing up three or more children.

These are not high benefits. For example, if a family consists of a mother and father and three children aged 2, 4 and 10, it will receive PLN 409.00 per month from the family allowance together with this allowance. Of course, it is another support that is important, but it could be shaped at a higher level, which concerns in particular the allowance for raising a child in a large family, and which would be an expression of appreciation of the role of such families among families in general. However, when this benefit is "combined" with 500+, it amounts to PLN 1,909.00, which gives the perspective of real support for such a large family. Of course, this does not release the rulers from creating further support and working out forms of assistance responding to the needs of large families.

6. Social assistance benefits

According to Article 7 Points 8 and 9 of the Act of 12 March 2004 on social assistance[11] having many children is one of the reasons for providing social assistance. After meeting the income criterion which is income per person in the family not exceeding PLN 600.00, the family may receive assistance in the form of a targeted or periodic benefit. In exceptional situations, financial assistance may be granted even if the income criterion is not met, then support is granted in the form of a special targeted benefit. The family may apply for the costs of feeding children at school, covering the costs of food during their stay at a summer camp, assistance in the form of a food package.[12]

11 Act of 12 March 2004 on social assistance (Journal of Laws of 2023, Item 901 with later amendments).
12 https://ops.pl/2016/09/pomoc-spoleczna-dla-rodzin-wielodzietnych/ (access: June 23, 2023).

This is relevant in cases of the poorest families with many children, as well as those that temporarily found themselves in a difficult financial situation. This may particularly apply to families with many children, because with a larger number of children, the family's financial situation is usually not easy, and often it can be simply difficult, especially when the funds received are used unreasonably, and even more so when the family is affected by such frequent Polish reality with alcoholism and other pathologies of family life.

7. Child tax relief

A form of financial support for a family is also a tax relief for a child or children, which is also referred to as a pro-family relief. It is important for all working parents–also for those who establish families with many children.

This solution is perceived as stimulating the family's own activity in striving to improve its financial situation, stimulating its responsibility, making it independent of external help. However, its disadvantage may be that it is universal, which means that it is also used by wealthy families who could do without it (Ratyński, 2003, p. 321-323). However, this universality is necessary and justified in the perspective of equality before the law of all families.

Act of 26 July 1991 on personal income tax[13] in Article 27f Section 1 provides that the taxpayer has the right to deduct from the income tax the amount for each minor child in relation to whom in the tax year he primarily exercised parental authority. According to Section 2 of this article, the deduction is PLN 92.67 for each calendar month of the tax year for one minor child, PLN 92.67 for each child for two minor children, and PLN 92 for three or more minor children, PLN 67 for the first and second child respectively, PLN 166.67 for the third child, and PLN 225 for the fourth and each subsequent child. It is therefore the case that the more children in a family, the greater the amount of the tax credit for them for the third and subsequent children compared to the amount for the first and second children.

The possibility of taking advantage of this relief depends on the income of the taxpayer who is married and his spouse throughout the tax year not exceeding PLN 112,000, and the income of the unmarried taxpayer, including for part of the tax year, of PLN 56,000, with the exception of a single parent taxpayer minor child. However, this limitation applies only to situations where there is one child in the family, because if there are two or more children, the possibility of taking advantage of this relief is independent of the family's income. This is an important solution for families with many children, because even those who are financially well off will be able to beneficiaries of the tax relief for children.

8. Large Family Card

"The Large Family Card is a system of discounts and additional rights for 3+ families both in public institutions and private companies. Holders of such a card have the opportunity to use the offer of entities, e.g. from the food, fuel, banking and recreation industries. The Charter supports the budgets of large families and facilitates their access to goods and services."[14]

Details regarding this form of support are contained in the Act of 5 December 2014 on the Large Family Card.[15] Its Article 1 Section 2 provides that the rights of persons holding a valid card consist in granting more favourable than generally applicable access to goods, services or other forms of activity. According to Article 4 Section 1 of the Act, the right to have a card is granted to a member of a large family, which is understood as a family in which the parent or parents or the parent's spouse have or had a total of at least three children, regardless of their age, and Section 2b of this article specifies that the

13 Act of July 26, 1991 on personal income tax (Journal of Laws of 2022, Item 2647 with later amendments).
14 Ministry of Family and Social Policy, Large Family Card, https://www.gov.pl/web/rodzina/karta-duzej-rodziny-ogolne (access: June 23, 2023).
15 Act of December 5, 2014 on the Large Family Card (Journal of Laws of 2021, item 1744 with later amendments).

right to have a card is vested in a child up to the age of 18 or up to the age of 25, respectively, when the child is studying at school or a university.

Article 9 Section 1 of the Act indicates that the card is granted by the commune head competent for the place of residence of a large family member. This happens, accordance with Article 10 Section 1, at the request of a large family member.

The rights granted under the Large Family Card may be granted by institutions subordinated to the competent ministers, as well as by other entities on the basis of an agreement concluded with the minister competent for family matters, as provided for in Article 23 Section 1 of the Act. These are cultural institutions, including cinemas and museums, educational, commercial and service entities, including gastronomy and hotels. This gives large families a chance to save money, and often allows them to take advantage of various goods that, if not for this support, they would not be able to afford or access to them would be troublesome.

The Large Family Card is an important instrument of pro-family policy, especially in terms of promoting families, but it will not replace programs that will allow for financial and organisational stability of families, and will also change the cultural perception of having many children (Przeperski, 2014, p. 62).

9. Maternity pensions "Mom 4+"

Raising children may mean giving up employment or not taking it up at all. Such a situation may even more concern the care of children in a large family, in which the size of responsibilities increases with the birth of another child or children.

Therefore, it is good that the legislator, by the Act of 31 January 2019 on the supplementary parental benefit[16] introduced such a benefit. As stipulated in Article 1 Section 2 of the Act, its purpose is to provide the necessary means of subsistence to persons who have resigned from employment or other gainful activity or have not undertaken it due to raising children. According to Article 3 Section 1, it may be granted to a mother who gave birth to and brought up or brought up at least four children, or to a father who raised at least four children, in the event of the death of the children's mother or abandonment of the children by the mother, or in the case of a long-term cessation of raising children by the mother. The right to the benefit is established at the request of the mother or father of the children, as provided for in Article 4 Section 1 of the Act. According to its Article 7 Section 1, the amount of the benefit may not be higher than the lowest old-age pension. Article 3 Section 3 of the Act specifies that this benefit may be granted to the mother after reaching the age of 60 or to the father after reaching the age of 65, if he does not have an income that ensures the necessary means of subsistence.

Therefore, the right to this benefit is granted to parents who brought up at least four children, who either did not acquire the right to an old-age pension because they did not work or whose old-age pension is lower than the lowest, and then the benefit has a supplementary dimension. From March 1, 2023, the lowest pension is PLN 1,588.44 gross,[17] which gives the amount of 1445.00 net. This is not a high amount, but it is good that it is there at all, because before there was no such benefit at all.

This benefit is available to mothers and possibly fathers who brought up four or more children, which covers only a part of large families, which have such a status in cases of having three or more children. Therefore, it may be postulated to extend this benefit to all large families, being aware that this change would entail serious costs and therefore may prove impossible to implement.

Summary

A negative, stereotypical approach to a large family is an expression of a lack of knowledge and awareness of its functioning, and as a consequence is harmful to all its members, unpleasant for parents and children, especially for young people who

16 Act of 31 January 2019 on supplementary parental benefit (Journal of Laws of 2022, Item 1051).

17 Pensions and disability pensions will be higher by 14.8% from March, https://www.zus.pl/-/od-marca-emerytury-i-renty-b%C4%99d%C4%85-wy%C5%BCsze-o-14-8- (access date: 08/24/2023).

need so much social acceptance and recognition, not critical evaluation that will make them feel ashamed of their background. Therefore, there is a need for permanent educational impact in order to build or increase awareness of large families, to show their image in a positive light, to change the mentality of the society so that it does not reflectively make negative assessments of them, as well as to improve the forms of supporting this category of families.

The local government, non-governmental organisations and organisations of the Catholic Church, both nationwide and operating within the local parish community, try to provide active assistance to large families as part of their own tasks. Large families willingly associate, helping each other (Bonisławska, 2010, p. 37). However, it is the state that has the fundamental obligation to provide financial support for large families. It tries to fulfil this task, which is confirmed by the catalogue of forms of support in this regard. It includes several forms of such support, and their standard is good, although it requires continuous improvement.

In recent years, representatives of large families themselves have publicly announced their needs, criticising irregularities in the state's social policy and applying for specific forms of assistance. Associations of large families have repeatedly signalled that the biggest problem for large families is obtaining funds for educating children and ensuring their sense of security. In their opinion, there is no family policy in Poland, and the tax system is not pro-family, because it ignores the number of children dependent on the taxpayer (Forma, 2020, p. 27).

Help and support for large families should be constantly improved. This is required by financial, emotional and educational difficulties occurring in families, as well as passivity and helplessness, sometimes the lack of conscious decisions about having many children. Appropriately selected forms of support may be important for preventing and reducing poverty in large families, improving the housing conditions of these families, as well as shaping positive attitudes towards large families. Special actions are necessary which, on the one hand, will activate large families to become independent economic entities, and on the other hand, will facilitate their functioning. There are even low-interest loans for large families to open their own business and facilitations in establishing contacts with contractors (Dyczewski, 1996, p. 21). However, it is the specific benefits and discounts that are of fundamental importance for real support for large families. Their juxtaposition made above seems to have an ordering value, which gives a fairly complete picture of the importance of these benefits in the life of each large family as a special category of families.

Bibliography

800 plus zamiast 500 plus od 2024 r. Co z warunkami przyznawania świadczenia? (From:) https://www.portalsamorzadowy.pl/polityka-i-spoleczenstwo/800-plus-zamiast-500-plus-od-2024-r-co-z-warunkami-przyznawania-swiadczenia,470640.html (access: 23.06.2023).

Auleytner, J., Głąbicka, K. (2001). *Polskie kwestie socjalne na przełomie wieków*. Warszawa: Dom Wydawniczy Elipsa.

Bebel, A. (2014). Wspieranie rodzin wielodzietnych przez samorządy lokalne–przykład Karty Dużej Rodziny, *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania Uniwersytetu Szczecińskiego, 35,* 279-293.

Bonisławska, E.A. (2010). *Wielodzietność we współczesnych rodzinach polskich*. Poznań – Opole: Wydawnictwo Naukowe Scriptorium.

Dyczewski, L. (1996). Rodzina wielodzietna w okresie transformacji systemowej. *Samorząd Terytorialny, 11,* 16-23.

Forma, P. (2012). *Socjalizacja dziecka z rodziny wielodzietnej: studium teoretyczno–empiryczne*. Kielce: Wydawnictwo Uniwersytetu Jana Kochanowskiego.

Forma, P. (2016). *Dziecięca kreacja bibliografii w rodzinach wielodzietnych*. Kraków: Oficyna Wydawnicza Impuls.

Forma, P. (2020). *Wokół problematyki rodzicielstwa wielodzietnego. Wielowymiarowość ujęć pedagogicznych*. Kielce: Wydawnictwo Uniwersytetu Jana Kochanowskiego.

Guzewicz, M. (2019). Troska państwa o polską rodzinę. (W:) E. Osewska, J. Stala (red.), *Rodzina w społeczeństwie – relacje i wyzwania*, 35-43, Kraków: Wydawnictwo Naukowe Uniwersytetu Papieskiego Jana Pawła II w Krakowie.

Karta Praw Rodziny, https://www.srk.opoka.org.pl/srk/srk_pliki/karta.htm (access: 26.06.2023).

Konstytucja Rzeczypospolitej Polskiej z dnia 2 kwietnia 1997 r. (Dziennik Ustaw z 1997 r. Nr 78, poz. 483 z późn. zm.).

Kożuchowska, M. (2015). Dzieci jedyne oraz z rodzin wielodzietnych. *Remedium, 1,* 10-12.

Majkowski, W. (1999). Polityka rodzinna. (W:) E. Ozorowski (red.), *Słownik małżeństwa i rodziny*, 339-340, Warszawa–Łomianki: Wydawnictwo Akademii Teologii Katolickiej.

Ministerstwo Rodziny i Polityki Społecznej, *Karta Dużej Rodziny* https://www.gov.pl/web/rodzina/karta-duzej-rodziny-ogolne (access: 23.06.2023).

Ochojska, D., Marmola, M., Węgrzyn-Białogłowicz, K. (2015). Sytuacja psychospołeczna w rodzinach jedno– i wielodzietnych w percepcji dzieci, *Wychowanie w Rodzinie, 1*, 193-211.

Od marca emerytury i renty będą wyższe o 14,8% https://www.zus.pl/-/od-marca-emerytury-i-renty-b%C4%99d%C4%85-wy%C5%BCsze-o-14-8- (access: 24.08.2023).

Pomoc społeczna dla rodzin wielodzietnych. (From:) https://ops.pl/2016/09/pomoc-spoleczna-dla-rodzin-wielodzietnych/ (access: 23.06.2023).

Przeperski, J. (2014). Rodzina wielodzietna w przestrzeni publicznej. Przykład wdrożenia Karty Dużej Rodziny, *Teologia i Moralność, 1,* 51-63.

Ratyński, W. (2003). *Problemy i dylematy polityki społecznej w Polsce*. Warszawa: Difin.

Rozporządzenie Rady Ministrów z dnia 30 maja 2018 r. w sprawie szczegółowych warunków realizacji rządowego programu „Dobry start" (Dziennik Ustaw z 2018 r. poz. 1061).

Rusaczyk, J. (2021). Rodzeństwo a osobowość dziecka. *Remedium, 3*, 24-25.

Szlendak, T. (2011). *Socjologia rodziny. Ewolucja, historia, zróżnicowanie*. Warszawa: PWN.

Uchwała nr 80 Rady Ministrów z dnia 30 maja 2018 r. w sprawie ustanowienia rządowego programu „Dobry start" (Monitor Polski z 2018 r. poz. 514).

Ustawa z dnia 11 lutego 2016 r. o pomocy państwa w wychowywaniu dzieci (Dziennik Ustaw z 2023 r. poz. 810 z późn. zm.).

Ustawa z dnia 12 marca 2004 r. o pomocy społecznej (Dziennik Ustaw z 2023 r. poz. 901 z późn. zm.).

Ustawa z dnia 26 lipca 1991 r. o podatku dochodowym od osób fizycznych (Dziennik Ustaw z 2022 r. poz. 2647 z późn. zm.).

Ustawa z dnia 28 listopada 2003 r. o świadczeniach rodzinnych (Dziennik Ustaw z 2023 r. poz. 390 z późn. zm).

Ustawa z dnia 31 stycznia 2019 r. o rodzicielskim świadczeniu uzupełniającym (Dziennik Ustaw z 2022 r. poz. 1051).

Ustawa z dnia 5 grudnia 2014 r. o Karcie Dużej Rodziny (Dziennik Ustaw z 2021 r. poz. 1744 z późn. zm.).

Ustawa z dnia 9 czerwca 2011 r. o wspieraniu rodziny i systemie pieczy zastępczej (Dziennik Ustaw z 2022 r. poz. 447 z późn. zm.).

Witkowska, M. (2022). *Uwarunkowania prokreacji w rodzinach wielodzietnych*. Warszawa: Instytut Pracy i Spraw Socjalnych.

Wojciechowski, K. *Rodzina na trójkę z plusem. Jak wygląda życie rodzin wielodzietnych w Polsce*, https://praca.gazetaprawna.pl/artykuly/1447080,zycie-rodzin-wielodzietnych-w-polsce.html (access: 26.06.2023).

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Professional socialization of midwives in the first year of work in hospital wards[1]

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Abstract: *Introduction and objective:* The first experience of entering a profession has a huge impact on an employee's later life. They affect motivations for development, relationships with co-workers, and in the medical sector will directly translate into patient safety and well-being. When midwives take up their first job, they face challenges and obstacles related not only to their inexperience, but also to communication in teams, the implementation of which requires time and commitment on both sides–the implementing and experienced employee. *Material and methods:* The aim of the research presented here was to identify difficulties related to communication in midwifery teams, especially at the level of experienced–inexperienced midwife and to find out the opinions on mentoring as a way to support in the first months of work. The study was conducted by means of group interviews. Three interviews were conducted with a total of 11 midwives with 1-2 years of professional experience working in hospital wards in three Polish cities. *Results:* In the participants' statements, three issues were singled out as the most important issues raised related to the difficulties of the first months at work: the organization of the induction system, the sense of mutual trust in the team of co-workers and the inequality of wages. *Conclusions:* A sense of security resulting from mutual trust and acceptance is crucial for young midwives entering the profession. A factor conducive to a smooth socialization process to work is a properly functioning mentoring system. Communication difficulties that cause division in teams, may be related to the inequality of salaries, resulting from the disparity in the level of education of midwifery staff in hospital wards.

Keywords: medical communication, midwives, professional adaptation, relations in the therapeutic team, socialization

Introduction

Socialisation is a complex concept that has been interpreted and defined differently over the years. While some thinkers identified a particular individual deriving behavioural patterns from society as a pillar of the socialisation process, which becomes fixed over time and influences the way individuals perceive the world around them, others attached special importance to society in the broadest sense, i.e. precisely the individual's environment in the socialisation process (Katra, 2020).

The issue of professional socialisation, which should be understood as a long-term process of learning how to perform a specific profession and how to function in the work environment (Kędzierska, 2018), is a topic rarely addressed by researchers in Poland when it comes to medical professions. Research papers mainly deal with the education of future health professionals at universities or induction systems. There is also a wealth of research on patient-health professional communication. However, the topic of communication and interpersonal relationships in medical settings and their relevance in the first stages of professional socialisation is rarely addressed.

In the context of the medical professions, socialisation entails years of training, and once the career begins, intensive learning of how to do the

1 Article in polish language: Socjalizacja zawodowa położnych w pierwszym roku pracy na oddziałach szpitalnych https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Toma.pdf

given job begins. During this time, the person introducing the individual to the work environment plays an important role (Regan et al., 2017). This is because it does not only involve instruction in the performance of particular activities, learning about the layout of the hospital or a particular ward, but also, and perhaps above all, conveying the principles and values of a particular group of health professionals. It is a question of groups, as the medical community is heterogeneous and often highly divided. The most apparent boundary is between doctors and nurses and midwives (Kołodziej, 2014), once wrongfully referred to (mainly by doctors) as „lower-" or „mid-level staff" – and thus also treated in a somewhat negatively charged manner – or, to put it another way, „looked down on". Nowadays, future nursing and midwifery students are instructed during their degree programme to know their competences, and the term „lower-level staff" has been replaced by „therapeutic team", which does not have a homogenous structure, but precisely because its members complement each other, it is easier for them to achieve a common overriding goal – the well-being of the patient (Barnaś, 2016).

The smooth running of the team and respect between its members is possible if the relationships within the team are appropriate. Within the midwifery and nursing community (primarily women), it is easy to observe conflicts resulting from exhausting work patterns, constant stress or poor team organisation (McKibben, 2017), but also from non-uniform educational levels. These differences sometimes create tension and lead to conflict.

The different levels of education stem mainly from the changes in the education system for nurses and midwives over the years. Female graduates of secondary medical schools are still professionally active. The current education system is standardised across Europe and is primarily based on the 1999 Bologna Declaration. In Poland, first- and second-cycle studies in midwifery are available, and midwives with secondary education have opportunities to upgrade their qualifications (Pradela et al., 2020). A particular incentive to enter bridging programmes or specialised courses is higher salaries – in proportion to education (Jagodzińska and Rezmerska, 2017). And this is another factor dividing the nursing and midwifery community. It is not uncommon for newly graduated midwives entering the profession to earn considerably more (sometimes even several hundred zlotys) than older and experienced midwives, who essentially introduce them to the profession, pass on basic knowledge of ward operations or manual skills, but also teach the young midwives core values and work culture. Such a situation often leads to frustration and anger among midwives with greater professional experience.

The course of professional socialisation in a pleasant environment of coworkers, among whom the individual feels safe and accepted, impacts the quality of work performed (Hopkinson et al., 2022). The experience of the first months in a hospital ward of a young nurse or midwife translates into attitudes towards colleagues or decisions made in a crisis. Research into relationships within nursing and midwifery teams will allow us to understand the mechanisms affecting the quality of these relationships and to draw conclusions leading to their improvement. The final goal of patient care is the well-being and safety of the patient, which can be achieved when the team members providing care for the patient have respect for one another, are able to cooperate and communicate properly (Witczak and Rypicz, 2020) – which is directly influenced by the course of socialisation.

1. Objectives

The following article describes the experience of young midwives in the early years of their careers, i.e. precisely during the secondary socialisation associated with the start of professional activity. The primary aim of this study was to identify the difficulties associated with relationship building and communication between novice and experienced midwives and to assess the relevance of mentoring in the first months of midwives' work.

The main research questions are as follows: (1) To what extent do midwives entering the profession receive support from colleagues? (2) What difficulties

are most commonly experienced by midwives entering the profession? (3) Does mentoring exist, and what impact does it have on the course of professional socialisation? (4) What impact do communication difficulties in the first years on the job have on the quality of work?

2. Materials and methods

The study used a qualitative method involving focus groups. Three focus groups were conducted. The interviews were carried out remotely using the Zoom application. The sample included 11 (female) midwives from Warsaw, Lublin and Gdańsk. All participants started their first job in the profession no later than two years before the interview. Eight participants worked in hospitals in Mazowieckie Province, two in Lubelskie Province and one in Pomorskie Province. Seven declared an age of under 25, three over 25 and one over 40. Nine participants had a bachelor's degree, of which eight were continuing with a master's degree, and two had a master's degree in midwifery. No information about the participant's workplace – the ward or the referral level of the hospital – was collected before the interviews.

The study used convenience sampling. The participants volunteered to take part in the study by responding to social media posts that included information about the topic of the study, the requirements for participation, i.e. work experience of no more than two years, working in a hospital ward, and the participation form – online or face-to-face (depending on the study group). Despite the initial strong interest and willingness to participate in the focus groups, once the details were discussed and an appointment was made, some individuals withdrew due to the amount of time required to participate in them. On several occasions, after the researcher had sent a reminder to participants about the interview scheduled for the following day, some individuals pulled out, often without giving a reason. It was also challenging to find a date that suited several participants due to the many professional or personal obligations of those in the target group. The plan was to interview at least 15 midwives. However, this plan was unsuccessful, with a final sample of 11 individuals. The initially intended in-person delivery format for the focus group was also modified. After a number of cancellations by potential participants, the decision was made to change the format of the interviews to an online setting.

The focus group meetings lasted between 44 and 58 minutes and were conducted on Zoom. The same interview script was used in all groups, and the researcher was the focus group facilitator.

The analysis of the results focused on three main themes: (1) feeling of security among colleagues, (2) organisation of the induction system, (3) pay inequality and new salary grids. Two strands can be distinguished within the first theme: (a) acceptance and (b) support.

3. Results

In all focus groups, participants described their first days and weeks at work as an important time that directly influenced their subsequent behaviour and attitudes towards their profession. Midwives mentioned on many occasions that a well-organised induction system for newcomers was very important in their opinion. According to the interviewees, it is linked, for example, to trust within the team and to issues such as equal pay.

The main themes explored during the interviews are outlined below, supported by quotes from the interviewees.

1. Feeling of security among colleagues

    1.1. Acceptance

    The interviewees cited situations where having to supervise the work of a junior colleague was not accepted by midwives with more seniority and made them feel frustrated and upset. The interviewees recounted witnessing this frustration and sometimes hearing statements that could be considered a manifestation of verbal abuse.

(...) she was abrasive and unpleasant when I asked her something, for example, when I was working out the distribution of medications. (...) I just wanted it all to be reviewed properly, (...) and she said to that – No! You're supposed to do it – and she was so aggravated (...) (AI)2
(...) it was like these older midwives would fall silent when I went to the bathroom, for example (...)
and when I went in, they would stop talking (...). And it made me feel utterly embarrassed at the time (AII)

There was also one comment about senior midwives who mentored the interviewee from the beginning of the introductory period and did not show verbal abuse towards the younger, inexperienced colleagues. However, it is worth noting that, in the interviewee's opinion, such a positive attitude was a stroke of luck that happened to her. This may imply that relationship difficulties between younger and older team members are common in this environment, and their absence is recognised and interpreted as a special situation.

(...) I think it is very important who you get. I was lucky to meet midwives who do their job diligently and consider it some sort of a mission to pass on this knowledge to others, and I think it is fortunate to meet such people on duty (GI)

The interviewees found it easier to establish positive relationships with colleagues their age. At the same time, building a good relationship with even one person makes the other team members start to perceive the new employee more favourably.

It was easier for me to get along with the younger ones, and once we warmed to each other, the older ones also liked me (...) in the sense that, well, I have the impression that once the younger ones accepted me, the older ones did, too, later on (RII)
(...) I was glad that most of the girls were pretty young because we quickly hit it off, and somehow, they accepted me into the group faster. I found it difficult to get on a first-name basis with some of the older ones for a long time – I mean, it was stupid, but then I finally got the courage to do it, and it was fine (...) it made the job easier (DIII)

1.2. Support

An important factor that directly influenced the young midwives' feeling of security in the ward was mutual support and a sense of shared responsibility for the patient. The participants talked about the importance of support in building trust between team members. The interviewees' experience in this area varied. Four had a positive experience, and five a negative one.

But it was very comforting that there was one person I knew that (...) I could always talk to [that] is very important because I know that someone here has my back (WI)
A sense of security is key here, not only for the young ones who are getting started but also for the older midwives (ZIII)
(...) I experienced this situation. It made me to trust a colleague 100%. (...) I think it's very important to have the feeling that if something goes wrong, it's a shared responsibility (...) (ZI)
And what bothers me the most are the lines like: „When I started work, nobody asked me if I knew how to do it, they just said: 'If you have the degree, do the job.' You guys have it better now, so enjoy it" (AIII)

2 The capital letters correspond to the first letters of the participants' first names (G, A, Z, etc.), as this was to make it easier to distinguish between the individual statements, and the numbers in brackets indicate the number of the focus group from which the statement originated (I, II, III).

(...) you hear lines like „You have your stamp, you have 100% responsibility", and you know that's not exactly the case when you're on duty together (GI)

2. Sound organisation of the induction system

When asked about the induction system in their working environment, the interviewees mostly rated it as inefficient and blamed it on their immediate superiors. Only two interviewed midwives acknowledged that the mentoring system in their hospital is working well.

We have this system; sometimes it works well, and sometimes it doesn't. But I think it's useful for us – as new employees. Because we have a specific person assigned to us (...) who is a kind of tutor or mentor (DIII)
(...) I find the situation when a person without any experience is put on duty as a regular – and not as an extra (...) extremely unfair, especially on the part of the employer (...). For me, a situation when a senior colleague takes it out on me is a sign that she simply can't handle it (...) (GI)
because, in my hospital, there is such a system (...) those who induct actually get a financial bonus for inducting a new employee (...) I think it is a sound system (...)) (ZI)
(...) every midwife is a bit of a mentor to me, but honestly, I think something didn't work out (...) Because I don't remember it in a positive light (...) it was not a great experience3 (OII)
(...) maybe it would actually be easier if I already had a person assigned to me at the very beginning who was responsible for me. And I would know that I can just unabashedly follow her around and ask her about anything and that she has to make time for me (OII)
(...) at my workplace, mentoring works. (...) the fact that I was always on shift with one midwife and that she showed me the ropes was kind of reassuring for me. I mean, I knew I could ask about anything (...) (PII)
(...) I don't think there's any real mentoring at my workplace, but, in general, I was on duty in two shifts at the beginning and for the first month as an extra. It was quite fine. (...) because I always had a trusted person I could ask about things (LIII)

3. Pay inequality and new salary grids

The topic of pay resulting from the new salary grids, introduced in July 2022, was also raised during the interviews. Young midwives recalled situations indicating dissatisfaction and a sense of injustice among experienced colleagues, which they felt directly impacted the working atmosphere and relationships within the team.

(...) I feel that in my case, the problems started later (...) when the new bill on pay rises came into force, and it was then that anger and rage began to surface among some of my colleagues at the fact that we were going to get more money (...) There was quite a lot of tension and anger, and I heard them say many times: „We won't teach those midwives with master's degrees if they get more money than us", and I get the impression that from a collegial point of view, this money did a lot of harm (ZI)
(...) sometime in June, the tension started to grow because we were all waiting for these new salary grids, and I remember that, at that time, there was constant talk that those older midwives who were training us would get lower salaries than us, the educated ones (...) B(III)

3 According to the ward management, each senior midwife mentors a junior midwife during induction. Describing her first days in the ward, the young midwife cited situations where she felt like „a third wheel", like an interfering and unnecessary presence. Therefore, she did not view the induction system proposed by the ward nurse favourably.

I know that my hospital operates like a company, and midwives with long work experience don't get seniority bonuses or whatever they call it (...) sometimes we're paid more per month, having been on the job less than a year (...) it is a bit unfair T(III)
One of the midwives at my workplace commented that they have to encourage people to enter this profession somehow, and it's known that money is the biggest incentive (LIII)

4. Discussion

As the above study shows, the key issues for those entering the midwifery profession are the feeling of security and trust in colleagues, which can be achieved mainly through a well-organised induction system for new staff. The first experience as a young midwife has a direct impact on the formation of a professional identity and the subsequent approach to the job. It also becomes a pattern of relationships between members of the therapeutic team (Hastie and Barclay, 2021). Professional socialisation takes place on two levels – adaptation to the rules and conditions of a particular organisation and assimilation into a new group of colleagues. The above study looked at the second dimension of this process, i.e. adaptation to the group formed by midwives already working for a particular organisation. The only work-related experience that young midwives recruited for hospital wards have is work placements during their studies. The first few months on the job confront the perceptions about the functioning of a hospital and the day-to-day tasks of a midwife. It turns out that the difficulties that stand in the way of a new staff member are not only the lack of knowledge needed to work in a specific ward or insufficient manual skills but also the uneasy adaptation to a group of colleagues. Many studies raise the universal issue of the medical professions' particular vulnerability to professional burnout. These risks are strongly influenced by relationships with colleagues (Bańkowska, 2016), formed during the first months after starting a job. Therefore, it is important that professional socialisation takes place in a way that fosters relationships between members of the therapeutic team based on mutual respect and trust. The right atmosphere in the first few months of work, good relationships and communication patterns will have a positive impact on job satisfaction.

The sense of satisfaction with one's job is influenced by many factors, but one of the most important is having good interpersonal relationships with colleagues (Babiarczyk et al., 2014). As can be inferred from the interviewees' statements, a sense of security was fundamental for them in their first months on the job. This broad term was used by young midwives in different contexts, depending on the situation recalled. The results described above divide issues of feeling secure depending on their source – those arising from support and those arising from acceptance. Focus group participants talked about acceptance in two ways. First, as the very situation when a new staff member arrives in the ward, and the role of the senior experienced midwife is to induct them, and second, to accept (not just tolerate) and welcome the new person into her team. It was highlighted that both the willingness of both parties and adequate time were usually needed here.

Senior midwives, who had developed a particular working system and rhythm of the day after many years in the same ward, showed frustration and aggravation at having to train a younger colleague. The reasons for the unfavourable attitude towards novices, according to the interviewees, were that they asked too many questions too often and that they wanted to perform all duties very diligently. The lack of support from experienced midwives, which resounded in statements such as „You have your stamp, you have 100% responsibility", results in young midwives having a „survival rather than development" mindset, as described by an Australian qualitative study. The unsupportive behaviour of experienced midwives was associated with feelings of „littleness" and „stupidity"(Fenwick et al., 2012), which is consistent with the findings of this study.

In the European Psychosocial Risk Management Excellence Framework project (PRIMA-EF, 2009), lack of social support and interpersonal conflict are

listed as psychosocial risks. These factors may even directly influence early withdrawal from the labour force (Mielecka, 2021).

There was also positive feedback from the participants, which reflected the supportive attitude of the senior midwives accepting their situation and willing to induct their younger colleagues. However, it should be noted that this was usually linked to the mentoring system in place at the hospital, which is a didactic process involving the transfer of knowledge and skills of effective work and practical habits and knowledge (Górka et al., 2019). A mentor is a guide who, as the definition says, imparts not only practical knowledge and skills but also good habits relevant to the job. And this is another issue that came up frequently in the statements of the interviewees. The women highlighted the importance of a well-organised induction system for the new employee, in which both the inductee and the inductor are satisfied. Two of the eleven interviewees declared that their employer had implemented a mentoring system. A sound induction system brings many benefits, such as facilitating interpersonal communication, enhancing work motivation and improving integration (Mielecka, 2021). For the mentor, satisfaction is not only linked to the recognition bestowed on them by their supervisor. This is the role of experienced individuals with the ability to impart knowledge. At the same time, they receive additional compensation for their role as mentors. The interviewees were clear that they believed that this important function of introducing a new person to the team should involve financial gratification. The interviewees saw that this task requires commitment and time, and comes with additional responsibility. For a newcomer, mentoring means, above all, a boost in confidence and a feeling of security, guaranteed by the constant presence of one person who „you can always ask about things". Communication problems resulting from the negative attitude and frustration of senior midwives, as can be inferred from the statements of the midwives interviewed, were often due precisely to the lack of a system to ensure the induction of newly recruited staff, and the interviewees attributed the blame for this state of affairs to the ward management, in particular the ward or head midwife. A sound mentoring system has a positive impact on subsequent performance as a midwife and willingness to practise in subsequent years, as reported by Bradford et al. (2022).

One research problem raised during the interviews due to being a relatively new topic was pay inequality and the new salary grids for nurses and midwives, introduced in July 2022. Young midwives with higher education are often inducted by women without a master's degree. Yet, they are paid more for the mere fact of completing second-cycle studies than their experienced colleagues. According to the Act of 26 May 2022 on amending the Act on the manner of determining the lowest basic pay of certain staff employed in medical entities and certain other acts (Dz. U./ Journal of Laws/ of 2022. 1352), which entered into force on 1 July 2022, the basic pay of a senior, experienced midwife without higher education and a junior midwife who completed second-cycle studies may differ by up to several hundred zlotys. Focus group participants said this situation negatively affects interpersonal relationships within the team.

In the view of midwives entering the profession, this method of gratification, awarding higher pay to those with no experience compared to long-serving staff, is unfair and generates negative comments and unfavourable attitudes from experienced midwives towards younger ones. They believe that it would make sense to introduce a bonus system based on length of service for so-called seniority. Unfortunately, seniority allowances were scrapped in many hospitals following the introduction of the new salary grids in July 2022, and in some, there was no such allowance at all. The difficulties associated with the inequality of pay and responsibilities described here are corroborated by other researchers. According to S. Wieder-Huszla et al. (2016), the disproportionate responsibilities in relation to earnings, i.e., for example, the responsibility for induction of a junior midwife, causes stress and is one of the factors that, in the long term, may contribute to the risk of professional burnout.

Conclusions

A well-functioning midwifery team is a group of people who accept and respect one another. However, young women entering the workforce with no experience often encounter problems at the beginning of their careers in establishing good professional teacher-learner relationships. Dysfunctional interpersonal relationships within the team result primarily in a sense of absence of support and mutual trust.

As the above study shows, the proper socialisation process is made possible by the mentoring system, which, by creating a space for ‚two generations' to work together, enables a feeling of security to develop, which is crucial for both those entering the profession and qualified midwives.

Bibliography

Babiarczyk, B., Fraś, M., Ulman-Włodarz, I., Jarosova, D. (2014). The level of job satisfaction and its relation to midwives' subjective quality of life, *Medycyna Pracy* [Preprint]. https://doi.org/10.13075/mp.5893.2014.011

Bańkowska, A. (2016). Syndrom wypalenia zawodowego – symptomy i czynniki ryzyka, *Pielęgniarstwo Polskie, 60*(2), 256–260. https://doi.org/10.20883/pielpol.2016.20

Barnaś, E. (2016). Pattern ethical communicationin the therapeutic team, *Health Promotion & Physical Activity, 1*(1), 9–22. https://doi.org/10.5604/01.3001.0010.7697

Bradford, H., Hines, H.F., Labko, Y., Peasley, A., Valentin-Welch, M., Breedlove, G. (2022). Midwives Mentoring Midwives: A Review of the Evidence and Best Practice Recommendations, *Journal of Midwifery & Women's Health, 67*(1), 21–30. https://doi.org/10.1111/jmwh.13285.

Fenwick, J., Hammond, A., Raymond, J., Smith, R., Gray, J., Foureur, M., Homer, C., Symon, A. (2012). Surviving, not thriving: a qualitative study of newly qualified midwives' experience of their transition to practice: Surviving, not thriving, *Journal of Clinical Nursing, 21*(13–14), 2054–2063. https://doi.org/10.1111/j.1365-2702.2012.04090.x

Górka, E., Kunecka, D., Szylińska, A., Ptak, M. (2019). Coaching and mentoring in nursing practice, *Pomeranian Journal of Life Sciences, 65*(1), 98–104. https://doi.org/10.21164/pomjlifesci.547

Hastie, C.R., Barclay, L. (2021). Early career midwives' perception of their teamwork skills following a specifically designed, whole-of-degree educational strategy utilising groupwork assessments, *Midwifery, 99*, 102997. https://doi.org/10.1016/j.midw.2021.102997

Hopkinson, M.D., Kearney, L., Gray, M., George, K. (2022). New graduate midwives' transition to practice: A scoping review, *Midwifery, 111*, 103337. https://doi.org/10.1016/j.midw.2022.103337

Jagodzińska, A., Rezmerska, L. (2017). Czynniki wpływające na podnoszenie poziomu kwalifikacji zawodowych pielęgniarek w ramach kształcenia podyplomowego, *Innowacje w Pielęgniarstwie, 2*(4), 44–60. https://doi.org/10.21784/IwP.2017.022

Katra, G. (2020). Socjalizacja i wychowanie na przestrzeni całego życia. (W:) K. Bargiel-Matusiewicz, M. Ledzińska (red.), *Psychologiczne mechanizmy regulacji z perspektywy zdrowia i choroby,* 17-45, Warszawa: Wydawnictwo Liberi Libri.

Kędzierska, H. (2018). Socjalizacja profesjonalna nauczycieli na starcie kariery zawodowej – druga strona medalu, *Zarządzanie publiczne (Uniwersytetu Jagiellońskiego)*, 41(1), pp. 75–89. https://doi.org/10.4467/20843968ZP.18.006.8235

Kołodziej, A. (2014). Czynniki określające status społeczny pielęgniarek, *Hygiea, 49*(1), 69-74.

McKibben, L. (2017). Conflict management: importance and implications, *British Journal of Nursing, 26*(2), 100–103. https://doi.org/10.12968/bjon.2017.26.2.100

Mielecka, D. (2021). Determinanty satysfakcji zawodowej pielęgniarek a racjonowanie opieki pielęgniarskiej. Rozprawa doktorska, Wrocław: Uniwersytet Medyczny im. Piastów Śląskich.

Pradela, K., Radosz, Z., Sobiegała, A. (2020). Nursing education in Poland, *Pielegniarstwo XXI wieku / Nursing in the 21st Century, 19*(1), 47–56. https://doi.org/10.2478/pielxxiw-2020-0008

PRIMA-EF, Psychosocial Risk Management Excellence Framework. (From:) http://www.prima-ef.org/prima-ef.html (access: 02.02.2023)

Regan, S., Wong, C., Laschinger, H.K., Cummings, G., Leiter, M., MacPhee, M., Rhéaume, A., Ritchie, J.A., Wolff, A.C., Jeffs, L., Young-Ritchie, C., Grinspun, D., Gurnham, M.E., Foster, B., Huckstep, S., Ruffolo, M., Shamian, J., Burkoski, V., Wood, K., Read, E. (2017). Starting Out: qualitative perspectives of new graduate nurses and nurse leaders on transition to practice, *Journal of Nursing Management, 25*(4), 246–255. https://doi.org/10.1111/jonm.12456

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Wieder-Huszla, S., Żak, B., Jurczak, A., Augustyniuk, K., Schneider-Matyka, D. (2016). Occupational burnout among nursing personel, *Family Medicine & Primary Care Review, 1*, 63–68. https://doi.org/10.5114/fmpcr/59057.

Witczak, I., Rypicz, Ł. (2020). *Bezpieczeństwo pacjentów i personelu medycznego: uwarunkowania ergonomiczne*, Wrocław: Uniwersytet Medyczny im. Piastów Śląskich.

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Leisure activities and feelings of stress in the workplace. The mediating role of emotional reactivity and activity[1]

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Abstract: The purpose of the research was to verify the relationship between experiencing stress while in the workplace and leisure activities, and to see whether selected temperament traits in line with Strelau's Regulative Theory of Temperament – emotional reactivity and activity – significantly affect the link between these variables. The survey included 124 economically active people, with a minimum of one year of work experience, in the age range of 18 to 65. It was conducted using the paper-and-pencil method in a stationary mode with three tools: Formal Characteristics of Behaviour – Temperament Inventory Revised Version, Subjective Work Assessment Questionnaire, and Free Time Spending Questionnaire. The results showed that as the level of stress experienced in the workplace goes up, relaxation and physical activity and activity decrease, while emotional reactivity increases. At the same time, the higher the relaxation and physical activity, the higher the activity level and the lower the emotional reactivity. Moreover, these two temperament traits may modify the relationship between leisure activities and feelings of stress in the workplace.
Keywords: activity, leisure time, emotional reactivity, stress, temperament

Introduction

In today's dynamically changing reality, issues related to work and leisure time are particularly important. There is a growing need to understand the peculiarities of these phenomena and readiness to manage them optimally is of crucial importance. Leisure time is the main area of interest for the authors of the article, since conscious planning and undertaking activities outside of work has many benefits for physical and mental health, effective functioning under stress, as well as work-home balance (Łukaszewski, 2020; Rosak-Szyrocka, 2021). This raises another issue of what role an individual's characteristics – in the form of the intensity of certain temperament traits – play in the perception of leisure and stress (Cyniak-Cieciura, 2021). Previous analyses on the aforementioned variables were undertaken with specific social or professional groups to indirectly verify the relationship between them. Given the lack of implications that confirm the significance of the interactions, the aim of the conducted research was not only to examine the relationship between the perception of stress at work and leisure activities, but also to see whether emotional reactivity and activity modify the relationships under consideration.

1. Ways of spending leisure time

The concept of leisure time emerged in scientific discourse as the opposite of time devoted to work. The literature provides various definitions that de-

1 Article in polish language: Sposoby spędzania czasu wolnego a odczuwanie stresu w pracy. Pośrednicząca rola reaktywności emocjonalnej i aktywności https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Lipi.pdf

scribe the essence of this issue, and since it arouses the curiosity of researchers from many scientific fields, three approaches to the conceptualization of leisure time are distinguished: instrumental, behavioural and spiritual (Czarnecki, Kaszkowska, Kreft, Nikolenko, Skalski, 2023). The first defines time as moments left for an individual to regenerate after fulfilling tasks arising from varied obligations. The behavioural approach involves engaging in activities that lead to rest and relaxation (Czarnecki et al., 2023). In spiritual terms, leisure time involves focusing on satisfying higher-order needs, such as self-development or self-improvement (Miłaszewicz, Węgrzyn, 2018). In the research presented here, leisure time will be considered both in terms of rest from work and household chores as well as in terms of any activity that is a source of satisfaction (Czarnecki et al., 2023).

Leisure time plays various roles in human life, which can basically be boiled down to three functions. The first of these – rest – is oriented toward relieving and removing mental and physical fatigue. Relaxation is essential for recovery and directly affects a person's well-being. The second function of leisure time is entertainment, which allows needs that counteract monotony to be satisfied through activities with different levels of variation and intensity. The third function involves the independent expansion of knowledge about one's own being, which leads to development and self-realization. It is a different kind of stimulation that provides an opportunity to disconnect from daily worries. In addition, it is said that through leisure mental life is enriched, interpersonal relationships are established and maintained, and there is an opportunity to satisfy the need for creative expression (Czarnecki et al., 2023; Różanski, 2018).

Considering leisure time through the prism of the activities undertaken in it makes it possible to carry out a division of the ways it is spent into, first, active such as sports, gardening, traveling, and second, passive in the form of, for example, listening to music, watching TV, going to the theatre. Their preference depends on a number of factors, such as environmental conditions, individual characteristics of the person or his or her current well-being (Łukaszewski, 2020). Leisure time physical activity positively affects various aspects of daily functioning, from improving sleep quality to affecting overall health (Bull et al., 2020). A popular form of this type of recreation is team sports (such as volleyball, basketball, football or hockey). They can be a good way to relieve accumulated tension in a group of people who enjoy physical exertion and like situations that involve interpersonal interaction and cooperation. Individual sports (e.g., swimming, golf, skiing) are another type of active leisure activity. They are certainly characterized by greater time flexibility. Moreover, they leave ample room for individual preference in the intensity and frequency of the activities undertaken. Individual sports increase a sense of control, self-discipline, and independence, and by requiring a high level of focus, distract from stressors and other negative factors (Šagát et al., 2021).

When it comes to relaxation leisure activities, there are a number of options to choose from as well. Due to ease of access, many people consider watching TV, listening to the radio or reading a book or newspaper to be the optimal way to rest passively. Those with a passion for the art of film are more likely to go to the cinema for a movie screening, while classical music enthusiasts will prefer concerts at the philharmonic. Others will regularly choose to spend an evening at the theatre or art gallery (Yoo, 2022). An interesting way to spend leisure time, especially in the long term, is tourism. This is a specific form of activity which involves an extremely wide range of possibilities as regards the choice of destination, as well as the activities undertaken. Depending on individual preferences, tourism can be both active and passive. However, regardless of whether a person decides during this time to visit architectural monuments, walk through mountainous terrain or relax in the sun, any change of environment that allows a break from various commitments significantly improves the quality of life and provides an opportunity for rest and recuperation (Stasiak, 2022).

The leisure activities listed above are only a small portion of the activities a person can undertake during breaks from work. How an individual spends their free time depends on their individual preferences, interests, education, place of residence, economic status and availability, among other factors. In the context of the variety of diseases of civilization, undertaking activities

that serve recreation is gaining importance. Finding a moment to relax becomes a key part of taking care of one's own physical and mental well-being (Skalski, Nesterchuk, Skalska, Kindzer, 2021).

2. Leisure time, emotional reactivity and activity versus experiencing stress at work

The pace of life in the modern world means that we have increasingly less time to relax and also need to deal with much more stressful situations (Heszen, 2020). Despite the multiplicity of definitions of stress, it seems that the common denominator of the vast majority of them is to view the stress response as some kind of disruption of the harmony between an individual's resources and the demands of the outside world. A particular place which a definite part of society can associate this type of tension with is the professional environment. The stress response in general is a healthy and adaptive function that occurs when a person is faced with a challenge. Thus, it should not be considered unequivocally harmful to the individual; however, prolonged and regular contact with stressful stimuli can significantly stress the entire body and bring negative consequences (Engert, Linz, Grant, 2019). Time pressure, fear of losing one's job, excessive control by one's supervisor, conflicts or inadequate working hours are among the many stressors associated with the work environment. There are a number of indications from empirical studies that confirm that high levels of perceived stress at work, among other things, reduce employees' satisfaction and productivity, as well as worsen their well-being. Therefore, the introduction of measures to prevent and counteract this phenomenon should be an integral part of the structure of operations of the entire organization, and the personnel employed should be properly prepared (Aryanto, Tukinah, Hartarini, Lubis, 2020; Brunner, Igic, Keller, Wieser, 2019).

The approach to workplace stress proposed by Dudek, Waszkowska and Hanke (1999) plays an important role in the research presented herein. The aforementioned researchers believed that stress is a process which consists of diverse reactions and changes that occur in a person as a result of having to face a difficult situation and becoming aware of the various demands associated with it. The researchers identified six consecutive phases of workplace stress: (1) the objective situation; (2) the subjective situation; (3) the primary evaluation; (4) the immediate reaction resulting from emotional arousal; (5) the choice of how to deal with the stress; and (6) the distant effects depending on the adequacy of the decision made in the previous stage. The whole process is directly influenced by certain modifiers that depend on the characteristics of the individual and the social environment, which can support the person facing a difficult situation or, on the contrary, cause additional difficulties (Dudek, Waszkowska, Hanke, 1999).

Due to the negative effects of stress, many researchers are taking on the challenge of finding the most optimal methods to reduce such tension. Various analyses have been conducted to consider this issue and to verify, among other things, the relationship between various leisure activities and different aspects and types of stress, including work-related stress. Officers of the National Fire Service were one of the professional groups that was subjected to such testing. Slendak and Cewińska (2015) examined the role of sports activities undertaken in free time in counteracting stress in the workplace. It turned out that the largest number of officers of the National Fire Service relieve accumulated stress by meeting with friends, listening to music, watching TV series, and playing sports. After the physical activity, most officers felt a significant improvement in their mood and a reduction in tension. Moreover, more than half of the respondents reported that team sports in particular had a positive effect on decreasing tension. Bell, Theiler and Rajendran (2012), on the other hand, decided to see if there was a relationship between the stress experienced at work and the balance between time spent in the workplace and that spent on private activities and relaxation. The study included 100 employees of various universities located in Australia. Analysis of the results showed that work-home imbalance was significantly more common among the workers who experienced more severe professional stress.

Another factor that can moderate the relationship between stress-related phenomena and also be related to the level of stress is temperament. Of the many diverse takes on this issue, one seems to be particularly frequently cited by the numerous researchers exploring the subject, namely the Regulative Theory of Temperament. The author of this approach, J. Strelau, distinguishes six temperament traits: perseverance, briskness, endurance, sensory sensitivity, emotional reactivity, and activity. Due to the specifics of the analyses carried out, it is worth paying special attention to the latter two characteristics. Emotional reactivity according to this concept is defined as the tendency to react intensely to emotogenic stimuli, which are expressed in high sensitivity and low emotional resilience. Activity, in turn, can be understood as the tendency to engage in behaviours characterized by high stimulative value or those that provide high internal stimulation (Heszen-Niejodek, 2020). The relationship between temperament and stress has been analyzed for a variety of groups and environments both in Poland and abroad. Waszkowska, for example, tested the relationship between certain temperament characteristics and the level of stress drivers experience in connection with active participation in traffic. The results clearly indicate that individuals experiencing less tension in traffic are those characterized by low intensity of response to stimuli and high need for stimulation (Waszkowska, 2009). Cyniak-Cieciura and Zawadzki (2019), on the other hand, tested whether temperament traits were related to symptoms of post-traumatic stress disorder (PTSD) and its moderators. Through a meta-analysis of 19 studies, they were able to determine that all temperament traits consistent with the Regulative Theory of Temperament were statistically significantly associated with PTSD symptoms – emotional reactivity was associated positively, while activity – negatively. In turn, Brudek, Steuden and Ciuła (2019) reviewed the mediating role of stress coping styles in the relationship between temperament and occupational burnout. The study group consisted of nurses, working in various psychiatric wards. The results led to the conclusion that emotion-focused coping is a significant mediator between emotional reactivity and activity and emotional exhaustion.

The studies cited above provide clear evidence of a link between leisure time, emotional reactivity and activity and the experience of stress in various situations and environments, including the workplace. However, there is a clear deficit in the literature of studies that take into account selected temperament traits and leisure activities, especially in relation to the phenomenon of occupational stress.

3. Problems of own research

The aim of the study was to analyze the relationship between feelings of stress at work and leisure activities, and to see if emotional reactivity and activity play a significant role in shaping the relationship between these variables. So far, the considerations mainly referred to single aspects of the factors under review. The relationship between stress and leisure time is usually studied indirectly by checking the relationship with a specific interest on which leisure time can be spent. The subject of such considerations is primarily physical activity in its broadest sense. Rosak-Szyrocka (2021) showed that undertaking such activities helps combat occupational stress, allows for relaxation and recovery, and increases the employees' overall quality of life. Also, activities unrelated to sports can reduce tension, as can be seen, for example, in analyses conducted by Hartono (2022). A questionnaire survey with respondents between the ages of 17 and 25 led to the conclusion that having a hobby, in this case specifically related to drawing, helped reduce accumulated stress by directing attention to developing creative thinking. Despite the lack of research that takes into account the breakdown of leisure activities into relaxation and physical activities, the rationale from the cited studies provides a solid basis for the assumption that stress at work will correlate with leisure activities. In addition, analyses by Cyniak-Cieciura (2021) showed that the level of activity and emotional reactivity are clearly related to stress as a predictor of its intensity, with the latter temperament trait possibly being modified by the intensity of psychological flexibility. Moreover, a study involving psychiatric nurses (Brudek, Ciuła, Furmanek, Steuden, 2018) found that activity was

negatively associated with emotional exhaustion and depersonalization, i.e., aspects of professional burnout, which in many cases is underpinned by chronic stress in the professional environment.

In view of the cited research results, the following research hypotheses were formulated:

H1. There is a relationship between stress levels and leisure activities:
  H1.1 The stronger the relaxation activity, the lower the level of occupational stress.
  H1.2 The stronger the physical activity, the lower the level of occupational stress.

H2. The lower the level of emotional reactivity, the lower the level of perceived stress.
H3. The higher the level of activity, the lower the level of perceived stress.

Given the lack of research with regard to the relationship between emotional reactivity and activity and leisure activities, and the desire to verify the links that exist between them, it was decided to formulate the following directional research questions:

Q. 1. Is there a relationship between the level of emotional reactivity and leisure activities?
  Q. 1.1 Does a higher level of emotional reactivity mean weaker relaxation activity?
  Q. 1.2 Does a higher level of emotional reactivity mean weaker physical activity?

Q. 2. Is there a relationship between activity levels and leisure activities?
  Q. 2.1 Does a higher level of activity mean higher relaxation activity?
  Q. 2.2 Does a higher level of activity mean higher physical activity?

Q. 3. Can emotional reactivity modify the relationship between leisure activities and feelings of stress in the workplace?
Q. 4. Can activity modify the relationship between leisure activities and feelings of stress in the workplace?

4. Method

4.1. People surveyed

The survey included 124 people with a minimum of one year of work experience at their current place of employment. Women accounted for 52.4% of the respondents, while men accounted for 47.6% of the respondents. The mean age of the participants was 34 years ($M = 33.8$; $SD = 12.2$). The average length of service overall was 9 years, while for the currently held position it was 6 years. For 72.6% of the respondents, the learned profession was not compatible with their occupation. In addition, 29% of those surveyed held a management position. The most common place of residence declared by the participants was a city between 100,000 and 500,000 residents (32.3%), and the least common was a village (18.5%). Most of the respondents had a master's degree (34.7%), followed by secondary education (33.9%). Moreover, less than half of the respondents (43.5%) played sports, with more than 42% doing so more than twice a week.

4.2. Research tools

In seeking answers to the formulated hypotheses and research questions, three research tools with satisfactory reliability indices were used.

Formal Characteristics of Behaviour – Temperament Inventory Revised Version (FCZ-KT (R)) by Cyniak-Cieciura, Zawadzki and Strelau (2016) was used to measure the intensity of emotional reactivity and activity. This tool contains 100 items to which the surveyed individual responds using a four-point response scale, where 1 means *strongly disagree* and 4 means *strongly agree*. The questionnaire consists of seven scales: briskness, perseverance, endurance, sensory sensitivity, rhythmicity, emotional reactivity, and activity. Due to the subject matter of the research conducted, only the latter two were used. They show a satisfactory level of reliability in our own research (Cronbach's *alpha* for emotional reactivity $\alpha = 0.88$, and for activity $\alpha = 0.84$).

The job's burden with psychosocial stressors was measured using the Subjective Work Assessment Questionnaire (KSOP) worked out by Dudek, Waszkowska and Hanke. The tool contains 57 items

that describe various job characteristics, which the respondent rates on a five-point scale indicating the degree of strain of the characteristic (1 – *the characteristic is not present, does not apply to my job*; 5 – *it annoys me all the time at work, and I even get annoyed about it at home*). The questionnaire consists of ten scales: (1) sense of psychological burden associated with work complexity; (2) lack of rewards at work; (3) sense of insecurity caused by the organization of work; (4) social contact; (5) sense of threat; (6) physical strain; (7) unpleasant working conditions; (8) lack of control; (9) lack of support; (10) sense of responsibility. When added together, these give an overall index of job stressfulness. In our study, the Cronbach's alpha coefficient for the entire questionnaire was 0.95, which indicates highly satisfactory reliability. For individual scales, it is highest for the sense of psychological burden associated with work complexity (Cronbach's alpha = 0.88) and unpleasant working conditions (Cronbach's alpha = 0.87), while it is lowest for lack of support (Cronbach's alpha = 0.65), sense of threat (Cronbach's alpha = 0.69) and sense of insecurity caused by the organization of work (Cronbach's alpha = 0.67).

The Free Time Spending Questionnaire by Hauk and Strzelczyk was used to verify leisure activities. It consists of 32 items that relate to activities undertaken during vacation, to which the respondent provides a reply using a four-point scale indicating the frequency of their performance, where 1 means *never* and 4 means *very often*. The tool highlighted two scales with satisfactory reliability in our own research – relaxation activity (Cronbach's *alpha* = 0.78) and physical activity (Cronbach's *alpha* = 0.77).

4.3. Test procedure

The research was conducted between October 2022 and January 2023 in a stationary mode, in accordance with the principles of the Declaration of Helsinki. This means that all the respondents were informed of the voluntary nature and anonymity of participation, as well as the scientific purpose of the study and the fact that the results obtained would be used for scientific purposes only. The process of recruiting participants for the study was based on the use of social relationships. Trustworthy people close to the researchers actively encouraged the people they knew who met the set criteria to participate in the study, which made it possible to gather participants representing diverse professional backgrounds. The subjects were given a sheet to fill out, containing the personal data necessary for the analysis, as well as three carefully prepared questionnaires, which they returned to the researchers after completing them on their own without time constraints or supervision. Any data collected was used in further statistical analysis, performed in SPSS Statistics 28. Given the number of respondents (124 participants), the central limit theorem was applied to assume that the distribution approximates normal.

5. Results of own research

5.1. Ways of spending leisure time versus experiencing stress in the workplace

The first research problem addressed the relationship between leisure activities and feelings of stress at work. Accordingly, specific research hypotheses were formulated, which assumed that relaxation and physical activity attenuate the experience of stress in the workplace (H1.1-H1.2). The results of Pearson's r correlation are presented in Table 1.

The results indicate strong negative associations between active and passive leisure activities and feelings of stress at work. Both relaxation and physical activity reduce tension, resulting from mental strain, lack of rewards, feelings of insecurity, social contact, sense of threat, physical strain, unpleasant working conditions, lack of control, lack of support, lack of responsibility, and overall levels of occupational stress. Thus, hypotheses H1.1-H1.2 were confirmed.

5.2. Emotional reactivity and activity versus experiencing stress in the workplace

The second research problem concerned the relationship of emotional reactivity and activity with stress at work. Pearson's r correlation coefficient was again used to verify the second and third hypotheses (see: Table 2).

The data shows that low emotional reactivity co-occurs with low levels of stress in the workplace, both overall and in terms of specific aspects of work (hypothesis H2 was confirmed). Only unpleasant working conditions do not yield to emotional reactivity. In the case of activity, negative statistically significant relationships were noted, the strength of which ranged from moderate to strong (hypothesis H3 was confirmed).

5.3. Emotional reactivity and activity versus leisure activities

A decision was taken to test whether the higher the level of emotional reactivity, the weaker the relaxation and physical activity, and whether the higher the activity level, the stronger the leisure activities studied. The results in Table 3 confirm the directions of the assumed relationships. High emotional reactivity weakens the readiness for active and passive leisure activities, while high activity significantly enhances such leisure activities.

5.4. Ways of spending leisure time versus experiencing stress in the workplace. The mediating role of emotional reactivity and activity

The last research problem involved the relationship of leisure activities with feelings of stress, taking into account selected temperament traits as mediating variables. To this end, a series of regression analyses were performed using the introduction method in two subgroups distinguished based on high and low levels of emotional reactivity (see: Table 4) and high and low activity levels (see: Table 5).

In the case of emotional reactivity, both models proved to be a good fit to the data and explained 14% of the variation in the dependent variable – feeling stressed at work in the low reactivity group – and as much as 63% of the variation in the high reactivity group. In people with low reactivity levels, the experience of stress is affected only by the level of physical activity (*beta* = -0.41), while high relaxation (beta = -0.55) and physical activity (*beta* = -0.34) reduce the stress levels of highly reactive people (see: Table 4).

Table 1. Ways of spending leisure time versus experiencing stress in the workplace

Variables		Physical activity	Relaxation activity
Mental load	*r Pearson*	-0.54	-0.54
	Significance	<0.001	<0.001
No rewards	*r Pearson*	-0.52	-0.43
	Significance	<0.001	<0.001
Sense of insecurity	*r Pearson*	-0.43	-0.49
	Significance	<0.001	<0.001
Social contacts	*r Pearson*	-0.54	-0.48
	Significance	<0.001	<0.001
Sense of threat	*r Pearson*	-0.47	-0.45
	Significance	<0.001	<0.001
Physical strain	*r Pearson*	-0.40	-0.28
	Significance	<0.001	0.002
Unpleasant conditions	*r Pearson*	-0.37	-0.28
	Significance	<0.001	0.001
Lack of control	*r Pearson*	-0.42	-0.45
	Significance	<0.001	<0.001
Lack of support	*r Pearson*	-0.43	-0.45
	Significance	<0.001	<0.001
Sense of responsibility	*r Pearson*	-0.46	-0.48
	Significance	<0.001	<0.001
Experiencing stress in the workplace	*r Pearson*	-0.59	-0.56
	Significance	<0.001	<0.001

As for another temperament trait studied – activity – the models obtained also proved to be a good fit to the data and explained 51% of the variation in work stress levels of those with low activity and 15% of those with high activity. Experiencing stress at work for those with low activity is affected by both passive (*beta* = -0.44) and active forms of leisure (*beta* = -0.46), while for those with high activity, stress is reduced only by physical activity (*beta* = -0.33), (see: Table 5).

At the end of the conducted analyses, it was examined whether the combined consideration of emotional reactivity and activity modifies the relationship between active and passive forms of leisure and stress at work. Active leisure activities have an impact on stress levels in the low reactive group with high activity (*beta* = – 0.45), ($F(2,33) = 5.94^{**}$). Stress levels (64% of variation) depend

Table 2. Emotional reactivity and activity versus experiencing stress in the workplace

Variables		Emotional reactivity	Activity
Mental load	*r Pearson*	0.46	-0.50
	Significance	<0.001	<0.001
No rewards	*r Pearson*	0.35	-0.49
	Significance	<0.001	<0.001
Sense of insecurity	*r Pearson*	0.28	-0.44
	Significance	0.002	<0.001
Social contacts	*r Pearson*	0.42	-0.46
	Significance	<0.001	<0.001
Sense of threat	*r Pearson*	0.29	-0.44
	Significance	<0.001	<0.001
Physical strain	*r Pearson*	0.29	-0.37
	Significance	<0.001	<0.001
Unpleasant conditions	*r Pearson*	0.14	-0.25
	Significance	0.1	0.004
Lack of control	*r Pearson*	0.34	-0.34
	Significance	<0.001	<0.001
Lack of support	*r Pearson*	0.21	-0.42
	Significance	0.022	<0.001
Sense of responsibility	*r Pearson*	0.39	-0.42
	Significance	<0.001	<0.001
Experiencing stress in the workplace	*r Pearson*	0.43	-0.54
	Significance	<0.001	<0.001

Table 3. Emotional reactivity and activity versus leisure activities

Variables		Emotional reactivity	Activity
Relaxation activity	*r Pearson*	-0.29	0.42
	Significance	<0.001	<0.001
Physical activity	*r Pearson*	-0.49	0.67
	Significance	<0.001	<0.001

Table 4. Leisure activities and feelings of stress in people with high and low levels of emotional reactivity

Stress at work – people with low reactivity levels	*ß*	*T*	*Adjusted* R^2	*F(df1,df2)*
Relaxation activity	-0.001	-0.01	0.14	*F*(2.61) = 6.24**
Physical activity	-0.41	-3.48***		

Stress at work – people with high reactivity levels	*ß*	*T*	*Adjusted* R^2	*F(df1,df2)*
Relaxation activity	-0.55	-5.61***	0.63	*F*(2,57) = 50.50***
Physical activity	-0.34	-3.47***		

Explanation: **Significance < 0.01, ***Significance < 0.001

on both relaxation and physical activity for highly reactive individuals with low activity (*F(*2,33) = 32.25***), (see: Table 6).

Discussion of results and conclusions

In the context of various diseases of civilization, taking measures to reduce stress assumes special importance. The purpose of the study was to verify whether leisure activities can be a means of reducing occupational stress, and whether selected temperament traits – emotional reactivity and activity – can modify these relationships.

The results indicate strong negative associations between active and passive leisure activities and perceived stress at work. Both relaxation and physical activity reduce tension from mental strain, lack of rewards, feelings of insecurity, social contact, sense of threat, physical strain, unpleasant working conditions, lack of control, lack of support, lack of responsibility, and overall levels of occupational stress. Similar relationships were observed by Lagunes-Córdoba et al. (2022) and Brudek et al. (2018). This supports the premise that leisure can be a way to replenish personal resources or relieve tension after work by choosing specific ways to spend it. Active recreation in the form of swimming, running or cycling is always associated with a certain level of physical exertion. Passive forms, such as reading a book, listening to music or watching a movie, are no longer so physically exhausting, so they mainly serve to relax and have a healing function.

Table 5. Leisure activities and feelings of stress in people with high and low levels of activity

Stress at work – people with low activity levels	*ß*	*T*	*Adjusted R^2*	*F(df1,df2)*
Relaxation activity	-0.44	-4.72***	0.51	*F*(2,61) = 34.37***
Physical activity	-0.46	-5.02***		
Stress at work – people with high activity levels	***ß***	***T***	***Adjusted R^2***	***F(df1,df2)***
Relaxation activity	-0.19	-1.52	0.15	*F*(2.57) = 6.24**
Physical activity	-0.33	-2.65*		

Explanation: *Significance < 0.05, **Significance < 0.01, ***Significance < 0.001

Table 6. Leisure activities and feelings of stress in the workplace. The mediating role of emotional reactivity and activity

Stress at work – people with low reactivity and high activity	*ß*	*T*	*Adjusted R^2*	*F(df1,df2)*
Relaxation activity	-0.11	-0.64	0.22	*F*(2.33) = 5.94**
Physical activity	-0.45	-2.61*		
Stress at work – people with high reactivity and low activity	***ß***	***T***	***Adjusted R^2***	***F(df1,df2)***
Relaxation activity	-0.44	-3.40**	0.64	*F*(2,33) = 32.25***
Physical activity	-0.47	-3.63***		

Explanation: *Significance < 0.05, **Significance < 0.01, ***Significance < 0.001

It is important to keep in mind personal preferences in the form of certain temperamental conditions when choosing leisure activities, as the research conducted confirms that low emotional reactivity and high activity remain associated with low levels of experienced occupational stress. This is in line with the results obtained by Heszen (2020) and Waszkowska (2009), among others, regarding the direction of the relationship between the level of emotional reactivity and activity and the level of stress. Emotional reactivity, according to Strelau's concept of Regulative Theory of Temperament, manifests itself in the intensity (magnitude) of responses, so people with higher levels of it may be less resilient to stress and perform worse in tension-provoking situations. Activity, on the other hand, shows clear links to various aspects of stress. Individuals characterized by high levels of activity tend to regulate the emotions they feel more flexibly, which supports coping with tension in the workplace and facilitates taking adequate action to reduce it. This translates into preferred leisure activities. As shown in the analyses presented herein, high emotional reactivity weakens the readiness for active and passive leisure activities, while high activity significantly strengthens such forms of leisure.

The most important finding of the study, however, is to show how leisure activities contribute to lowering work tension in a group of people who differ in reactivity and activity levels. It turns out that respondents with low reactivity and high activity, temperamentally the least vulnerable to stress, deal with tension in various dimensions of work actively and satisfy the individual need for stimulation, which will promote the arousal of positive emotions and efficiency of action. In contrast, people who are temperamentally most vulnerable to stress, due to their high emotional reactivity and low activity, protect themselves from the negative effects of stress by choosing various leisure activities, both relaxing and active.

In conclusion, the research conducted proves the important role of leisure time and ways of using it in shaping human health. Any form of leisure activity has a positive effect on reducing tension caused by occupational stressors, so continuing research in this

direction with a more numerous and professionally diverse group is considered significant from a scientific and practical point of view. The observed relationships can find a number of practical implications, ranging from mental health prevention in organizations, the formation of company policies on stress management in the workplace based on individual employee characteristics, or in the process of individual counselling and support for employed individuals.

Bibliography

Aryanto, T, Tukinah, U., Hartarini, Y.M., Lubis, F.M. (2020). Connection of stress and job satisfaction to successful organizational stress management: a literature review. *International Journal of Advanced Engineering Research and Science, 7*(11), 217-225. https://doi.org/10.22161/ijaers.711.26

Bell, A.S., Rajendran, D., Theiler, S. (2012). Job Stress, wellbeing, work-life balance and work-life conflict among Australian Academics. *E-Journal of Applied Psychology, 8*(1), 25-37. https://doi.org/10.7790/ejap.v8i1.320

Brudek, P., Steuden, S., Ciuła, G. (2019). Mediacyjna rola stylów radzenia sobie ze stresem w związkach temperamentu i wypalenia zawodowego. Badania pielęgniarek psychiatrycznych. *Psychiatria Polska, 53*(5), 1151-1168. https://doi.org/10.12740/PP/OnlineFirst/99849

Brudek, P., Steuden, S., Furmanek, M., Ciuła, G. (2018). Cechy temperamentu i style radzenia sobie ze stresem jako predyktory wypalenia zawodowego u pielęgniarek psychiatrycznych. *Annales Universitatis Mariae Curie-Skłodowska Lublin – Polonia*, *31*(2), 285-299. https://doi.org/10.17951/j.2018.31.2.285-299

Brunner, B., Igic, I., Keller, A.C., Wieser, S. (2019). Who gains most from improving working conditions? Health-related absenteeism and presenteeism due to stress at work. *The European Journal of Health Economics, 20*(8), 1165-1180. https://doi.org/10.1007/s10198-019-01084-9

Bull, F.C., Al-Ansari, S.S., Biddle, S., Borodulin, K., Buman, M.P., Cardon, G., Carty, C., Chaput, J.P., Chastin, S., Chou, R., Dempsey, P.C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C.M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P.T., Lambert, E., [...] Willumsen, J.F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, *54*(24), 1451–1462. https://doi.org/10.1136/bjsports-2020-102955

Cyniak-Cieciura, M. (2021). Psychological flexibility, temperament, and perceived stress. *Current Issues in Personality Psychology, 9*(4), 306-315. https://doi.org/10.5114/cipp.2021.108685

Cyniak-Cieciura, M., Zawadzki, B. (2019). The relationship between temperament traits and post-traumatic stress disorder symptoms and its moderators: meta-analysis and meta-regression. *Trauma, Violence & Abuse, 22*(4), 702-716. https://doi.org/10.1177/1524838019876702

Cyniak-Cieciura, M., Zawadzki, B., Strelau, J. (2016). *Formalna Charakterystyka Zachowania: Kwestionariusz Temperamentu: wersja zrewidowana*. Warszawa: Pracownia Testów Psychologicznych PTP.

Czarnecki, D., Skalski D.W., Kreft, P, Kaszowska, M., Nikolenko, O. (2023). Aktywność fizyczna kobiet i mężczyzn w czasie wolnym od pracy. *Rehabilitation and Recreation, 14*, 151-157. https://doi.org/10.32782/2522-1795.2023.14.17

Dudek, B., Waszkowska, M., Hanke, W. (1999). *Ochrona zdrowia pracowników przed skutkami stresu zawodowego*. Łódź: Instytut Medycyny Pracy.

Engert, V., Liznz, R., Grant, J.A. (2019). Emodies stress: The physiological resonance of physiological stress. *Psychoneuroendocrinology, 105*, 138-146. https://doi.org/10.1016/j.psyneuen.2018.12.221

Hartono, M. (2022). Drawing hobby as a medium to manage stress and self-development. *Journal of Visual Communication Design*, 7(1), 43-52.

Heszen, I. (2020) *Psychologia stresu. Korzystne i niekorzystne skutki stresu życiowego*. Kraków: Wydawnictwo Naukowe PWN.

Lagunes-Córdoba E, Yoldi-Negrete M, Hewson T, Guízar-Sánchez D, Robles-García R, Tovilla-Zárate CA, Tracy D, Saracco-Alvarez RA and Fresán A (2022) A better way of life: The role of leisure activities on self-perceived health, perceived stress, confidence in stress management, and satisfaction with social support in psychiatrists and psychiatry trainees in Mexico. *Frontiers in Psychiatry, 13*:1052275. https://doi.org/10.3389/fpsyt.2022.1052275

Łukaszewski, B. (2020). Czas wolny Polaków w kontekście potencjału turystycznego. *Zeszyty Naukowe. Turystyka i Rekreacja, 1*(25), 139-157.

Miłaszewicz, D., Węgrzyn, G. (2018). Czas wolny i jego wykorzystanie a źródła dochodów – wybrane wyniki badań zasobu czasu wolnego studentów. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 529, 205-214. https://doi.org/10.15611/pn.2018.529.18

Rosak-Szyrocka, J. (2021). Aktywność fizyczna jako sposób radzenia sobie ze stresem zawodowym. *Bezpieczeństwo Pracy – Nauka i Praktyka, 6*(597), 4-8. https://doi.org/10.5604/01.3001.0014.9357

Różański, T. (2018). Czas wolny jako obszar pracy socjalnej. *Praca Socjalna*, *33*(4), 109-125. https://doi.org/10.5604/01.3001.0012.9699

Šagát, P., Bartik, P., Lazić, A., Tohănean, D.I., Koronas, V., Turcu, I., Knjaz, D., Alexe, C.I., Curițianu, I.M. (2021). Self-Esteem, Individual versus Team Sports. *International Journal of Environmental Research and Public Health, 18*(24), 12915. https://doi.org/10.3390/ijerph182412915

Skalski, D., Nesterchuk, N., Skalska, E., Kindzer, B. (2021). *Rekreacja ruchowa dla społeczeństwa – wybrane współczesne aspekty.* https://doi.org/10.5281/zenodo.5510485

Slendak, J., Cewińska, J. (2015). Rola aktywności sportowej w przeciwdziałaniu stresowi w służbie funkcjonariuszy Państwowej Straży Pożarnej. *Zarządzanie Zasobami Ludzkimi, 5*, 69-78.

Stasiak, A. (2022). *Turystyka a jakość życia*. (W:) P. Różycki (red.), *Turystyka społeczna a jakość życia*, 15-42. Kraków: Oficyna Wydawnicza "Wierchy".

Waszkowska, M. (2009). Temperament a poczucie stresu w ruchu drogowym. *Medycyna Pracy, 60*(2), 137-144.

Yoo, J. (2022). Attitude toward leisure, satisfaction with leisure policy, and happiness are mediated by satisfaction with leisure activities, *Scientific Reports, 12*(1), 11723. https://doi.org/10.1038/s41598-022-16012-w

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The effects of cognitive, social, and emotional intelligence on children's sociometric status in a new peer group[1]

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Abstract: Sociometric status is of consequence to the child's development and adjustment, as research shows that people with low status in childhood and adolescence run a greater risk of later maladjustment. On the other hand, popularity is a significant predictor of well-being as well as academic success and effective intra- and interpersonal functioning. Given the importance of sociometric status to a person's psychological and social functioning, researchers have sought to identify its determinants with a view to developing methods of supporting children's development and adjustment. *The objective of the study* was to investigate changes in the sociometric status of children in a new classroom and determine to what extent they are shaped by cognitive, social, and emotional intelligence. *Method:* The study encompassed 136 first graders aged six and seven years (M = 6,87, SD = 0.54). Sociometric status was evaluated three times: at the beginning of the school year, as well as after six and twelve months. In addition, one test of cognitive, social, and emotional intelligence was performed. The data were analyzed using latent growth curve models. *Results:* It was found that the sociometric status of children changed over time. Cognitive intelligence was not found to be a statistically significant predictor of either the initial level or the rate of change of sociometric status (whether in the acceptance or rejection domains). Emotional intelligence was significant only for the initial rejection by their peers. While social intelligence did not statistically significantly predict initial levels of acceptance and rejection, it did have a significant effect on the rate of temporal change in both domains of sociometric status. This means that children with higher SI improved their position in the peer group over time (with increasing acceptance and declining rejection levels). *Conclusions:* The research shows that by developing social intelligence, it is possible to help children with a low sociometric status, who do not cope well in a social group and are often rejected by their peers.
Keywords: sociometric status, cognitive intelligence, social intelligence, emotional intelligence

1. Theoretical introduction

1.1. Sociometric status of children in peer groups

Starting school by children implies not only new academic challenges and responsibilities, but also involves entering an unfamiliar environment and peer group. A formal peer group, such as a classroom, quickly develops an informal structure. Some of the fundamental developmental tasks faced by first graders include socializing with peers, building positive relationships with them and newly met adults (e.g. teachers), and establishing one's status in a peer group. At the beginning of school education, children tend to attach increased attention to their position among peers and, as a result, they become more susceptible to peer influence (see e.g.: Weyns, Colpin, Verschueren, 2021). A child's status in a peer group is usually (if not most) operationalized as sociometric position (Basra, 2016; Bukowski, Castellanos, Persram, 2017; McMullen, Veermans, Laine 2014; Meijs, Cillessen, Scholte, Segers, Spijkerman, 2010), which shows peer acceptance and rejection quantified by the number of positive and negative peer nominations, respectively. Sociometric status is of consequence to the child's development and adjustment, as research shows that people with low

1 Article in polish language: Rola inteligencji poznawczej, społecznej i emocjonalnej w konstytuowaniu się pozycji socjometrycznej dziecka w nowej grupie: https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Knopp.pdf

status in childhood and adolescence run a greater risk of maladjustment and various kinds of difficulties (Almquist, Brännström 2014; Lorijn, Engels, Huisman, Veenstra, 2022; Yang, Chen, Zhang, Ji, Zhang, 2020). This negative effect persists even into adulthood. On the other hand, popularity brings a number of benefits. A high sociometric peer status is a significant predictor of well-being as well as academic success and effective intra- and interpersonal functioning later in life (Lease, Kennedy, Axelrod, 2002; Kiuru i in., 2020; Wentzel, Jablansky, Scalise, 2021).

1.2. Determinants of a child's sociometric peer status

Given the importance of sociometric status to a person's psychological and social functioning, researchers have sought to identify its determinants with a view to developing methods of supporting children's development and adjustment. The predictors of sociometric status described in the literature may be classified into three broad categories: extra-individual characteristics, such as the socioeconomic status of one's family (LaFontana, Cillessen, 2002; Lease, Kennedy, Axelrod, 2002), ascribed characteristics including gender, ethnicity, physical attractiveness and fitness (LaFontana, Cillessen, 2002; Lease, Kennedy, Axelrod, 2002), and psychological and behavioral characteristics. It has been consistently shown that popular children score higher than average on prosocial and helpful behaviors and lower on aggressive and acting-out behaviors, as opposed to rejected children, who score higher on aggressive and acting-out behaviors and lower on prosocial behaviors (see e.g.: Camodeca, Caravita, Coppola, 2015; Garaigordobil, 2017; LaFontana, Cillessen, 2002; Marryat, Thompson, Minnis, Wilson, 2014; Meijs et al., 2010; Newcomb, Bukowski, Pattee, 1993; Rytioja, Lappalainen, Savolainen, 2019). There are also differences in following peer interaction rules, sociability, openness to others (as opposed to withdrawal), capacity for cooperation, friendliness, as well as academic and athletic performance (see e.g.: LaFontana, Cillessen, 2002; Meijs et al., 2010; Newcomb, Bukowski, Pattee, 1993). Most of the factors shaping children's sociometric peer status may be classified as broadly understood social skills and adjustment ability.

1.3. The effects of cognitive, social, and emotional intelligence on children's sociometric status

Scholars have long studied the effects of intelligence on establishing a child's position in a peer group. The most extensive body of research has been accumulated for general intelligence, also known as cognitive intelligence, defined as the ability to solve intellectual problems, and often measured by means of the intelligence quotient (IQ). Most of these studies indicate a positive correlation of cognitive intelligence with peer acceptance (Czeschlik, Rost, 1995; Dundić, Pleić, 2022; LaFontana, Cillessen, 2002; Newcomb, Bukowski, Pattee, 1993; see also Weyns, Colpin, Verschueren, 2021), and a negative correlation with rejection (Czeschlik, Rost, 1995). However, it should be noted that the observed coefficients are quite low and rarely exceed .35 (Czeschlik, Rost, 1995). The relationship between cognitive intelligence and peer status is usually explained by the fact that IQ may compensate for deficits in social skills while contributing to better academic performance (more efficient learning, higher cognitive competence, better school grades), which is appreciated by peers (see e.g.: Czeschlik, Rost, 1995). This has been corroborated by studies reporting that popular children are more academically able and competent (e.g.: Dundić, Pleić, 2022; LaFontana, Cillessen 2002). However, it has also been argued that intelligence may not only be the *cause* of a higher sociometric status, but also the *consequence* of the quality of a child's peer relationships. Children who are rejected by their peers and excluded from group activities may have inferior opportunities to study and develop their intelligence, which may in turn translate into slower academic progress at school (Czeschlik, Rost, 1995).

Nevertheless, the effects of intelligence on sociometric status may not be reduced exclusively to the cognitive and academic fields. What is also important is the child's functioning in the social and emotional

domains, which are increasingly often operationalized as social intelligence (SI) and emotional intelligence (EI), respectively (see Andrei, Mancini, Mazzoni, Russo, Baldaro, 2015; Mavroveli, Petrides, Rieffe, Bakker, 2007; Meijs et al., 2010). These two types of intelligence are defined in terms of cognitive ability and/or effectiveness of social or emotional functioning (Ford, Tisak, 1983; Knopp. 2019). The latter interpretation goes far beyond the traditional definition of intelligence as an instrumental disposition, stirring considerable controversy among scholars (see Dowswell, Chessor, 2014). Indeed, it would seem that these constructs could be more aptly termed social and emotional competence, respectively (Dowswell, Chessor, 2014; see also zob. też. Webb et al., 2013). On the other hand, defining SI and EI in terms of the ability to process social and emotional information is rather uncontroversial (c.f. Knopp, 2019; Wong, Day, Maxwell, Meara, 1995). In light of previous research, these constructs are qualitatively distinct from general intelligence and from each other (Barnes, Sternberg, 1989; Ford, Tisak, 1983; Mayer, Caruso, Salovey,, 2000; Wong et al., 1995). The cognitive component of SI helps to accurately perceive, understand, and assess social situations (Wong et al., 1995). In turn, EI involves the ability to perceive and express emotion, as well as emotional facilitation of thinking, understanding emotions, and emotion regulation (Mayer, Caruso, Salovey, 2000).

Both SI and EI have been proven to facilitate social skills (see e.g.: Holland, 2021; Hsieh, Wei, Hwa, Shen, Feng, Huang, 2019; Morin, 2020; Sesma Mannes, Scales, 2013). People with higher SI better understand social and interpersonal situations (see e.g.: Conte, Grazzani, Pepe, 2018; Putallaz,1983; Zautra, Zautra, Gallardo, Velasco, 2015), and so they find it easier to choose behaviors consistent with social norms and expectations, as well as appropriate to the circumstances. Therefore, it is only natural that a number of studies have consistently confirmed correlations between the social intelligence of children and their sociometric peer status (Lease, Kennedy, Axelrod, 2002; Meijs et al., 2010). However, it should be stressed that while most studies in this field concern the behavioral rather than cognitive component of SI, the latter also seems to play an important role in shaping peer status. For instance, Putallaz (1983) suggests that peer acceptance largely depends on accurate perceptions of the group's ongoing activity, knowing what is required to be relevant on a statement-by-statement basis, and being able to understand the more general rules, or norms of social interaction. Other findings have demonstrated that rejected children had deficits in social information processing (Moore, Hughes, Robinson, 1992).

By enabling greater sensitivity to emotional information from others, more effective expression of one's emotions, as well as a good understanding of emotional states and efficient emotional regulation, EI also improves interpersonal functioning (cf., e.g.: Farina, Belacchi, 2014, 2022; Parker et al., 2021; Wood, 2020). EI has been shown to be associated with general social competence, prosocial and cooperative behaviors, adaptive coping (Mavroveli et al., 2007), and leadership (Garaigordobil, 2020; Mavroveli et al., 2007; Mavroveli, Petrides, Sangareau, Furnham, 2009; McCrimmon, Matchullis, Altomare, 2016). Moreover, students with higher EI are better rated by others. For example in one study, they were described by their teachers and peers as kind, helpful, and less aggressive (Mavroveli et al., 2009). On the other hand, studies show negative correlations between emotional intelligence and maladaptive, hostile and aggressive behaviors towards peers (García-Sancho, Salguero, Fernández-Berrocal, 2016; Qualter, Urquijo, Henzi, Barrett, Humphrey, 2019). An EI component which seems to be of particular significance to interpersonal functioning is emotion regulation (Blair et al., 2015; Camodeca, Coppola, 2019). It has been found that children who cannot regulate their emotions and engage in strong emotional displays, either positive or negative, are more likely to be rejected by peers (Blair et al., 2015), while those with effective emotion regulation exhibit better social skills and are more likely to be accepted by peers (Spinrad et al., 2006). Starting school and entering a new peer group (classroom) bring about new challenges and tasks in which the ability to effectively manage emotions can be critical for long-term success in peer relationships (cf., Blair et al., 2015).

1.4. The present study

Since the first part of this paper cites a number of studies examining the relationship between children's sociometric peer status and various kinds of intelligence, the question arises as to the novel and original contribution of the present research. First of all, the results of previous studies using intelligence as a predictor of children's peer status are not entirely unequivocal. Moreover there are relatively few papers on the relationship between sociometric status and EI and SI. Therefore, it is necessary to further explore this avenue, especially given the impact of sociometric status on the present and future functioning of children. Second, it should be noted that existing papers are mostly focused on only one type of intelligence (*either* cognitive, *or* social, *or* emotional). To the best of the present author's knowledge, no paper to date has dealt with all three types of intelligence. Third, while previous research into the relationship between sociometric status and SI or EI primarily involved their behavioral component, the present study is mainly focused on the cognitive aspect. Fourth, the greatest advantage of the current paper is that it describes a longitudinal study, in contrast to most other reports, which treat sociometric status as a time-fixed, static domain (with measurements conducted only at one point in time). The scarcity of longitudinal studies may result from the belief that sociometric status is relatively constant, which is based on a rather solid empirical foundation, with most authors finding the absence of, or only slight temporal changes in children's sociometric status (see Cillessen, Bukowski, Haselager, 2000; Engels et al., 2019). However, such studies usually concerned fully formed peer groups with a stable informal structure. In contrast, the present paper investigates new classrooms in the process of developing informal structures, and so it may be expected that the sociometric positions of children are still fluid. Moreover, in previous studies the relationship between sociometric status and intelligence was described in a static manner: correlations between the two variables were determined at a single point in time. But in order to accurately determine how intelligence shapes sociometric position, one should take into account group dynamics. Therefore the objective of the current longitudinal study was not only to identify a *relationship* between the two factors, but also to evaluate the effects of the various types of intelligence on *changes* in sociometric status.

The goal of this research was to answer the following questions:

1. Does sociometric status change significantly in the initial stage of peer group functioning?
2. What are the effects of cognitive, social, and emotional intelligence on children's sociometric peer status and on changes in that status over time?

It was hypothesized that:

H1: In the first year of the functioning of a peer group, children's sociometric status changes dynamically. There are significant interpersonal and intrapersonal differences in the initial status of children, as well as in the rate of change over time.

H2: Cognitive, social, and emotional intelligence are significant predictors of both the initial sociometric status of children in a peer group as well as of temporal evolution of that status. The position of children with high intelligence tends to increase over time, and conversely, that of children with low intelligence gradually declines. Since sociometric status consists of two basic domains, peer acceptance and peer rejection, it is expected that the effects of the studied intelligence types will be positive for positive nominations (indicating acceptance) and negative for negative nominations (indicating rejection).

2. Method

2.1. Study group

The initial study group encompassed 146 children, but several of them changed schools during the study or resigned from participation in the research, and so the final population consisted of 136 first graders

from 7 different elementary classrooms ((M = 6,87, SD = 0.54), of whom 58% were girls, and 42% boys. Very few children (dyads or triads) knew each other previously from day care or neighborhood; the vast majority met for the first time in the classroom. Participation in the research was completely voluntary. Prior to the study, informed consent was obtained from the teachers, parents, and the children themselves, and only classrooms with a 90% rate of consent or more were included in this study. This was done to ensure that sociometric estimates were based on a sufficient number of informants. The classrooms contained from 18 to 20 children, with the number of non-participants being 0 to 2 per classroom.

2.2. Procedure

Tests were conducted three times. The first measurement (M1) was done approx. three weeks into the school year. The participants completed the sociometric test and intelligence tests during two individual meetings lasting approx. 45–60 min (depending on how fast the child worked). The second measurement (M2) took place 6 months after the first one (±7 days) – these were 15 min individual meetings with children, who were administered a sociometric test. The third measurement (M3), similar to the second one, was done after another 6 months, approx. 3 weeks into the second school year (grade two).

2.3. Tools

Sociometric test. The sociometric test for first graders was constructed pursuant to Moreno's classical criteria. The children made positive and negative nominations among their classmates answering two questions: 1) "Which classmate would you like to go to the movies with?" and 2) "If you could invite all of your classmates to the movies, but you did not have tickets for three of them, who would you leave behind?" In both cases, children were asked to name three classmates, but could nominate more if they insisted.

DMI-2. Cognitive intelligence was measured using Assessment of Intellectual Potential-2 (DMI-2) developed by Matczak (2001). The test measures the intellectual potential of children based on performance of concrete operations. It consists of 76 tasks involving verbal, pictorial, and numerical material in which children are required to complete classes, series, and analogies by selecting an appropriate element from a set of five options. The tool is characterized by high internal consistency (with Cronbach's alpha ranging from 0.86 to 0.91, depending on age group), as well as by good theoretical and diagnostic validity.

CSCS. Social intelligence was measured using the Children's Social Comprehension Scale (CSCS) by Knopp (2019). It is a performance test designed to evaluate the cognitive component of SI, that is, the ability to understand and interpret human behavior in social situations, as well as knowledge of social norms, their underlying principles, consequences of violating them, etc. (c.f., Wong, et al., 1995). The test consists of 10 tasks, each of which contains a picture representing a social situation and a short story describing it (see Appendix 1). The subjects are requested to identify the worst thing in a given situation by selecting one of four options. All sets of answers are constructed according to the same pattern: one answer concerns the negative consequences of the protagonist's behavior to his or her interaction partner (which is considered correct and scored), another one concerns social conventions and savoir-vivre principles, the third one concerns the negative consequences for the protagonist himself or herself, and the fourth one concerns elements of secondary importance, irrelevant from the point of view of social interactions. In a group of first graders, the reliability coefficient $\lambda 6$ was 0.66. The test is characterized by good factor validity as estimated by confirmatory factor analysis ($\chi 2 = 42.28$, $p = 0.185$; CFI = 0.97; RMSEA = 0.038). The validity of the tool is also corroborated by positive correlations of its scores with other measures of social intelligence (stronger) and intellectual potential (weaker), as well as with indicators of social functioning. The scores increase with age.

"Behavior" subtest. Emotional intelligence was evaluated by the "Behavior" subtest from the Emo-Tests battery by Knopp (paper in progress). The test is

designed to measure knowledge about ways to regulate emotions and the ability to apply that knowledge in managing strong negative emotions evoked by various interpersonal situations. Such an ability is considered to be one of the critical components of emotional intelligence (Mayer et. al., 2000). The test consists of 14 tasks containing short stories describing situations which produce strong negative emotions in the protagonist. The participant responds to the question "What should the protagonist do to feel better?" by choosing from among four options. One option always gives an active, adaptive way of self-reliant coping (scored two points), another option offers an active way of coping but soliciting the help of others (one point), the third option describes a passive coping strategy (zero points), and the fourth one concerns maladaptive, aggressive coping (zero points). In a group of first graders, the reliability coefficient λ6 was 0.82. The test is characterized by good factor validity, with confirmatory factor analysis revealing a one-factor solution ($\chi 2 = 115.57$; $p = 0.206$; CFI = 0.99; RMSEA = 0.028). The validity of the tool is also corroborated by positive correlations with other emotional intelligence measures, as well as indicators of social functioning. The scores also increase with age.

3. Results

All analyses were performed using IBM AMOS version 22. The hypotheses were verified using a latent growth curve model (LGC; Byrne, 2010). The unique advantage of a LGC is that it enables the description of changes not only at the group level, but also at the intraindividual level (Cieciuch, Davidov, Algesheimer, 2016; Zając-Lamparska, Warchol, Deja, 2018), as it contains both a "between-person" component showing differences between the participants and a "within-person" component revealing the changes that have occurred in individuals (the latter being the main focus of the current study). The group effect is evaluated by estimating the mean, while the individual effect is assessed by estimating covariance.

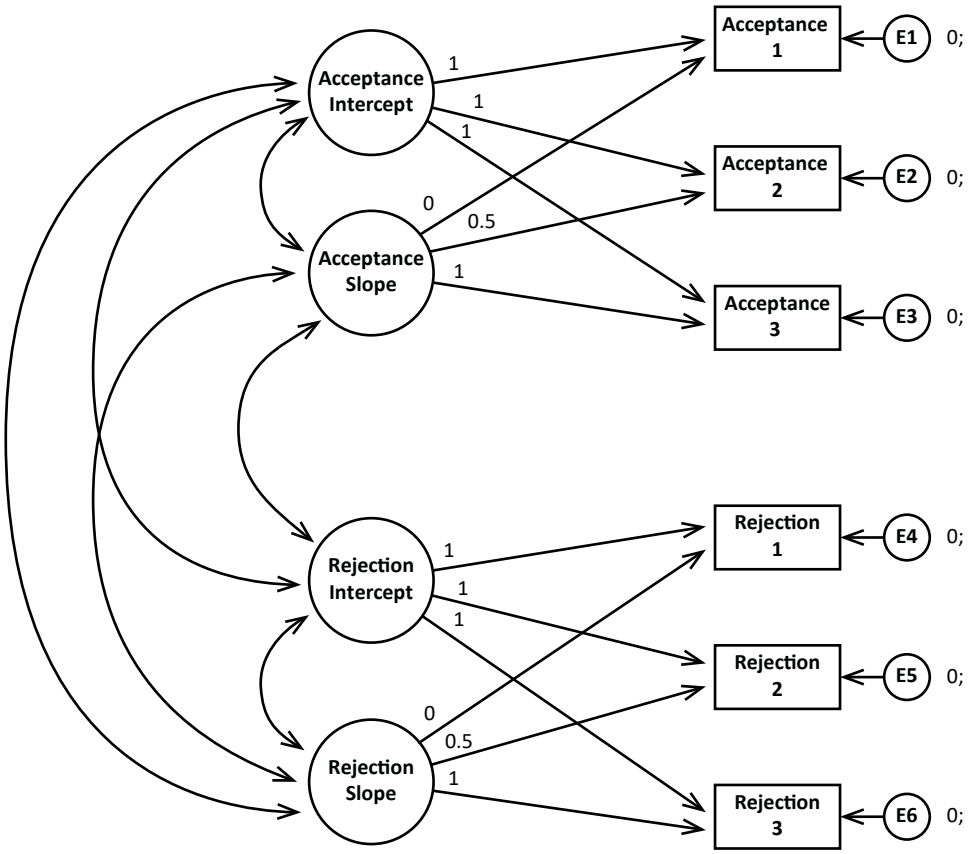
In the applied LGC model, the observed variables were scores from three sociometric status measurements (positive nominations as indicators of acceptance and negative nominations as indicators of rejection), and the latent variables were the *Acceptance Intercept* and *Rejection Intercept* (the mean initial levels of acceptance and rejection) as well as the *Acceptance Slope* and *Rejection Slope* (changes in acceptance and rejection). LGC is treated as a factor model with all loadings being known (see Byrne, 2010), and so a specific configuration of conditions and limitations is imposed on those factor loadings, as marked in the figure. The LGC model, given in Figure 1, was found to fit the data very well ($\chi 2 = 6.044$; $p = .535$; CFI = 1.00; RMSEA = .000; RMSEA 90% CI .000–.096), but a detailed analysis of estimates related to these factor covariances showed only four to be statistically significant. Therefore, the model was modified by removing statistically non-significant covariances: those between the Acceptance Intercept and Rejection Slope and between the Acceptance Slope and Rejection Intercept. The modified model is shown in Figure 1.

The final model (see Figure 1) exhibited the following fit characteristics: $\chi 2 = 7.041$; $p = .633$; CFI = 1.00; RMSEA = .000; RMSEA 90%, CI .000–.080. Taking into consideration the fact that the standard acceptance criteria for such models are CFI > 0.90 and RMSEA < 0.08 (Cieciuch, Davidov, Algesheimer, 2016; Zając-Lamparska, Warchol, Deja, 2018), the presented model was found to have an excellent fit to the data, enabling further change analysis.

Subsequently, it was checked whether children differed in terms of their sociometric status at M1 and whether intrapersonal changes in this respect occurred over time. Due to the relatively short period of time (1 year), linear changes were analyzed.

It should be noted that in contrast to typical LGC analyses, expecting a uniform direction of change among participants, the present study did not focus on changes at group level. In this case, sociometric status was expected to increase in some children and decline in others. Therefore, the main area of interest was temporal individual change (from a "within-person" perspective).

To begin with, interpersonal differences in initial sociometric status were identified in the first measurement, as reflected by significant variance of the latent variables Acceptance Intercept (2.848;



Notes: Latent variables are given in ovals, and observed variables in rectangles; E – measurement error.

Figure 1. LGC model with three sociometric status measurements.

p<.001) and Rejection Intercept (6.348; p<.001) in the LGC model. This means that at M1 the participants significantly differed between each other in both domains of sociometric status.

In the next step, interpersonal differences in sociometric status change were analyzed to determine whether or not changes occurred in all participants in the same way. Again, it was found that participants differed significantly in terms of temporal evolution of their sociometric status, as reflected by significant variance of the latent variables Acceptance Slope (6.596; p<.001) and Rejection Slope (4.990; p<.01).

Having proven interindividual changes in sociometric status, the next step was to establish whether and to what extent this heterogeneity is explained by the analyzed types of intelligence. Therefore, it was necessary to address two issues: 1) Does sociometric status differ between participants who exhibited different intelligence levels in the initial measurement? and 2) Is the rate of change determined by intelligence? Consequently, three types of intelligence (cognitive, social, and emotional) were introduced to the model as hypothetical predictors of individual and group change in sociometric status, thus forming *a conditioned latent growth curve* (CLGC; Byrne, 2010; Zając-Lamparska, Warchol, Deja, 2018), as shown in Figure 2 (some numbers are not shown for the sake of clarity).

A covariance was found between SI and EI, which is not surprising in light of previous empirical research, which showed that while these two constructs are distinct, they are nevertheless positively correlated with one another (Mayer, Caruso, Salovey, 2016). In turn, cognitive intelligence was not correlated with either of them. The fit indicators for the CLGC model presented in Figure 3 were as follows: $\chi 2 = 26.497$;

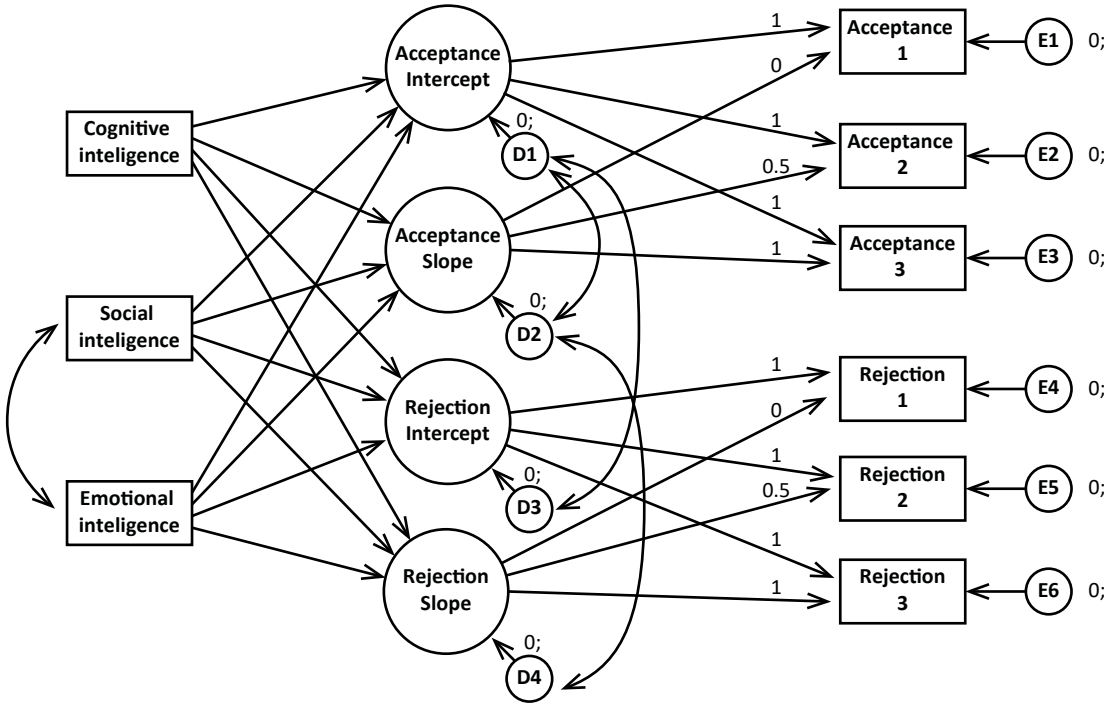


Figure 2. CLGC model with effects of cognitive, social, and emotional intelligence on sociometric status.

p = .066; CFI = .984; RMSEA = .064; RMSEA 90% CI .000 – .109. According to the aforementioned criteria for model acceptability (Cieciuch, Davidov, Algesheimer, 2016; Zając-Lamparska, Warchol, Deja, 2018), the model in question exhibited a satisfactory fit to data, enabling further analysis. Standardized regression coefficients are given in Table 1.

Cognitive intelligence was not found to be a statistically significant predictor of either the initial level or the rate of change of sociometric status (whether in the acceptance or rejection domains). Emotional intelligence was significant only for the Rejection Intercept (negative correlation), which means that children with lower EI at M1 were more likely to be rejected by their peers.

While social intelligence did not statistically significantly predict initial levels of acceptance and rejection, it did have a significant effect on the rate of temporal change in both domains of sociometric status. This means that children with higher SI improved their position in the peer group over time (with increasing acceptance and declining rejection levels).

Discussion

While there exists a long tradition of research on children's peer status, many issues still remain open. A considerable body of data has been accumulated concerning the individual characteristics which determine whether or not a child is liked by his or her peers. However, no study to date has encompassed all three types of intelligence discussed here. Moreover, little is known about the formation of children's sociometric status in new peer groups and about the contribution of the various types of intelligence to this process.

The present findings lead to the following conclusions: first, in a new peer group, such as a first-grade classroom, sociometric status is dynamic and changes quite rapidly over the short period in which an informal group structure develops; second, the process of establishing peer status differs between children; and third, the various types of intelligence have different effects on this change.

Table 1. Standardized regression coefficients for cognitive, social, and emotional intelligence as predictors of sociometric status

	Cognitive Intelligence		Social Intelligence		Emotional Intelligence	
	Estimate	*p*	Estimate	*p*	Estimate	*p*
Acceptance Intercept	-.002	.890	.049	.481	-.009	.721
Acceptance Slope	-.008	.655	.544	<.001	.057	.096
Rejection Intercept	.007	.749	-.035	.723	-.084	.029
Rejection Slope	.025	.169	-.830	<.001	.020	.548

The observed significant changes in children's position in the informal structure of a classroom diverge from the results of previous studies suggesting relative permanence of one's sociometric status. This divergence is even more pronounced if one takes into account the fact that the presented study encompassed a rather short period of time, which means that the changes were quite dynamic. On the other hand, the obtained results corroborate Hypothesis 1, according to which the informal structure of new groups is fluid and unstable, and so the positions of its participants are not settled. It should be noted that the present study involved young schoolchildren (six- and seven-year-olds), while empirical data indicate that peer status stability is positively correlated with age (cf., Cillessen, Bukowski & Haselager, 2000). Thus, given the age of the participants and the specific period in the functioning of the peer groups, the obtained results no longer seem very surprising.

In the present study, it was also found that changes in sociometric status are specific to individual children and are significantly affected by certain abilities. The observation that such changes are not influenced by cognitive intelligence is inconsistent with the majority of previous findings (see, e.g., Czeschlik, Rost, 1995; LaFontana, Cillessen, 2002; Newcomb, Bukowski, Haselager, 1993). However, it should be noted that the other studies were not longitudinal, and so in most of them both cognitive intelligence and sociometric status were measured only once. As a consequence, the reported results concern a general relationship between the studied variables rather than the contribution of cognitive intelligence to temporal change in sociometric status. Second, previous research did not measure all three types of intelligence at the same time, not enabling a distinction between cognitive and other intelligence types. Finally, while the effect of cognitive intelligence on sociometric position has been mostly viewed in terms of facilitation of academic achievement (cf., Czeschlik, Rost, 1995), according to some authors the effect of the latter on peer status depends on the norms of the group. Academic achievement leads to higher status only if it is prioritized in the classroom, but where other skills are prioritized, it may not lead to high social status (Meijs et al., 2010). It may be the case that in the studied children the purely cognitive domain and academic achievement did not serve as significant criteria of peer evaluation and liking. It should also be noted that the studied children were at the very beginning of school education with the first measurement being conducted only three weeks into the school year. Therefore, it is likely that the effect of cognitive intelligence on academic achievement was not yet revealed.

Emotional intelligence defined in terms of the capacity for emotion regulation was not found a significant predictor of sociometric status, either. While low EI was associated with peer rejection in the initial measurement, its influence disappeared over time, without a significant predictive effect on sociometric status change. Although the obtained results are not consistent either with the adopted hypothesis or with previous reports indicating that EI plays a substantial role in interpersonal relations (c.f. Andrei et al., 2015), this may be logically explained. First, the present study focused on only one of the four major elements of EI proposed in Salovey and Mayer's ability model, that is, emotion regulation (Mayer, Caruso, Salovey,

2016), in contrast to many previous studies, which operationalized multiple EI elements. Second, it should be noted that emotion regulation was defined herein as effectiveness of emotion information processing, or knowledge about how to manage emotions and the ability to deploy that knowledge in concrete emotion-provoking situations. Therefore, the current study operationalized the *ability to regulate emotions* rather than actual emotional functioning and *regulation in real-life situations*. This is an important distinction. The cognitive component of emotional intelligence, just as in other types of intelligence, is essentially an instrumental disposition, which is to say that one may have it, but not necessarily use it in interpersonal relations. The present study characterized children in terms of the degree of emotional intelligence (emotion regulation ability) possessed by them rather than applied in relations with their peers, as opposed to most other studies, which dealt with EI defined in behavioral terms (emotional competence). Obviously, the cognitive component of EI is indispensable for successful solving of emotion-related tasks. Knowledge about how to manage emotions and the ability to use this knowledge in situations generating emotional arousal is the foundation and prerequisite for effective emotion regulation, but not a sufficient condition per se. Therefore, EI was beneficial for the children at the very beginning of group formation and protected them from peer rejection. However, short-, and especially long-term, performance in peer groups is affected by a number of other factors, such as individual motivation, personality traits, situational determinants, etc. This may explain why EI was not found to exert a significant effect on change in peer status.

The type of intelligence which had the strongest effect on the sociometric position of children was SI. While it did not affect the initial peer status, higher SI led to its gradual improvement over time (increasing peer acceptance and decreasing rejection). This is hardly surprising, as SI is defined herein as the ability to understand and correctly assess social situations, which undoubtedly facilitates effective interpersonal functioning. It seems likely that accurate perception and comprehension of other people's behaviors, social norms, as well as social situations and their dynamics, allows the child to act appropriately, according to the expectations and requirements of his or her interaction partners. Due to this, the child may initiate interactions and bond with his or her peers more easily.

Finally, it should be mentioned that the present study, just as any other, has a number of limitations. Future research could control for the effects of individual characteristics not included herein, and especially temperament and personality traits. Second, while social intelligence and emotional intelligence are very complex, multidimensional constructs, the present study measured only selected components thereof (this especially pertains to EI), which constrains the generalizability of the conclusions. With respect to these issues, in the future it would be interesting to further examine different subdomains of social and emotional intelligence as they might be differentially related to children's social status. The main limitation of the presented study is the fact that it treats the various types of intelligence as time-fixed predictors, being evaluated only once, in the initial measurement. In future research, they could be interpreted as time-varying factors and measured at several time points.

Nevertheless, despite the aforementioned limitations, the present findings are an interesting contribution to knowledge about the shaping of sociometric peer status and the intraindividual characteristics that affect it. Taking into account the short- and long-term consequences of children's peer position for their functioning, an understanding of the predictors of this position and its temporal evolution is not only of theoretical, but also practical, importance as it allows to design effective and targeted psychoeducational and psycho-corrective instruments. A prompt intervention when an informal structure of the peer group is still being formed, prior to the solidification of children's peer positions, seems to be rational and potentially most successful. The present study showed that efficient processing of social information, that is the cognitive component of social intelligence, has a significant effect on the shaping of peer status. By developing social intelligence, we can help children who do not cope well in a peer group and are often rejected by it. Shaping social intelligence through purposeful educational influences can be beneficial for various spheres of child development and the entirety of its social relations.

Bibliography

Almquist, Y.B., L. Brännström, L. (2014). Childhood peer status and the clustering of social, economic, and health-related circumstances in adulthood. *Social Science and Medicine, 105*, 67–75. https://doi.org/10.1016/j.socscimed.2014.01.011

Andrei, F., Mancini, G., Mazzoni, E., Russo, P.M., Baldaro, B. (2015). Social status and its link with personality dimensions, trait emotional intelligence, and scholastic achievement in children and early adolescents. *Learning & Individual Differences*, *42*, 97–105. https://doi.org/10.1016/j.lindif.2015.07.014

Barnes, M.L., Sternberg, R.J. (1989). Social intelligence and decoding of nonverbal cues. *Intelligence, 13*, 263–287.

Basra, H.K. (2016). Sociometric status and peer group behaviour. *Indian Journal of Health & Wellbeing*, *7*(6), 668–670.

Blair, B.L., Gangle, M.R., Perry, N.B., O'Brien, M., Calkins, S.D., Keane, S.P., Shanahan, L. (2016). Indirect effects of emotion regulation on peer acceptance and rejection: The roles of positive and negative social behaviors. *Merrill-Palmer Quarterly, 62*(4), 415–439. https://doi.org/10.13110/merrpalmquar1982.62.4.0415

Blair, B.L., Perry, N.B., O'Brien, M., Calkins, S.D., Keane, S.P., Shanahan, L. (2015). Identifying Developmental Cascades among Differentiated Dimensions of Social Competence and Emotion Regulation. *Developmental Psychology*, *51*(8), 1062–1073. https://doi.org/10.1037/a0039472

Bukowski, W.M., Castellanos, M., Persram, R.J. (2017). The current status of peer assessment techniques and sociometric methods. *New Directions for Child & Adolescent Development, 157,* 75–82. https://doi.org/10.1002/cad.20209

Byrne, B.M. (2010). *Structural equation modeling with Amos: Basic concepts, applications, and programming* (2nd ed.). New York, NY: Taylor and Francis Group.

Camodeca, M., Caravita, S., Coppola, G. (2015). Bullying in preschool: The associations between participant roles, social competence, and social preference. *Aggressive Behavior, 41*(4), 310–321. https://doi.org/10.1002/ab.21541

Camodeca, M., Coppola, G. (2019). Participant roles in preschool bullying: The impact of emotion regulation, social preference, and quality of the teacher-child relationship. *Social Development, 28*(1), 3–21. https://doi.org/10.1111/sode.12320

Cieciuch, J., Davidov, E., Algesheimer, R. (2016), The stability and change of value structure and priorities in childhood: longitudinal study. *Social Development, 25*, 503–527. https://doi.org/10.1111/sode.12147

Cillessen, A.H.N., Bukowski, W.M., Haselager, G.J.T. (2000). Stability of sociometric categories. (In:) A.H.N. Cillessen & W.M. Bukowski (eds.), *Recent advances in the measurement of acceptance and rejection in the peer system*. 75–93. San Francisco: Jossey-Bass.

Czeschlik, T., Rost, D.H. (1995). Sociometric types and children's intelligence. *British Journal of Developmental Psychology, 13*(2), 177–189.

Conte, E., Grazzani, I., Pepe, A. (2018). Social cognition, language, and prosocial behaviors: A multitrait mixed-methods study in early childhood. *Early Education and Development, 29*(6), 814–830. https://doi.org/10.1080/10409289.2018.1475820

Dowswell, E., Chessor, D. (2014). Socially skilled–successful students: improving children's social intelligence through social education programs. *e-Journal of Social & Behavioural Research in Business*, *5*(2), 23-60.

Dundić, M.M., Pleić, N. (2022). The popularity of students within the classroom in relation to school achievement, intelligence and teacher assessment. *Journal for Pedagogical & Educational Matters / Školski Vjesnik*, *71*(1), 1–17. https://doi.org/10.38003/sv.71.1.15

Farina, E., & Belacchi, C. (2014). The relationship between emotional competence and hostile/prosocial behavior in Albanian preschoolers: An exploratory study. *School Psychology International, 35*(5), 475–484. https://doi.org/10.1177/0143034313511011

Engels, M.C., Colpin, H., Wouters, S., Van Leeuwen, K., Bijttebier, P., Van Den Noortgate, W., Goossens, L., Verschueren, K. (2019). Adolescents' peer status profiles and differences in school engagement and loneliness trajectories: A person-centered approach. *Learning and Individual Differences, 75*, 101759. https://doi.org/10.1016/j.lindif.2019.101759

Farina, E., Belacchi, C. (2022). Being visible or being liked? social status and emotional skills in bullying among young children. *European Journal of Developmental Psychology*, *19*(2), 267–282. https://doi.org/10.1080/17405629.2021.1903864

Farina, E., Belacchi, C. (2014). The relationship between emotional competence and hostile/prosocial behavior in Albanian preschoolers: An exploratory study. *School Psychology International, 35*(5), 475–484. https://doi.org/10.1177/0143034313511011

Ford, M.E., Tisak, M.S. (1983). A further search for social intelligence. *Behavioural Research in Business, 75*(2), 196-206.

Garaigordobil, M. (2020). Intrapersonal emotional intelligence during adolescence: sex differences, connection with other variables, and predictors. *European Journal of Investigation in Health, Psychology and Education*, *10*(3), 899–914. https://doi.org/10.3390/ejihpe10030064

Garaigordobil, M. (2017). Conducta antisocial: conexión con bullying/cyberbullying y estrategias de resolución de conflictos. *Psychosocial Intervention, 26*(1), 47-54. https://doi.org/10.1016/j.psi.2015.12.002

García-Sancho, E., Salguero, J.M., Fernández-Berrocal, P. (2016). Angry rumination as a mediator of the relationship between ability emotional intelligence and various types of aggression. *Personality and Individual Differences, 89*, 143–147. https://doi.org/10.1016/j.paid.2015.10.007

Holland, J.M. (2021). Leading with emotional and social intelligence: Implications for FCS professionals. *Journal of Family & Consumer Sciences*, *113*(2), 62–68. https://doi.org/10.14307/JFCS113.2.62

Hsieh, Y.-P., Wei, H.-S., Hwa, H.-L., Shen, A.C.-T., Feng, J.-Y., Huang, C.-Y. (2019). The effects of peer victimization on children's internet addiction and psychological distress: The moderating roles of emotional and social intelligence. *Journal of Child & Family Studies*, *28*(9), 2487–2498. https://doi.org/10.1007/s10826-018-1120-6

Hubbard, J.A. (2001). Emotion expression processes in children's peer interaction: The role of peer rejection, aggression, and gender. *Child Development, 72,* 1426–1438.

Kiuru, N., Wang, M.-T., Salmela-Aro, K., Kannas, L., Ahonen, T., Hirvonen, R., Buehner, R.E. (2020). Associations between adolescents' interpersonal relationships, school well-being, and academic achievement during educational transitions. *Journal of Youth and Adolescence, 49*(5), 1057–1072. https://doi.org/10.1007/s10964-019-01184-y

Knopp, K.A. (2019). The Children's Social Comprehension Scale (CSCS): Construct validity of a new social intelligence measure for elementary school children. *International Journal of Behavioral Development*, *43*(1), 90–96. https://doi.org/10.1177/0165025418787923

LaFontana, K.M.,Cillessen, A.H. N. (2002). Children's perceptions of popular and unpopular peers: A multimethod assessment. *Developmental Psychology, 38*, 635–647. https://doi.org/10.1037/0012-1649.38.5.635

Lease, A.M., Kennedy, C.A. Axelrod, J.L. (2002). Children's social constructions of popularity. *Social Development, 11*, 87–109. https://doi.org/10.1111/1467-9507.00188

Lorijn, S.J., Engels, M.C., Huisman, M., Veenstra, R. (2022). Long-term effects of acceptance and rejection by parents and peers on educational attainment: A study from pre-adolescence to early adulthood. *Journal of Youth & Adolescence*, *51*(3), 540–555. https://doi.org/10.1007/s10964-021-01506-z

Marryat, L., Thompson, L., Minnis, H., Wilson, P. (2014). Associations between social isolation, pro-social behaviour and emotional development in preschool aged children: A population based survey of kindergarten staff. *BMC Psychology, 2*(44). https://doi.org/10.1186/s40359-014-0044-1

Matczak, A. (2001). *DMI-2M, DMI-2S. Testy operacyjności myślenia: diagnoza możliwości intelektualnych dziecka.* Warszawa: Pracownia Testów Psychologicznych PTP.

Mavroveli, S., Petrides, K. V, Rieffe, C, Bakker, E (2007). Trait emotional intelligence, psychological well-being, and peer-rated social competence in adolescence. *British Journal of Developmental Psychology, 25,* 263-275. https://doi.org/10.1348/026151006X118577

Mavroveli, S., Petrides, K.V., Sangareau, Y. & Furnham, A. (2009). Exploring the relationships between trait emotional intelligence and objective socio-emotional outcomes in childhood. *British Journal of Educational Psychology, 79*, 259–272. https://doi.org/10.1348/000709908X368848

Mayer, J.D., Caruso, D.R., Salovey, P. (2016). The ability model of emotional intelligence: Principles and updates. *Emotion Review, 8*, 290–300. https://doi.org/10.1177/1754073916639667

McCrimmon, A.W., Matchullis, R.L., Altomare, A.A. (2016). Resilience and emotional intelligence in children with high-functioning autism spectrum disorder. *Developmental Neurorehabilitation*, *19*(3), 154–161. https://doi.org/10.3109/17518423.2014.927017

McMullen, J.A., Veermans, K., Laine, K. (2014). Tools for the classroom? An examination of existing sociometric methods for teacher use. *Scandinavian Journal of Educational Research, 58*, 624–638. https://doi.org/10.1080/00313831.2013.838694

Meijs, N., Cillessen, A.H. N., Scholte, R.H. J., Segers, E., Spijkerman, R. (2010). Social intelligence and academic achievement as predictors of adolescent popularity. *Journal of Youth and Adolescence*, *39*(1), 62–72. https://doi.org/10.1007/s10964-008-9373-9

Moore, L.A., Hughes, J.N., Robinson, M. (1992). A comparison of the social information-processing abilities of rejected and accepted hyperactive children. *Journal of Clinical Child Psychology, 21*, 123-131. https://doi.org/10.1207/s15374424jccp2102_4

Morin, A. (2020). *How to increase your social intelligence.* (from:) https://www.verywellmind.com/what-is-social-intelligence-4163839, (access: 1.07.2023).

Newcomb, A.F., Bukowski, W.M., Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological Bulletin, 113*, 99–128. https://doi.org/10.1037/0033-2909.113.1.99

Parker, J.D. A., Summerfeldt, L.J., Walmsley, C., O'Byrne, R., Dave, H.P., Crane, A.G. (2021). Trait emotional intelligence and interpersonal relationships: Results from a 15-year longitudinal study. *Personality and Individual Differences*, *169*. https://doi.org/10.1016/j.paid.2020.110013

Putallaz, M. (1983). Predicting children's sociometric status from their behavior. *Child Development, 54*(6), 1417-1426. https://doi.org/10.2307/1129804

Qualter, P., Urquijo, I., Henzi, P., Barrett, L., Humphrey, N. (2019). Ability emotional intelligence and children's behaviour in the playground. *Social Development*, *28*(2), 430–448. https://doi.org/10.1111/sode.12340

Riggio, R.E., Messamer, J., Throckmorton, B. (1991). Social and academic intelligence: Conceptually distinct but overlapping constructs. P*ersonality and Individual Differences, 12,* 695–702.

Rytioja, M., Lappalainen, K., Savolainen, H. (2019). Behavioural and emotional strengths of sociometrically popular, rejected, controversial, neglected, and average children. *European Journal of Special Needs Education*, *34*(5), 557–571. https://doi.org/10.1080/08856257.2018.1560607

Sesma, A., Mannes, M., Scales, P.C. (2013). Positive adaptation, resilience and the developmental assets framework. (In:) S. Goldstein, R.B. Brooks (eds.), *Handbook of resilience in children,* 427–442. New York: Springer.

Spinrad, T.L., Eisenberg, N., Cumberland, A., Fabes, R.A., Valiente, C., Shepard, S.A., Reiser, M., Losoya, S. H, Guthrie, I.K. (2006). Relation of emotion-related regulation to children's social competence: A longitudinal study. *Emotion, 6,* 498–510. https://doi.org/10.1037/1528-3542.6.3.498

Webb, C.A., Schwab, Z.J., Weber, M., DelDonno, S., Kipman, M., Weiner, M.R., Killgore, W.D. S. (2013). Convergent and divergent validity of integrative versus mixed model measures of emotional intelligence. *Intelligence, 41*(3), 149-156. https://doi.org/10.1016/j.intell.2013.01.004

Wentzel, K.R., Jablansky, S., Scalise, N.R. (2021). Peer social acceptance and academic achievement: A meta-analytic study. *Journal of Educational Psychology, 113*, 157–180. https://doi.org/10.1037/edu0000468

Weyns, T., Colpin, H., Verschueren, K. (2021). The role of school-based relationships for school well-being: How different are high- and average-ability students? *British Journal of Educational Psychology*, *91*(4), 1127–1145. https://doi.org/10.1111/bjep.12409

Wong, C, Day, J., Maxwell, S., Meara, N. (1995). A multitrait-multimethod study of academic and social intelligence in college students. *Journal of Educational Psychology, 87,* 117-133.

Wood, P. (2020). Emotional intelligence and social and emotional learning: (Mis)interpretation of theory and its influence on practice. *Journal of Research in Childhood Education*, *34*(1), 153–166. https://doi.org/10.1080/02568543.2019.1692104

Yang, Y., Chen, L., Zhang, L., Ji, L., Zhang, W. (2020). Developmental changes in associations between depressive symptoms and peer relationships: A four-year follow-up of Chinese adolescents. *Journal of Youth and Adolescence, 49*, 1913–1927. https://doi.org/10.1007/s10964-020-01236-8

Zając-Lamparska, L., Warchol, Ł., Deja, M. (2018). Analiza danych podłużnych: modelowanie latentnych krzywych rozwojowych. *Polskie Forum Psychologiczne, 23*(2), 395-412. https://doi.org/10.14656/PFP20180210

Zautra, A., Gallardo, C., Velasco, L. (2015). Can we learn to treat one another better? A test of a social intelligence curriculum. *PLoS One, 10*(6), e0128638. https://doi.org/10.1371/journal.pone.0128638

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Sources of individual differences in human musical activity: selected neurophysiological and developmental aspects[1]

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Abstract: The article is devoted to individual differences in the field of human musical activity. Musical abilities were taken into account in terms of development, emphasizing the prenatal period of a man. The attention was paid to important aspects in further human development, taking into account heritability and the influence of the environment. They used neurophysiological indicators of changes in development that define neuroplasticity. The importance of characteristics relating to perception, musical intelligence and manual skills was also noted. It is also associated with individual differences in physical activity as a response to music or support in musical performance. The importance of own work in the development of musical abilities was also taken into account. It turns out to be equally important to emphasize the development of musical abilities within the recalling game as opposed to the improvisational one, which is correlated with the variable activation of the neurophysiological task-positive and task-negative networks. The cross-sectional approach to the problem shows the complexity of the musical activity itself which justifies the wide variance of musical abilities analyzed in terms of individual differences which underlie the neurophysiological mechanisms conditioning developmental changes and resulting from own work.
Keywords: improvisation, individual differences, musical abilities, musical activity, musical intelligence, neuroplasticity

Introduction

The aim of this study is to present a review of selected issues concerning individual differences in musical ability[2]. Individual differences are physical and mental traits or generalized tendencies to specific behaviors that are relatively constant within the individual. These include: abilities, including intelligence, personality and temperament, cognitive styles, styles of coping with stress. Individual differences researchers generally focus on two trends: neurobiological (including genetic), and cognitive (Strelau, Zawadzki, 2016). Both include dynamics during developmental processes that include environments such as family, peers or the child's school environment. Our aim was to examine the phenomenon of musical abilities from two different perspectives: first, neuroscience, or the physical perception of sounds by humans and their physiological response to sound stimuli, and second, the science of human development which includes children's music education.

We considered the concept of human musical activity to include both sound perception and body movements, including aspects of fine motor skills

1 Article in polish language: Źródła różnic indywidualnych w aktywności muzycznej człowieka: wybrane aspekty neurofizjologiczne i rozwojowe https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Sweb.pdf

2 The article is the result of the work of students of the Chopin University of Music doctoral school in Warsaw as part of the subject "Psychology of music with elements of the theory of cognition".

closely related to proprioception. In addition, we distinguished abilities such as sight reading and improvisation. In this review, we chose to focus on a broader examination of the literature across neuroscience and music education rather than a complete in-depth review of a single aspect of musical ability. The didactic aspect of this study is intended to service an audience of both musicians and researchers, who want to broaden their general knowledge of individual differences in human musical activity.

The paper is a narrative literature review in which the choice of literature, as already noted above, focuses on research on the neurophysiological mechanisms of human musical activity and research on human development in the context of child music education. As such, the following topics will be discussed in this article: early musical development, potential and development of abilities, musical abilities and neurophysiology, body movement to music – rhythmic interpretation, manual skills, training – own work, playing from notes and improvisation. It is therefore evident that musical activity is multifactorial. This, in turn, makes the development of musical abilities long-term, multifaceted and at the same time dependent on many environmental factors affecting the neurophysiological mechanisms underlying musical activity. It should therefore be expected that there are a number of individual differences in the various dimensions of musical ability.

1. Early musical development

Maria Manturzewska and Barbara Kamińska distinguished six periods of human musical development: prenatal period, infancy period, post-infancy period, pre-school age, younger school age and adolescence, as based on the periodization proposed by Maria Żebrowska, (Manturzewska, Kamińska, 1990). Although we can distinguish individual periods by considering their duration, as well as age, the transition to the next phase of development is determined by individual differences. The prenatal period is the first stage of human psychophysical development, in which the first sensory and motor reactions to music are formed. In the prenatal period, this is done indirectly through the psychophysical state of the mother. Connecting with music can provide the expectant mother with satisfaction and relaxation. This has a significant impact on the development of the child because other negative physiological changes taking place in the mother's body are potentially aversive stimuli for the child. Musical stimulation in the prenatal period however, has a positive effect on development. Among the positive aspects, we can mention that correlations have been found for: greater calmness after birth, better food intake, concentration on objects, greater watchfulness (special attention), faster speech development, as well as greater general developmental efficiency, creative abilities, a higher level of sensitivity and more effective development of cognitive processes (Kędziora, 2012). Thanks to the study of the prenatal period in terms of musical activity, we can see far-reaching positive associations that have impacts on development. It can therefore be concluded that the conditions of the prenatal environment will be the first factors affecting the neurophysiological mechanisms underlying individual differences in various human abilities, including musical ability.

2. Potential and ability development

According to Edwin E. Gordon (Manturzewska, Kamińska, 1990), the causes of individual differences in musical activity are rooted in genetic conditions. Each child has a certain potential for musical abilities which provide opportunities to learn music and develop music-related skills (Bonna, 2005). Musical activity is the result of a musical potential activated by an environment that constantly stimulates music development. Gordon points out, however, even in a favorable environment (e.g.: musical family, musical education), musical abilities may reach their potential but will not exceed it. Similar conclusions were also reached by Howard Gardner who emphasized that various types of intelligence (including musical) are based on a biological potential conditioned by genetic factors (Gardner, 2002).

While researchers are still inconclusive about the heritability of musical abilities, they agree that the child's environment in the first months of its life

has a huge impact on the development of musicality. Psychologist and music therapist Kinga Lewandowska showed that children described as "less musical" come from families where interest in music was very low. Children are not given any patterns of music perception which is why they show low sensitivity to it, they are unable to repeat the melody or rhythm they hear, and when singing they do not intuitively strive for the tonic (Lewandowska, 1978). Put in the same situations, the "more musical" children dance, sing, hum, and react emotionally.

Other researchers came to similar conclusions: Edwin Gordon, Barbara Kamińska and Maria Manturzewska showed that children who have contact with music from an early age show more advanced musical activity as older children, teenagers or adults. One of the functions, according to Gordon's theory, is audiation, which "is to music what thinking is to language" (Bonna, 2005). This means that the child learns music as well as language. Therefore, Gordon suggests that the family be involved as early as possible in the child's musical development. This theory was confirmed in research by Manturzewska who, through an in-depth biographical analysis of Polish musicians, came to the conclusion that one of the most important factors in the development of musicality is the presence of at least one musical person emotionally connected to the child in their upbringing.

Further, pedagogue Beata Bonna discovered a relationship between the musical activity of preschool children and their mothers' musical education and ability to play an instrument. Interestingly, this relationship was negligible for fathers (Bonna, 2005). This could be the result of an increased attachment between mother and child in infancy and preschool age. In many cases, the mother spends the most time with the child, feeds, nurtures and may sensitize the child to music through joint play, dancing or singing.

Kinga Lewandowska noticed a difference in musical activity between children with music education and children without it. It would seem that this issue is obvious but Lewandowska, however, states that greater musical abilities are conducive to the development of appropriate interests because they are a source of additional satisfaction (Lewandowska, 1978). Therefore, it can be concluded that children brought up in a family with a high musical culture and educated musically will show greater musical activity. The generally understood participation of the child's immediate environment in various types of cultural events can also be distinguished as a favorable factor. This can include the presence of musical instruments at home or listening to music by loved ones. The influence of the family economic situation, which may allow the child to participate in extracurricular artistic activities, may be important.

In sum, during infancy, preschool or early school period, there are many environmental factors that affect the development of a child's musical abilities. This is done by reinforcing the behavior emitted by the child. The importance of acculturation as a factor conducive to the development of a child's musical abilities is also emphasized.

3. Musical abilities and neurophysiology

Various trends have dominated the history of research on musical ability, from the first considerations on the innate nature of musical ability undertaken in the mid-nineteenth century, through to the attempts to systematize research through tests conducted on large samples. Two trends stand out here – the perception of musical talent as a general feature and multi-factor and integrative theories, up to the currently dominant approaches, which can be divided into phenomenological and psychometric, and the "new wave" research of the last 20-30 years, where one can distinguish:

- the current of the psychology of perception and musical psychoacoustics conducted in the convention of cognitive psychology,
- the Musical Meaning research trend, perceiving musical activity in a broader cultural context and drawing on the achievements of psycholinguistics,
- the current of neurobiological and neurophysiological research, largely based on research on brain activity (Kamińska, 2002).

An attempt to divide the phenomenon of musical ability into different components of varying proportions, Maria Manturzewska, has suggested the following:

- musical-specific perceptual abilities, such as pitch hearing, harmonic hearing, melodic memory, sense of rhythm,
- specific musical performance skills,
- musical intelligence (Manturzewska, 2014).

Perceptual abilities include not only the ability to hear a sound as such and the ability to determine its properties (volume, timbre), but also a basic degree of understanding the tonal relationships between sounds. However, the mere ability to distinguish basic musical relationships does not constitute the full musical skills necessary, for example, in the processes of composition and improvisation.

Musical intelligence can be understood in different ways. Currently, there are at least four definitions of it (Majzner, 2019). In this paper, we would like to highlight the definition proposed by Howard Gardner, which includes, among other things, the ability to deeply understand the relationships between sounds, tonal, and rhythmic patterns. From such an approach, it can be concluded that it is the understanding of the relationship between sounds, along with a sense of drama and structure and their impact on the emotional overtones of a piece, that is crucial for skills such as composition and improvisation.

In recent years, the technological possibilities of imaging brain activity have made it possible to draw conclusions regarding the connection of different areas of the brain with various elements of musical activity. From the point of view of neurophysiology, the perception of sound can be summarized as follows: sound otherwise known as cyclical changes in air pressure, goes through the auricles via the ear canal to the eardrum, whose vibrations via the ossicles stimulate the fluid filling the cochlea; the movement of the fluid by means of the organ of corti and ciliary cells is changed into action potentials, which travel along the way of nerve connections – through the auditory nerve and a set of subcortical structures – to the auditory cortex. Pitch perception is possible due to the construction of the cochlea itself, equipped with a series of membranes that, depending on their location in the cochlea, are sensitive only to a narrow range of vibration frequencies. Certain limitations of the structure of the hearing organ affect the range of perceived frequencies (Basiński, 2020). This is the so-called the principle of place, explaining the differentiation of treble, above 4000 Hz (Hudspeth, 2014). In addition, the following are also explanatory: the principle of frequency – perception of pitches up to 100 Hz and the salvo principle – differentiation of the pitch of other tones, the discussion of which would require writing a separate paper.

It can therefore be seen that at the level of structural and functional anatomy there are already a number of points that determine individual differences in the auditory analyzer. This translates into individual differences in terms of auditory perception or musical intelligence, described by the theory of traits (i.e.: maintained in the psychometric trend).

4. Movement of the body to music – rhythmic interpretation

Another element that can be analyzed in terms of individual differences in musical activity are body movements in relation to the perception and performance of music. Frequently, the movement reactions among the listeners are noticeable, depending on the music heard. Motor reactions to heard music are probably known to everyone, even to someone who does not interact with it on a daily basis in a reflective way. A study examining the involuntary movement of the body to music was conducted in 2017 called the "Norwegian Standing Championships." Each of the study participants had a marker placed on top of their head to obtain an average measure of the movement they had traveled. For the first half of the experiment, the participants stood in complete silence, and during the second half they listened to a variety of music. Researchers observed a much larger average amount of movement that the marker traveled during the second half of the experiment (Żelechowska, 2020). Carefully observing the work of your body and the activity of specific muscles can provide feedback on

how much motor effects can affect the interpretation of specific musical structures. At the same time, they can facilitate the expression of playing the instrument or increase the precision of keeping the tempo (Jacomucci, Delaney, 2013). Many unconscious and uncontrolled movements are revealed when playing an instrument. Repeated involuntary movements of the body, unconsciously for a time determined individually for each performer, turn into habits. If these motor automatisms are inconsistent with the rhythmic course of the work or other means of expression, they become a performance problem that is difficult to eliminate. The initial solution then is to become aware of your own motor automatisms during the game. Involuntary and spontaneous body movement is noticeable already in infants and is a universal phenomenon among people, which may indicate its deep biological conditioning. Although thanks to progressive research we are getting to know the condition of the body's functioning from the perception of music, we are not yet able to fully determine the links between music and the movement of our body (Żelechowska, 2020).

In conclusion, involuntary or spontaneous movements to music alone are not of interest to the psychology of individual differences. However, their use in the form of a tool supporting musical performance can be controlled, and therefore subject to the development of the musician-performer. The described motor phenomena concern both the postural muscles and the muscles of the lower and upper limbs.

5. Manual skills

The first studies showing the activity of the brain while playing an instrument showed the activity of the primary motor cortex of the left hemisphere, the cerebellum and areas of the secondary motor cortex, also appropriate for other non-musical manual activities (Czernecka, 2020). Later research also showed increased activity of neurons in the prefrontal cortex correlated with the degree of complexity of the piece being played. The pattern of activity of these areas depends on the level of professionalism of the performer – in beginner musicians it usually covers larger areas, in experienced musicians, smaller but more intense areas are activated. This probably reflects the degree to which, in the course of practice, movements are specialized and their randomness is reduced in favor of precision.

The possibility of changes in the precision of movements is enabled by the phenomenon of neuroplasticity (i.e.: the reorganization of the nervous tissue against the background of the development of the body or as a result of its damage), or through the training of a specific type of activity. Reorganization concerns both structural and functional changes (Rymarczyk, Makowska, Pałka-Szafraniec, 2015). As a result of regular exercise, thanks to the reorganization of the cerebral cortex and the corresponding cortical maps, control over the ring and little fingers (4th and 5th) may become independent, for example. Full independence can occur symmetrically (in both hands) in pianists and accordionists, and asymmetrically in the case of string players (where full independence is required only in the case of the left hand).

When learning and improving playing an instrument, feedback coming from the senses of hearing and sight, as well as from the sense of touch and deep feeling (proprioception) plays a key role in the development of manual skills. Therefore, the activation of motor centers in the brain during musical activities is inextricably linked to the activation of the auditory, visual, and somatosensory cortex (Czernecka, 2020). Procedural memory enables the automation of necessary movements during the game, which is associated with the activity of subcortical structures, including the striatum (Bayley, Frascino, Squire, 2005; Shohamy et al., 2008). Motor memory – another type of long-term memory for which the cerebellum is responsible, cannot be omitted. It is responsible for many motor aspects – repetition of movement sequences without eye control, time organization of individual elements of the sequence, etc. (Baumann et al., 2015).

Information from the sense of touch is the most direct element in the feedback loop between performing an activity and evaluating its effectiveness. It enables both real-time game control and technique

correction, enabling long-term improvement (Rovan and Hayward, 2000). The degree of development of proprioception in individual musicians changes over the course of practice and the development of playing skills. However, its innate level may still affect success when playing a particular instrument, or even influence instrument choice. Studies comparing the level of proprioception in musicians playing different instruments usually focus on the movement of the index fingers (Clark, Harman, & Redding, 2013). However, the innate level of proprioception in the wrist, forearm, and shoulder can have a significant impact on playing instruments in which physical contact is not continuous during playing (e.g.: piano, percussion instruments). Certain elements of playing (e.g.: hitting the keys) require feeling the location of the entire limb in space before it touches the instrument (Smitt & Bird, 2013). On the other hand, playing some stringed instruments (e.g.: guitar) involves constant contact of the hand with the instrument's neck, so in addition to medium-scale proprioceptive sensations (forearm movement), it also provides feedback by feeling the thickness of the instrument's neck in a given position. In the case of brass instruments, there is almost no need to sense the position of the limbs in space, because the fingers can remain in constant contact with the valves, and the other parameters are controlled by the tension of the lip muscles and the breathing apparatus. Thus, the feedback is completely independent of the position of the body in space. In this context, individual differences may predispose to success in playing certain instruments, and almost make it impossible to achieve success in playing others, regardless of generally high, non-motor musical skills.

6. Training – own work

Both professional and amateur musical performance results in characteristic changes in the brain, for example in the area of the primary motor cortex, corpus callosum, cerebellum or the network of connections between the auditory, sensory and motor centers. The transformations taking place are aimed at enabling the performer to perform precise motor control, rhythmic and melodic analysis, planning activities, quick exchange of information and effective cooperation while playing the instrument (Czernecka, 2020).

Among people who deal with musical performance on a daily basis, the quality of their activity in this field is also determined by their memory. Thanks to memory, the musician can fully get to know his playing apparatus and master the performance technique. Memorizing the performed repertoire each time has a direct impact on the interpretation of the work. The musician, instead of focusing on the text, dynamic or articulation markings, can only think about the emotional charge conveyed and the sound depth of the composition. Despite many studies on psychoactive substances that could improve memory processes, scientists have not been able to distinguish any that would have significant effects. Therefore, it can be concluded that "the best method of improving memory is mastering the material well and repeating it" (Kalat, 2020). At the same time, it can be noticed that individual differences in musical activity are not only the result of developmental changes resulting from the influence of the environment. In other words, self-initiated activities aimed at developing musical abilities are also significant.

7. Playing with score and improvisation

Another aspect of skill development within human musical activity may be related to playing as an activity controlled by score. When reading sheet music, in addition to the areas of the brain responsible for the categorization of graphic symbols such as the fusiform gyrus (also active when reading traditional writing) for example, the posterior parietal cortex is also activated, which is part of the dorsal visual pathway, in which there are neurons responsible for the perception of objects in space. This is probably related to the specific nature of the musical notation, where not only the shape of the symbol is important, but also its position in relation to the reference point – the staff (Czernecka, 2020).

Sight reading requires not only visual perception but also short-term memory. Experienced "readers" usually look a few bars ahead of the current fragment, so that in the event of a difficult passage written in the score, they have time to plan their reaction. This requires maintaining a kind of memory "buffer" in which data from the last read measures are stored. The short-term memory used in this process has a limited capacity, although the exact number of items stored in it is difficult to measure. The transfer of information to long-term memory, necessary in the case of performing pieces without musical notation, known as the consolidation process, occurs as a result of the active maintenance of information in short-term memory through the temporary activation of the same neurons forming the reverberation circuit (Kalat, 2020).

In the case of improvisation, the area of the frontal lobe is clearly activated – the inferior frontal gyrus and the anterior part of the cingulate gyrus, which are responsible, among others, for divergent thinking and immersion (Limb & Braun, 2008). At the same time, the activity of the dorsolateral part of the prefrontal cortex, which is responsible for cognitive control – monitoring, regulation and targeting – checking and modifying one's own actions, decreases. According to the postulated concept of two separate neural networks – task-positive and task-negative, whose activity is negatively correlated – the above areas belong to the first of these networks (Czernecka, 2020).

An additional level of complexity arises in the case of the analysis of team improvisation, occurring, for example, in the case of spontaneous jam sessions among musicians who do not know each other. On the one hand, the very fact of practicing improvisation suggests the activation of the task-negative part, (i.e.: the lack of self-critical and monitoring thinking). On the other hand, the social situation – the need to find one's place in the group and develop coherent sounding music together – suggests the need to activate the task-positive system and thinking focused on self-correction. In sum, individual differences in improvisational behavior are reflected in different activity patterns of different neural networks.

Conclusion

This paper presents many areas of individual differences underlying musical activity. This description is not exhaustive. Individual differences in musicality may relate to cognitive functions such as attention processes or cognitive control, there is also the consideration of the differences in the regulation of emotions, stress reactions or temperamental characteristics that determine the effectiveness and scope of activities within the musical activity. In this review we differentiated between different levels of description: On the one hand, it is possible to describe musical activity at the level of neurophysiological indicators, and on the other – psychological ones. In this area, the perspective of trait theory, which deals with individual differences in intelligence, temperament and ability, is useful. This review also discussed the potential impact of environmental factors – family, school, peers, on the development of musical abilities already during human development, including during the prenatal period. The complexity of musical activity itself was also emphasized, which further justifies the wide variance of musical abilities analyzed in terms of individual differences.

Bibliography

Basiński, K. (2020). Podstawy działania ludzkiego systemu słuchowego. (W:) M. Chełkowska-Zacharewicz, J. Kaleńska-Rodzaj (red.), *Psychologia muzyki*. Warszawa: Wydawnictwo Naukowe PWN.

Baumann, O., Borra, R.J., Bower, J.M., Cullen, E., Habas, C., Ivry, R.B., ... Sokolov, A.A. (2015). Consensus paper: The role of the cerebellum in perceptual processes. *Cerebellum*, *14,* 197-220.

Bayley, P.J., Frascino, J.C., Squire, L.R. (2005). Robust habit learning in the absence of awareness and independent of the medial temperal lobe. *Nature, 436*, 550–553.

Bonna, B. (2005). Zdolności muzyczne – ich rozwój i uwarunkowania. Wybrane koncepcje uzdolnienia muzycznego. (W:) W. Limont i J. Cieślikowska (red.), *Wybrane zagadnienia edukacji uczniów zdolnych*. t. 1. Kraków: Oficyna Wydawnicza „Impuls".

Clark, T., Harman, G., Redding, E. (2013). *Pointing to performance ability: Examining hypermobility and proprioception in musicians.* International Symposium on Performance Science: Wiedeń.

Czernecka, K. (2020). Korelaty mózgowe wykonawstwa muzycznego. (W:) M. Chełkowska-Zacharewicz, J. Kaleńska-Rodzaj (red.), *Psychologia muzyki*. Warszawa: Wydawnictwo Naukowe PWN.

Gardner, H. (2002). *Inteligencje wielorakie. Teoria w praktyce*. Poznań: Media Rodzina.

Hudspeth, A.J. (2014). Integrating the active process of hair cells with cochlear function. *Nature Reviews Neuroscience*, *15*, 600–614.

Jacomucci, C., Delaney, K. (2013). *Mastering accordion technique: a new approach to accordion playing based on the Alexander Technique*. Tricase: Youcanprint Self-Publishing.

Kalat, J.W. (2020). *Biologiczne podstawy psychologii*. Warszawa: Wydawnictwo Naukowe PWN.

Kamińska, B. (2002). Zdolności muzyczne w ujęciu psychologii muzyki: ewolucja poglądów. *Studia Psychologica, 3*, 187–195.

Kędziora, S. (2012). Znaczenie muzyki w okresie prenatalnym. (W:) J. Uchyła-Zroski (red.), *Wartości w muzyce. T. 4: Muzyka w środowisku społecznym*. Katowice: Wydawnictwo Uniwersytetu Śląskiego.

Lewandowska, K. (1978). *Rozwój zdolności muzycznych u dzieci w wieku szkolnym*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne.

Limb, Ch.J., Braun, A.R. (2008). Neural substrates of spontaneous musical performance: an fMRI study of jazz improvisation. *PLoS ONE 3*(2): e1679. https://doi.org/10.1371/journal.pone.0001679

Majzner, R. (2019). Inteligencja muzyczna kandydatów na nauczycieli wczesnej edukacji. *Problemy Opiekuńczo-wychowawcze, 2*, 59–67.

Manturzewska, M. (2014). *Psychologiczne wyznaczniki powodzenia w studiach muzycznych*. Warszawa: CEA UMFC.

Manturzewska, M., Kamińska, B. (1990). Rozwój muzyczny człowieka. (w:) M. Manturzewska i H. Kotarska (red.), *Wybrane zagadnienia z psychologii muzyki*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne.

Rovan, J., Hayward, V. (2000). Typology of tactile sounds and their synthesis in gesture-driven computer music performance. (In:) M. Wanderley i M. Battier (eds.), *Trends in gestural control of music*. Paris: Editions IRCAM.

Rymarczyk, K., Makowska, I., Pałka-Szafraniec, K. (2015). Plastyczność dorosłej kory mózgowej. *Aktualności Neurologiczne, 15*(2), 80–87.

Shohamy, D., Myers, C.E., Kalanithi, J., Gluck, M.A. (2008). Basal ganglia and dopamine contributions to probabilistic category learning. *Neuroscience and Behavioral Reviews, 32*, 219–236.

Smitt, M.S., Bird, H.A. (2013). Measuring and enhancing proprioception in musicians and dancers. *Clinical Rheumatology, 32*, 469–473.

Strelau, J., Zawadzki, B. (2016). Psychologia różnic indywidualnych. (W:) J. Strelau, D. Doliński (red.), *Psychologia akademicka. Podręcznik*. Sopot: Gdańskie Wydawnictwo Psychologiczne.

Żelechowska, A. (2020). Poruszeni muzyką – badania nad ruchem ciała w kontekście percepcji muzyki. (W:) M. Chełkowska-Zacharewicz, J. Kaleńska-Rodzaj (red.), *Psychologia muzyki*. Warszawa: Wydawnictwo Naukowe PWN.

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Medical care for children and adolescents with gender dysphoria and gender inconsistency in the light of current recommendations – how to implement the *primum non nocere* principle?[1]

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Abstract: Gender identity is one of the essential aspects of human functioning. The diagnosis of gender dysphoria or gender incongruence applies to people who do not have any developmental defects of the genital organs or sex hormone secretion disorders, while the problem is the lack of acceptance of functioning in their own body and the desire to become a person of the opposite sex. This phenomenon is increasingly observed in children and adolescents. In recent years there has been a trend towards earlier use of puberty blockers and sex steroids in minors with gender dysphoria or gender inconsistency in order to inhibit the development of sexual characteristics in the direction of their own sex (referred to as the sex assigned at birth) and to mimic them to the opposite sex, i.e. according to their gender identification. In addition, surgical procedures are performed to remove the gonads and change the appearance of the genitals (and/or breast) in the desired direction (these procedures are allowed in adults, although there are many advocates of performing them in adolescents). Such therapies have been described as "gender-affirming", as opposed to "conversion" therapies, i.e. interventions aimed at restoring the acceptance of one's own sex. The literature emphasizes the lack of evidence regarding the effectiveness and safety of these procedures, allowing for an unequivocal recommendation of their application in children and adolescents, as well as the possible relationship between the increase in the frequency of gender identity disorders and the influence of peer groups, in particular the media creating a climate of affirmation of transsexualism (and non-binary gender identification). Therefore some countries (e.g. Sweden) have tightened their legal regulations in this area. The most serious long-term consequence of gender-affirming therapies is infertility. This paper aims to present these problems based on current medical literature. Extremely important bioethical and legal aspect of these issues will only be indicated, although they undoubtedly require special attention and separate studies.
Keywords: gender identity, gender dysphoria, gender incongruence, gender-affirming therapy, children and adolescents

Introduction

Gender identification is one of the important aspects of human functioning. The diagnosis of dysphoria or gender incongruity concerns people who do not have any developmental defects in the sexual organs or disorders in the secretion of sex hormones, and the problem is the lack of acceptance of functioning in their own (otherwise physically healthy) body. The reasons for the differences (inconsistencies) between phenotypic sex (corresponding to the appearance of the genital organs, referred to in the current literature as sex assigned at birth) and gender identification are complex and not fully understood. The postulated mechanisms include differences in shaping the "brain sex" in a direction other than the gonadal sex (e.g. polymorphisms of genes encoding sex hormone receptors and proteins necessary for the proper functioning of sex hormones, epigenetic phenomena, the effect of excess androgens in fetal life). These issues–along with detailed source literature–were the subject of a separate study, published

1 Article in polish language: Opieka medyczna nad dziećmi i młodzieżą z dysforią płciową i niezgodnością płciową w świetle aktualnych rekomendacji – jak realizować zasadę „primum non nocere"? https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Smy.pdf

in the Quarterly „Fides et Ratio" (Smyczyńska, 2020) and chapters in the book "Between a chromosome and a paragraph" (Smyczyńska 2,021; Zazula, 2021).

In recent years, the frequency of diagnosis of gender dysphoria/incongruence has been increasing, especially among young people (there is a particularly dramatic increase in the percentage of teenage girls declaring male gender identification and the need for transition, i.e. becoming similar to the male gender and functioning as a male person), which raises suspicions about the influence of additional factors (e.g. cultural) on the choice of transsexual gender identification (this phenomenon has not yet been fully explained). At the same time, in society, mainly through the activities of the media and social networking sites, a climate of acceptance or even affirmation of any gender identification (socio-cultural gender), including non-binary and undefined gender, is being created. Changes in this direction also included the nomenclature used in medical classifications and publications, which unfortunately translates into the use of less precise terms in relation to the essence of the described disorders and the actual nature of the medical procedures.

In addition to the undoubtedly beneficial aspects of these changes (cessation of discrimination or stigmatization of people based on their identification and sexual orientation), it seems important to draw attention to the fact that in reality it is not possible to change genetic sex (genetic information encoded in every cell of the human body) and gonadal sex (it is possible to deprive a person of the testicles or ovaries, but not to change them to gonads, which are an attribute of the opposite sex), while interventions regarding the appearance of the genital organs can bring good results, but often without achieving their full functionality and at the cost of a relatively high percentage of complications. Awareness of these limitations is important when making decisions about performing irreversible surgical procedures or using hormonal preparations. In relation to children and adolescents, one should bear in mind the risk resulting from incomplete awareness of the consequences of particular medical interventions and the possibility of changing the perception of these consequences in subsequent periods of life.

Medical aspects regarding the issue of gender incongruence and dysphoria (also called transsexualism) will be presented in the following parts of the article, with particular emphasis on minors. Extremely important legal and bioethical issues will be included only to the extent necessary to discuss medical issues. Also, issues related to disorders of sex development (genetic diseases, developmental defects and endocrine diseases affecting the development of sexual organs in fetal life) will not be included, because these disorders constitute separate disease entities and require separate diagnostic and therapeutic procedures.

1. Definitions, nomenclature and classifications of disorders

There are various classifications of conditions related to the discrepancies between the sex assigned at birth (*i.e.* determined after birth according to the appearance of the external genitalia) and gender identity. Moreover, the nomenclature used in subsequent versions of these classifications have been evolved in time.

In Poland, up to now, the International Classification of Diseases, version 10 (ICD-10), published by World Health Organization (WHO) in 1992, with the last update in 2019, should be used, however version 11 of this classification (ICD-11) was published in 2018 and is announced to be implemented in nearest few years.

In ICD-10 in there is a block of diagnoses (Chapter V) "Disorders of adult personality and behaviour" (F60-F69), which includes subsections related to gender identity and sexual orientation (see Table 1). It seems important to be familiar with the definitions and descriptions given in this classification.

Transsexualism (ICD-10, F64.0) is defined as "a desire to live and be accepted as a member of the opposite sex" with a distress and need for "surgery and hormonal treatment to make one's body as congruent as possible with one's preferred sex".

Table 1. Disorders of gender identity, sexual preferences and sexual orientation, according to the WHO Classification ICD-10[2]

Gender identity disorders (F64)	Psychological and behavioural disorders associated with sexual development and orientation (F66)*
Transsexualism (F64.0)	Sexual maturation disorder (F66.0)
Dual-role transvestism (F64.1)	Egodystonic sexual orientation (F66.1)
Gender identity disorder of childhood (F64.2)	Other psychosexual development disorders (F66.8)
Other gender identity disorders (F64.8)	Psychosexual development disorder, unspecified (F66.9)
Gender identity disorder, unspecified (F64.9)	

* Sexual orientation by itself is not to be regarded as a disorder

Gender identity disorder of childhood (ICD-10, F64.2) is placed in a block of disorders diagnosed in adults relates to symptoms that "usually first manifest during early childhood (and always well before puberty)", with "a persistent and intense distress about assigned sex" and "a desire to be of the other sex", with the proviso that "Gender identity disorders in individuals who have reached or are entering puberty should not be classified here but in F66".

Sexual maturation disorder (ICD-10, F66.2) relates to the situation when "the patient suffers from uncertainty about his or her gender identity or sexual orientation, which causes anxiety or depression" and should be diagnosed in adolescents who are uncertain of their sexual orientation, or in individuals who "find that their sexual orientation is changing".

In ICD-11, the terms "Gender identity disorders" and "transsexualism" have been replaced by "gender incongruence". This diagnosis is situated not in Chapter 06 "Mental, behavioural and neurodevelopmental disorders" (equivalent to Chapter V in ICD-10), but in a new Chapter 17 "Conditions related to sexual health" (HA00-HA8Z). According to ICD-11, the following detailed diagnoses (codes) are related to gender incongruence:

- "**Gender incongruence of adolescence and adulthood**" (ICD-11, H60), defined as "a marked and persistent incongruence between an individual ′s experienced gender and the assigned sex", with "a desire to 'transition', in order to live and be accepted as a person of the experienced gender"
- "**Gender incongruence of childhood**" (ICD-11, H61), related to "a marked incongruence between an individual's experienced/expressed gender and the assigned sex in pre-pubertal children", with "a strong desire to be a different gender than the assigned sex" that "must have persisted for about 2 years"
- **"Gender incongruence, unspecified"** (ICD-11, HA6Z), described as "residual category".

Moreover, the term the term "disorders" suggesting a kind of pathology concerning gender identity has been replaced by "incongruence" that is more neutral. Nevertheless, ICD-11 is still a classification "for Mortality and Morbidity Statistics".

In recommendations of World Professional Association for Transgender Health (WPATH) (Coleman, Radix, Bouman, Brown, de Vries et al. 2022), the term **gender diversity** is used and people with this condition are still referred to as **transgender** ones It is emphasized in recommendations and should not be questioned that transgender people should be treated with respecting their dignity. Moreover, similar terminology should be used in medical standards and in legal documents. This terminology is also suspected to further evolve in future (Coleman et al. 2022).

The nomenclature concerning discussed issues have also significantly evolved in in subsequent editions of classification "Diagnostic and Statistical Manual of Mental Disorders"(DSM), developed by American Psychiatric Association (APA). In DSM IV (2006) the term "gender identity disorder" was used, with subtypes based on sexual orientation. In version 5 (DSM-5), published in 2013, this term

2 https://icd.who.int/browse10/2019/en#/F60-F69

was replaced by "gender dysphoria" with no previously separated subtypes related to sexual orientation. Instead, separate criteria for children and for adults and adolescents were added. Nonetheless, gender dysphoria has not been removed from the classification of mental disorders. Apart from clearly defined criteria of gender dysphoria, DSM-5 (APA, 2013) includes additional specification if this condition exists with disorders of sex development or if it is post-transitional (i.e. in case of gender dysphoria in the person who has transitioned and lives in the desired gender).

The last DSM Text Revision in 2022 (DSM-5-TR) has introduced further updates in order to use "culturally-sensitive" language. Unfortunately, this generally positive tendency to refrain from the terms that could be considered to any degree pejorative, sometimes leads to the use of less precise terminology (see Table 2).

Table 2. Updates of the terminology related to gender dysphoria in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition, text revision (DSM-5-TR), American Psychiatric Association (2022)

DSM-5	DSM-5-TR
Natal male	Individual assigned male at birth
Natal female	Individual assigned female at birth
Cross-sex medical procedure	Gender-affirming medical procedure
Cross-sex hormone treatment	Gender-affirming hormone treatment
Desired gender	Experienced gender
Disorders of sex development	Differences in sex development

With respect to these changes, it should be mentioned that the term "assigned sex" is in fact synonymous with somatic, gonadal and genetic sex, except for the relatively rare cases of disorders of sex development (DSD), which are classified separately as "Congenital malformations of genital organs" in ICD-10, while "Structural developmental anomalies of male genital system" or "Structural developmental anomalies of female genital system" in ICD-11. The change in nomenclature changing the nomenclature from "disorders" to "differences" of sexual development (DSD) should not obscure the fact that this category includes a number of developmental defects and diseases of the endocrine glands that have to be diagnosed and treated. This necessity is generally clear for disorders but not necessarily for differences. It should be also recalled that DSD relates to atypical genitalia or a discrepancy between genotypic and phenotypic sex (van Bever, Brüggenwirth, Wolffenbuttel, Dessens, Groenenberg *et al.* 2020).

Gender affirmation refers to affirming transgender people in their gender identity in different aspects of life (e.g. medical, behavioral, social or legal) and includes but is not limited to transition-related medical care (Coleman et al. 2022; Reisner, Poteat, Keatley, Cabral, Mothopeng et al. 2016). This means that the affirmation refers in fact to the interventions strengthening gender identity corresponding to the opposite sex (cross-sex) .

The persons with gender identity compatible with assigned (genital) sex are referred to as cisgender, while the persons with incongruence between gender identity and assigned (genital) sex – as transgender. It is also useful to differentiate between male-to-female (M/F) and female-to-male (F/M) persons, in older literature described as trans-women and trans-men. This nomenclature is useful to describe differences between these groups and gender-specific cross-sex medical interventions. However, some persons may define themselves as gender-ambivalent or non-binary.

2. Incidence of transgender experience

Due to different definitions used by the authors and different methods of estimation, there are significant differences in the reported incidence of transgenderism and gender dysphoria. It is also difficult to clearly compare the data from particular studies.

In a large administrative database, including 74 million of U.S. adults enrolled in commercial or Medicare Advantage plans, the overall incidence of gender diversity was 0.03%, with a tendency to higher

prevalence in younger age groups (Jasuja, de Groot, Quinn, Ameli, Hughto et al. 2020). As much as 43% of M/F and 45% of F/M transgender adults in this study were diagnosed with depression, however it has not been clarified if there is a relationship between the incidence of depression and the past gender-affirming medical interventions. In adult population of U.S., the prevalence of self-reported transgender status is estimated at 0.5 % (Crissman, Berger, Graham and Dalton 2017). In Sweden also 0.5% of asked adults declared the desire for cross-sex hormone administration or surgery, with higher proportion of those who felt or wanted to be perceived like a person of another sex (Åhs, Dhejne, Magnusson, Dal, Lundin et al. 2018). In the studies using 5-point Likert scale, the proportion of transgender M/F patients was 1.1% in Netherlands and 0.7% in Belgium, while of F/M it was 0.8% and 0.6%, respectively, with a relatively higher percent of those who declared gender ambivalence (van Caenegem, Wierckx, Elaut, Buysse, Dewaele et al. 2015; Kuyper and Wijsen 2014). In Canada, the proportion of transgender or non-binary people among the population aged at least 15 years was 0.33% and ranged from 0.12% in the oldest age group to 0,79% in the youngest one (Statistics Canada 2022).

It has been assessed that overall proportion of adults with transgender identity varies from 0.02-0.08% in health system databases to 0.3-0.5% in surveys. Moreover, in surveys performed among children and adolescents, transgender identity was assessed as 1.2-1.7%, while gender incongruence or ambivalence was reported by 2.5-8.4% respondents (Coleman et al. 2022). The observed age-related differences and temporal trends in the proportion of M/F and F/M persons in younger age groups, reported in the cited study, do not seem to confirm the persistent nature of gender dysphoria in children and adolescents at the population level. Moreover, in survey studies, similar or even higher percent of adolescents declared as not sure about their gender than as transgender ones, e.g.1.6% vs. 1.8% in the study of Johns, Lowry, Andrzejewski, Barrios, Demissie et al. (2019), while 2.5% vs. 1.2% in the study of Eisenberg, Gower, McMorris, Rider, Shea and Coleman (2017), respectively.

In the study summarizing 20 years of use of Dutch Protocol in Vrije University in Amsterdam (van der Loos, Klink, Hannema, Bruinsma, Steensma et al. 2023), a rapid, several time increase in the number of patients "assessed as female at birth" at age over 10 years was observed between 2012 and 2017, with only a slight increase in the number of patients "assessed as male at birth" in the same age group and a relatively small increase in the number of children under the age of 10. Very similar are the observations of Friesen, Söder and Rydelius (2017) in Sweden and of Butler, De Graaf, Wren and Carmichael (2018) in U.K. The occurrence of this phenomenon in different countries has quite recently been described in detail by Marianowicz-Szczygieł (2022).

The possible explanation of an increased number of adolescents with gender incongruence include: greater access to information on gender issues (on the internet and social media), a decrease of stigmatization together with an increase of acceptance in society, improved access to medical and increasing media interest in transgender issues (Indremo, Jodensvi, Arinell, Isaksson and Papadopoulos 2022). In support of the importance of this last circumstance, the authors have indicated the existence of a correlation between the increased interest in gender dysphoria on Google trends after media events concerning transgenderism in 2019.

It seems that the reasons for such situation cannot be associated only with greater incidence of true and permanent gender inconsistency (which increased during few years in one sex and only in teenagers), but this tendency may reflect current (and possibly temporal) trends emerging among young people.

Interestingly, in 7th version of WPATH Standards of Care (Coleman, Bockting, Botzer, Cohen-Kettenis, DeCuypere et al. 2012), there is a statement that gender dysphoria persisted into adulthood in only 2-4% girls and 1-2% boys. This data is, however, not recalled in more recent studies (possibly as it is not in line with current trends in "gender affirming" approach to minors).

These issues should be taken into account before starting any irreversible or potentially harmful medical procedures, as they indicate serious doubts as to

the true causes of feeling gender-related dysphoria and the real need for gender-affirming irreversible interventions in minors.

3. Available evidence and recommendations

In recent years there have been numerous recommendations on gender issues developed by various bodies in different countries. Some of them are signed by scientific societies and organizations, while others represent the views of their authors. The most important and the most up-to-date of them are discussed in next sections of the manuscript. The authors of particular guidelines have pointed at their limitations related to the scarcity of long-term data causing the necessity of relying mainly on expert opinions. Moreover, the content of the different guidelines varies to some extent and is mutable in subsequent versions of the same recommendations.

The Polish Society of Endocrinology published recommendations on the diagnosis and therapy of transsexualism several years ago (Mędraś and Józków, 2010). The Polish Sexological Society has issued recommendations on health care for transgender people (Grabski, Rachoń, Czernikiewicz, Dulko, Jakima et al. 2020), but they only apply to adults, without any reference to minors. Recently, the issue of transsexualism, taking into account the differences regarding minors, was discussed in the textbook "Andrology" (Robacha 2021) in the chapter "Psychological gender disorders".

4. Diagnosis of gender dysphoria in adolescents

According to current statements, gender identity disorders (also specified as gender dysphoria or gender incongruence) should be defined as a strong and persistent cross-gender identification that is associated with a remarkable distress related to living in an incongruent gender (Vita, Settineri, Liotta, Benvenga and Trimarchi 2018)

According to DSM-5-TR (American Psychiatric Association 2022), the diagnosis of gender dysphoria in adolescents requires fulfilling the following criteria:

A. marked incongruence between experienced/expressed gender and primary and/or secondary sex characteristics (also anticipated secondary sex characteristics in young adolescents), lasting for at least 6 months
B. a distress or impairment in functioning in different areas (social, occupational or others) of clinically significant severity

In this interpretation, gender incongruence alone does not meet the diagnostic criteria for gender dysphoria. However, in ICD-11 (WHO 2018), only the term "gender incongruence" was left, which allows a diagnosis to be made even if this incongruence is not the cause of suffering or functional impairment. This approach allows for qualifying for treatment also people who do not suffer or even feel discomfort only because they report the desire to transition.

5. Possible interventions

According to Dora, Grabski and Dobroczyński (2021), there are three main therapeutic approaches for children and adolescents with gender dysphoria:

- reduction of the experience of gender dysphoria by and strengthening identification with the assigned gender (i.e. with natal sex),
- supporting natural development of gender identification in childhood
- early affirmation of identification of a child with the experienced gender.

The authors of this relatively recent study have stated that literature concerning particular approaches is limited and each option is subject to criticism by supporters of the other approaches.

The main changes introduced in recent years are moving in the direction of gender-affirming procedures and supporting searching for gender identity, while against strengthening gender identification

consistent with. the sex assigned at birth. The basic scope of the intervention includes hormone administration, surgical procedures and psychotherapy.

5.1. Hormonal prescriptions

5.1.1. *Physiology of pubertal development*

The onset of puberty is related to activation of a pulsatile secretion of gonadoliberin (GnRH) in hypothalamus. GnRH stimulates synthesis of gonadotropins – luteinizing hormone (LH) and follicle stimulating hormone (FSH) – in pituitary gland. Gonadotropins induce secretion of sex steroids from gonads (estrogens and progesterone in ovaries, while testosterone in testes) and are important for ovulation and spermatogenesis. Estrogens induce development of female secondary sex characteristics; variability of pulsatile gonadotropin secretion is necessary for of cyclic changes in estradiol and progesterone secretion that is crucial for the proper course of menstrual cycle. Testosterone induces development of male secondary sex characteristics (virilization) and has some anabolic effects. Sex steroids inhibit gonadotropin secretion in the negative feedback mechanism. This description is, of course, very simplified, but may constitute the basis for understanding the mechanisms of action of particular interventions.

5.1.2. *Suppression of pubertal development*

Blocking puberty is achieved by using sustained-release GnRH agonists, i.e. synthetic peptides that bind to GnRH receptors in the pituitary, which inhibits the secretion of gonadotropins by the pituitary gland and, consequently, also the secretion of sex steroids by the gonads. These preparations are called puberty blockers. Such interventions suppress progression of puberty without affecting the development of sexual characteristics in the direction typical of the opposite sex. Effects of puberty blockers seem to be reversible, however with some reasonable concerns with respect to the future risk of osteoporosis and bone fractures, possible effects on final height and increase in body fat, while decrease in lean body mass. Long-term studies are available for children with premature puberty but not for transgender youths (Salas-Humara, Sequeira, Rossi, and Dhar 2019). Recommending administration of puberty blockers, the authors of the cited guidelines indicate that GnRH analogues have some positive effects on psychological and emotional problems but not for improvement of gender dysphoria.

In Poland, sustained-release GnRH analogues are approved for treatment of central (GnRH-dependent) premature puberty and selected forms of early puberty in children. In adults GnRH analogues are used in males with prostate cancers for androgen deprivation and in females with endometriosis, uterine fibroids or disorders of ovulation. According to the characteristics of medical product, therapy of transgender persons is not listed among the indications for the use of GnRH analogues in all age groups. In United States, GnRH analogues are also not approved by Food and Drug Administration (FDA) for the use in transgender youth (Salas-Humara et al. 2019).

5.1.3. *Gender- affirming (cross-sex) hormones*

This term relates to using estrogens in transgender M/F and testosterone in transgender F/M.

Estrogens are used in order to achieve the development of female secondary sex characteristics in the patients with genetic and phenotypic male sex (assigned at birth as boys). Due to the risk of thromboembolic events, it is suggested to prefer 17β-estradiol rather than ethinyl estradiol and to choose the route of administration which avoid hepatic first pass metabolism, preferably transdermal (however with no sufficient support for this recommendation for transgender M/F in published studies) (Salas-Humara et al. 2019). Gradual increasing the doses of estrogens is advised due to their potential impact on final height, as higher doses or their rapid escalation may decrease final height (this might be expected by M/F patient but is completely irreversible). Personal and family history should be taken before estrogens administration and other risk factors of thromboembolism (obesity and smoking) should be discussed. There is also some concern related to inconclusive data on the risk of hyperprolactinemia and hypertriglicerydemia during estrogen use

(Salas-Humara et al. 2019). The effects of estrogens administration may develop during few years, e.g. maximal breast development is expected after 2 years. The patient should be able to understand both the possible side effects and the irreversibility of the effects of estrogen therapy. The decrease of depressive symptoms during feminizing hormone therapy has been reported, however there are no prospective studies in this aspect (Salas-Humara et al. 2019). Potential adverse effects include an increase of body fat and BMI that was observed in adults, with no such effect in one published study on transgender youths (Jarin, Pine-Twaddell, Trotman, Stevens, Conard et al. 2017). Salas-Humara et al. (2019) have stated that the data concerning blood pressure in adult transgender M/F is inconclusive, while in adolescents it is limited to one study with 6-months follow-up (Jarin et al. 2017). With respect to the risk of malignancy in M/F patients, Salas Humara et al. (2019) have pointed at insufficient evidence to draw conclusions concerning breast cancers and prostate cancers, nevertheless with no data on increased risk of these tumors. Other effect of increased estrogen levels may be hyperprolactinemia and development of pituitary tumors (*prolactinoma*), however its risk in M/F adolescents on estrogen therapy has not been definitely assessed (Jarin et al. 2017). International Endocrine Society, bringing together members from over 100 countries, has recommended monitoring prolactin concentrations in such patients and implement appropriate management in case of hyperprolactinemia (Hembree, W. C., Cohen-Kettenis, P. T., Gooren, L., Hannema, S. E., Meyer et al, 2017).

As estrogens alone not always fully suppress testosterone production in transgender M/F, they are commonly prescribed together with GnRH blockers or antiandrogens (Spironolactone, Cyproterone acetate) (Coleman et al. 2022). However, the lack of data on the use of Spironolactone in monotherapy makes impossible to assess the effects of this drug in transgender M/F patients, while the health risks of Cyproterone acetate are debated and randomized protocols with anti-androgen drugs are requested (Glintborg, T'Sjoen, Ravn and Andersen 2021; Hembree et al. 2017; Salas-Humara et al, 2019). There is a clear recommendation of Endocrine Society (Hembree et al. 2017) against use progesterone in transgender M/F due to the increased risk of breast cancers and cardiovascular diseases, however the evidence is from the study on postmenopausal women (Chlebowski, Manson, Anderson, Cauley, Aragaki et al. 2013), not on transgender adolescents. Similar is the statement of Glintborg et al. (2021).

In Poland, in accordance with the characteristics of available estradiol-containing medicinal products (Estrofem, Systen 50), indications to estradiol administration in monotherapy include only estrogens deficiency in post-menopausal women after histerecotmy, who do not require standard hormonal replacement therapy with estrogens and progesterone. A study by the Agency for Health Technology Assessment and Tariff System (2023) was recently published confirming the validity of using cyproterone and estradiol in transsexuals (M/F), based on the results of studies using these drugs in transgender adults or people over 16 years of age. Estrogens are also used in adolescent girls with hypogonadism in the initial phase of sex steroids substitution (Nordenström, Ahmed, van den Akker, Blair, Bonomi et al. 2022).

Testosterone is used due to its anti-estrogen, virilizing and anabolic effects that enable promoting development of male secondary sex characteristics in genetic and phenotypic female persons (assigned at birth as girls). This include change of voice (irreversible after 6 months of treatment), skin hair growth (irreversible after 1 year) that may be connected with androgenic alopecia, possible increase of final height (depending on many factors and with no certainty about its improvement), induction of amenorrhea and changes in body shape (that may be to some extend irreversible). The effect of high testosterone levels in women is also enlargement (hypertrophy) of the clitoris, atrophic changes in the vaginal epithelium and the appearance or intensification of acne lesions. In the case of F/M people, the discussed effects of testosterone use may be at least partially accepted and even expected, but a serious problem is their irreversible nature in the event of an erroneous, hasty diagnosis of transsexualism in a girl with temporary gender identity disorders who wants to return to functioning as a female person.

With respect to mental health outcomes of testosterone administration in transgender youth, there are the reports on reduction of depression rates and anxiety, as well as on the increase on anger, especially in the initial phase of treatment (Salas-Humara et al. 2019). According to the cited statement, there are no common contraindications to testosterone administration, however, the same authors are not entirely consistent in drawing attention to concerns about complications of testosterone therapy started in adolescence, with respect to the possibility of increased risk of cardiovascular hypertension, diseases, polycythemia-related thromboembolism and cancers. The patients should be aware of the risk of breast, uterine and ovarian cancers, if they have these organs left (Salas-Humara et al. 2019).

It should be borne in mind that in Poland, the only approved indication for testosterone administration is male hypogonadism, including delayed puberty in boys (approved for use over 15 years). However, according to the characteristics, particular drugs for intramuscular (e.g. *Testosteronum prolongatum*) or subcutaneous (e.g. *Androtop*) administration are not recommended for use before the age of 18 years, as their safety and efficacy in children and adolescents have not been established. Similarly, testosterone products are approved by U.S. Food and Drug Administration (FDA) only for men with testosterone deficiency, *i.e.* with failure of the testicles to produce testosterone due to associated medical conditions (*e.g.* genetic defects, chemotherapy, hypothalamic or pituitary insufficiency). According to the Safety Announcement of U.S. FDA (2014) testosterone therapy turned out to be associated with an increased risk of cardiovascular events (heart attacks and strokes, or even death), however further clinical studies should be conducted to assess the real scale of such risk. Polish characteristics of testosterone products list breast cancers, prostate cancers (diagnosed or suspected), benign prostatic hypertrophy, nephrotic syndrome and hepatic neoplasms as contraindications to the use of testosterone, and advise caution in the patients with cardiac, renal or hepatic failure, epilepsy, migraine, as well as in obese subjects with chronic diseases of respiratory system.

Other intervention in F/M adolescents may be temporal (reversible) menstrual suppression, obtained by administration of oral contraceptives (or other methods of contraception), progesterone or puberty blockers (Coleman et al. 2022; Roden, 2023). Interestingly, there is also evidence that some patients may not desire testosterone therapy and only need appropriate menstrual underwear (i.e. special underwear tailored to individual needs with increased absorbency, not requiring the use of disposable menstrual hygiene products, providing greater freedom during bleeding, increasing the sense of security and maintaining discretion) and improved hygiene (Coleman et al. 2022; Roden, 2023). In WPATH recommendations there is also an important suggestion to use only GnRH agonists but not sex steroids in the patients who are unsure that they desire steroid hormones (Coleman et al. 2022).

According to the recent report of Gawlik, Antosz, Kasparek, Nowak and Grabski (2022), in Poland over 90% of transgender patients did not start hormonal treatment before the age of 18 years, and the most commonly used drugs were testosterone or estradiol and cyproterone, while the use of puberty blockers was not reported.

5.2. Gender-affirming (cross-sex) surgical interventions

5.2.1. *Gonadectomy and hysterectomy*

This procedures are – in fact – irreversible removal of otherwise healthy gonads (ovaries or testicles), making the person undergoing this procedure definitely infertile. Nevertheless, people who decide to have a gonadectomy as one of steps of gender-affirming therapy may want to have biological offspring in the future (Rodriguez-Wallberg, Obedin-Maliver, Taylor, Van Mello, Tilleman and Nahata 2023), even if they deny such a need when they are still children or teenagers.

It is technically possible and recommended to preserve ovarian or testicular tissue, or mature gametes (oocytes or sperm), that is referred to as "fertility preservation" (Coleman et al. 2022; Rodriguez-Wallberg et al. 2023; Salas-Humara et al. 2019;

Wang, Hengel, Ren, Tong, and Bach 2020). As both gender-affirming therapy hormonal and especially surgical procedures performed in transgender persons have irreversible negative effect on fertility, the only chance of having biological offspring is fertility preservation(Wang et al. 2020). Due to the adverse effects of gender-affirming therapies on fertility (including definitely irreversible infertility after gonadectomy), such procedures are recommended prior to administering hormones. However, cryopreservation of mature gametes requires an appropriate stage of maturation which may be a limitation in the case of adolescents, especially as the initiation of hormonal interventions is recommended at as early stage of puberty as Tanner 2.

Currently, the only option for prepubertal children is storing ovarian or testicular tissue for autotransplantation (i.e. for re-implantation of the gonads previously removed during the gender-affirming treatment), as there is no technique of maturation oocytes or sperm from cryopreserved pre-pubertal ovaries or testes *in vitro* of proven effectiveness (Coleman et al. 2022; Rodriguez-Wallberg et al, 2023). Moreovever, there are only single case reports of re-transplantation of ovarian tissue concerning early pubertal adolescents, while no cases of re-transplantation of testicular tissue in humans in the literature (Rodriguez-Wallberg et al. 2023); current evidence about the possibility of re-transplanting testicular tissue taken in the prepubertal period comes only from animal studies (Wang et al. 2020). It is postulated to discuss the possibility of cryopreservation gonadal tissue, however with the awareness of the lack of data on the actual possibilities of their use in the future (Rodriguez-Wallberg et al. 2023). It should also be commented here that "preserved fertility" related to cryopreservation of gametes is limited to in vitro fertilization procedures, while not allows fertilization during sexual intercourse. Hysterectomy performed in transgender F/M makes them impossible to get pregnant in future.

It seems that the details of these limitations are not widely known even among people interested in gender reassignment and are not taken into account by the bodies proposing hormone therapies in younger and younger children, in whom the use of methods of fertility preservation available for adults and post-pubertal adolescents may be impossible. It is also important to consider the age at which the minor is fully capable of assessing the long-term consequences of the such interventions and about the right of parents/guardians to consent to the performance of irreversible procedures which may result in infertility, even if the minor is fully convinced of the rightness of his/her decision (and finds gender-affirmative support from specialists).

5.2.2. *Genital surgery*

In transgender M/F patients, gender reassignment surgery includes removal of the penis (usually together with testes) and creation of neovagina, i.e. a structure designed to resemble a vagina, most often using the skin of the penis and scrotum, but it is possible to use flaps of skin and mucous membranes from other areas. It is not possible to create or recreate the vaginal epithelium and its physiological hydration, and the multitude of surgical techniques indicates that none of them is optimal. Post-operatively such patients often require calibration (dilation) of neovagina to enable sexual intercourse. There is also a risk of recto-vaginal fistula (Colebunders, Brondeel, D'Arpa, Hoebeke and Monstrey 2017; Salas-Humara et al. 2019).

U osób transpłciowych K/M operacja rekonstrukcji narządów płciowych obejmuje falloplastykę i metoidoplastykę różniące się szczegółami wykonywanych zabiegów oraz uzyskiwanymi efektami – falloplastyka wiąże się z większą długością *neophallusa*, natomiast metoidoplastyka pozwala na lepsze doznania erogenne (Robinson, Blasdel, Cohen, Zhao i Bluebond-Langner, 2021); szczegółowy opis tych operacji wykracza poza zakres niniejszego artykułu. Autorzy cytowanej pracy podają wysoki odsetek powikłań, w tym 40% ryzyko wystąpienia przetok cewkowo-skórnych, zwężeń cewki moczowej (ponad 30%) i prawie 20% ryzyko pogorszenia stanu zdrowia psychicznego. To ostatnie stwierdzenie należy traktować jako poważne ostrzeżenie, gdyż u osób z dysforią płciową nie występuje wcześniej choroba somatyczna gonad ani narządów płciowych, a celem interwencji jest poprawa zdrowia psychicznego. Według

niedawnej publikacji (Gottlieb i Cripps, 2023) nie określono żadnego standardu opieki w odniesieniu do rekonstrukcji prącia. Nie ma również zgody co do stosowania protez prącia, które według jednych autorów (Colebunders i in.,(2017) nie mają żadnej funkcjonalności, natomiast według innych autorów (Barnard, Cakir, Ralpha i Yafi, 2021) wskazania do operacji protezowania prącia mogą być poszerzone i obejmować osoby transpłciowe.

In transgender F/M patients genital reconstruction (cross-sex) surgery includes phalloplasty (a procedure involving the creation of a structure resembling the shape of a penis from tissue taken from other parts of the body) and metoidoplasty (a more limited procedure using only tissues from the genital area) that differ in the details of the performed procedures and with the obtained effects – phalloplasty is related to a longer length of neophallus (newly created structure resembling a penis), while metoidoplasty allows for better erogenous sensations (Robinson, Blasdel, Cohen, Zhao and Bluebond-Langner 2021); the detailed description of these operations goes beyond the scope of present paper. The authors of cited manuscript have reported a high complication rate, including 40% risk of urethro-cutaneous fistulae, urethral strictures (over 30%) and almost 20% risk of worsening mental health. The latter finding should be taken into account as a serious warning, as in the patients with gender dysphoria there is no previous somatic disease of gonads or genitals and the aim of the interventions is to improve mental health. According to a very recent paper of Gottlieb and Cripps (2023), no standard of care has been identified with respect to penile reconstruction. There is also no agreement according to penile prosthesis, as according to Colebunders et al. (2017) they have no functionality, while according to Barnard, Cakir, Ralph and Yafi (2021) the indications for penile prosthetic surgery may be broaden and include transgender persons.

Despite the previously mentioned concerns regarding the potential increased risk of ovarian and uterine cancer in F/M people using testosterone preparations in which these organs are left (Salas-Humara et al., 2019), currently there a recommendation against oophorectomy (surgical removal of ovaries) and hysterectomy (uterine resection), as there is insufficient evidence (lack of prospective data) that such procedures should be performed in order to decrease the risk of ovarian and endometrial cancers, instead, appropriate cervical cancer screening should be offered to F/M patients (Coleman et al. 2022). Such recommendations reduce the scope of mutilating procedures that F/M people undergo, but on the other hand, the possibility of underestimating the oncological risk should be taken into account.

5.2.3. *Chest surgery*

This term relates to removal of breast tissue (mastectomy) in transgender F/M and breast augmentation in M/F ones.

According to recent recommendations, mastectomy is permitted in minors below 18 years of age, when recommended by mental health providers, if testosterone therapy alone does not provide sufficient reduction of breast size (Salas-Humara et al. 2019). It should be noted that there is only limited data that such irreversible removal of mammary glands improves quality of life of persons with gender dysphoria (Poudrier, Nolan, Cook, Saia, Motosko et al. 2019; Salas-Humara et al. 2019; Alcon, Kennedy, Wang, Piper, Loeliger et al. 2021), nevertheless the patients' satisfaction outcomes are generally positive (Day, Klit, Lang, Mejdahl and Holmgaard 2023). In the latter study of Day et al. (2023) the response rate was as high as 93%, while in the study of Alcon et al. (2021) it was only 43% (22 out of 51 F/M patients completed the dedicated Gender Quality of Life survey 1 year after mastectomy).

In M/F patients, surgical enlargement of breast (with implants or fat grafting) is recommended after at least 12 months of feminizing hormones administration. The risk of breast cancers in the transgender M/F patients taking estradiol after breast augmentation surgery has not been evaluated (Salas-Humara et al. 2019). Despite the fact that – conversely to mastectomy – breast augmentation may be reversible (by re-operation), the Endocrine Society requires reaching 18 years of age to consent for chest augmentation (Hembree et al. 2017).

5.2.4. *Other procedures*

It is also possible to perform minor interventions that do not influence hormonal function and fertility, as facial masculinization or feminization, or voice surgery (Pasternak and Francis, 2019; Salas-Humara et al. 2019). Different nonmedical interventions, like chest padding or genital tucking, have also been proposed, however with the attention paid at their potential negative health effects (especially with respect to increase of scrotal temperature that might affect spermatogenesis and fertility) (Coleman et al. 2022). It seems somewhat puzzling that the same authors have allowed orchidectomy as one of the methods of gender-affirming therapy.

5.3. Psychological and psychosocial interventions

It seems that psychological interventions should have crucial role in management of minors with gender dysphoria. Unfortunately, in a very recent systematic review of Lehmann and Leavey (2023), concerning psychological and psychosocial interventions for gender diverse minors and their families, only four papers published between 2001 and 2021 met the inclusion criteria, and the main conclusion from the study is the need for further research in this area.

On the other hand, in WPATH SOC-8 (Coleman et al., 2022) there is no acceptance for reparative and conversion therapies undertaken to change person's gender identity or gender expression, due to their inefficiency and an increased risk of worsening mental health. The authors have emphasized that "efforts undertaken a priori to change a person's identity are clinically and ethically unsound" (Coleman et al. 2022, p.S53). Similar has been the statement of Turban, Beckwith, Reisner and Keuroghlian (2020), concerning psychotherapy that should be only gender-affirming, while not focused on regaining identification with the sex assigned at birth. In other part of WPATH recommendations there is a statement supporting psychological interventions as effective tools that may be helpful for "exploring gender identity and its expression, enhancing self-acceptance and hope" (Coleman et al. 2022, p. S175), referring to the work of Matsuno and Israel (2018).

Such approach may be considered with respect to persons with clearly defined gender identity, while – as can be seen from the previously quoted reports on frequency of gender incongruence – a large proportion of youths is ambivalent, non-binary or searching for their identity. It seems questionable to recommend that only gender reassignment solutions be offered in such cases. There is no doubt that all the activities must be undertaken with respect for human dignity and identity.

American Academy of Child & Adolescent Psychiatry (2018) in the Policy Statement concerning conversion therapy stated that interventions that intend to promote a particular gender and/or sexual orientation may be harmful and have no scientific credibility. The authors have proposed implementation of treatment focused on exploration of different aspects of identity to help the youth understand it, with no predetermined outcome. However, they have considered justified only gender-affirming (i.e. targeted towards transition) medical interventions, while not conversion (i.e. targeted to regain an identity consistent with one's biological sex) therapies. It should be noted that, in fact, the term "affirmation" is used in this context for the interventions that cause significant and often irreversible changes in the functioning of the body, while "conversion" relates to the attempts to regain gender integrity without irreversible interventions in the somatic integrity.

There are also other views regarding the psychotherapy of people with gender incongruence. The methodology of the previously cited study of Turban et al. (2020) has been criticized by D'Angelo, Syrulnik, Ayad, Marchiano, Kenny and Clarke (2021). The latter authors have also stressed the need for the least invasive treatment options, as psychological treatment focused on the relief from gender dysphoria, before progressing to irreversible medical interventions.

6. Timing of interventions, legal aspects and informed consent

According to recent recommendations (Coleman et al. 2022), the diagnosis of gender incongruence should be established according to ICD-11 classification (WHO 2018) or other taxonomy (in Poland the currently used version is ICD-10). Differences between various classifications have been described in dedicated part of the manuscript.

There is no approval for medical interventions in prepubertal children with gender dysphoria (Salas-Humara et al. 2019). The Endocrine Society (Hembree et al. 2017) recommends against using puberty blockers before the onset of puberty. The patients should be evaluated by experienced mental health professionals and ensured that their gender identity is accepted.

Medical interventions offered to transgender people include suppression of puberty, hormonal therapies and surgical operations, which should be chosen individually, according to the patient's needs and desires (Coleman et al. 2022). According to Dutch Protocol (van der Loos et al. 2023), suppression of puberty can be offered to children at least 12 years of age, at Tanner stage of breast or genital of 2 or more (i.e. after the onset of puberty). Gender-affirming hormones for puberty induction (testosterone in F/M adolescents, while estrogens for M/F ones) can be started at the age at least 15-16 years. Such procedures are in line with the guidelines of the Endocrine Society (Hembree et al. 2017). After at least 1 year of hormone administration, people "become eligible for gender-affirming surgery" after which they must continue to use hormones (van der Loos et al. 2023); unfortunately, the authors have not referred to a single item of literature to support their position in this aspect. The protocol presented by van der Loos et al. (2023) introduced an additional requirement of at least one year of observation before using puberty blockers, intended for a diagnostic evaluation.

Criteria for hormonal therapy for adolescents, provided by the Endocrine Society (Hembree et al. 2017) and WPATH (Coleman et al. 2022), include:

- gender dysphoria diagnosed by mental health professional,
- the ability of adolescent to give informed consent for the proposed interventions (it an adolescent have not reached the age necessary for legal medical consent, the consent must be obtained from the parents).

Risks and side effects of treatment should be discussed, including the potential compromise of fertility (infertility) and the possibilities to preserve fertility before the administration of gender-affirming hormones. The latter issue is of special importance in persons subjected to gonadectomy, that is in general not accepted in minors.

Pubertal blockers are proposed for suppression of puberty from the onset of breast development or testicular enlargement in order to delay development of potentially irreversible secondary sex characteristics (e.g. breast development, change of voice) and getting amenorrhea. The indication for such intervention is gender dysphoria diagnosed by mental health professional, worsening from the onset of puberty. According to WPATH (Coleman et al. 2022), in concordance with Dutch Protocol (van der Loos et al. 2023), the therapy should be initiated at Tanner stage 2, however, blockers of puberty may also be started at later stages of pubertal development, together with gender-affirming (cross-sex) hormones (estrogens, testosterone) that allows to use lower doses of sex steroids. Blocking puberty has been considered reversible but the authors have admitted that there is a lack of long-term studies on associated risks and also no consensus on the duration of such treatment, except for its discontinuation after gonadectomy (Salas-Humara et al. 2019).

It should be recalled here that in Poland the use of GnRH analogs in transgender minors is off-label therapy. Moreover, despite the pressure to use puberty blockers, it is uncertain whether such treatment does not reinforce the experienced dysphoria, due to the lack of data confirming the lack of effect of such treatment on gender identity (Robacha 2021). The concerns with respect to the use of puberty blockers in minors have also been discussed in the paper of Poleszak, Szabat P, Szabat M, Wójcik, Boreński

et al. (2019). The same caveat seems to apply even more to the early use of sex steroids for (trans)gender affirmation.

Even more far-reaching concerns about the use of puberty blockers have been presented by Richards, Maxwell and Mccune (2019) who pointed at loss of positive effect of sex steroids on consolidation gender identity, threatening the maturation of adolescent brain and limited experience with respect to causes of rapid increase of incidence of gender dysphoria and to safety profile of suppressing otherwise normal puberty. There is also a concern that the use of puberty blockers may be a factor that makes identification of adolescents with their own gender more difficult.

Previously, initiating gender-affirming hormones was recommended no earlier than at the age of 16 years, however, recent guidelines of Endocrine Society are more "flexible" in this aspect (Hembree et al. 2017).

American authors (Salas-Humara et al. 2019) are aware of the risks related to hormonal therapy with sex steroids, as venous thromboembolism or cardiovascular disease, as well as of an increased risk of depression and anxiety or even suicide (however, the reason for gender-affirming therapies is defined by them in the same document as improvement of mental health and life saving), so they suggest "to consider a risk/benefit analysis discussion with the patient and/or guardians about the medical interventions which may potentiate the patients' baseline risk of certain side effects".

In WPATH SOC-8 (Coleman et al. 2022) there is a clear recommendation that transgender or gender diverse adolescents should be informed about effects of gender-affirming medical interventions on reproductive capacity, especially the loss of fertility. The authors have also pointed out that future needs of minors with regard to having their biological offspring might change over time. Moreover, they have stressed that, up to now, only preliminary studies, concerning evaluation of decisions made in youth by transgender adults, are available (without providing proper citations, while drawing the evidence from studies on childhood cancer survivors that is in fact quite a different group).

Before initiating gender-affirming interventions, there is necessary to concern possible peer and social media influence on adolescents' perceptions of their own gender and needs for treatment. Parents or caregivers may provide important information, especially concerning the sudden change of gender identity, related to specific situations (Coleman et al. 2022).

As mentioned before, Endocrine Society recommends not to perform surgical interventions until the age of 18 (Hembree et al. 2017). However, there are also suggestions that certain procedures (e.g. chest masculinization) may be acceptable at a younger age (Salas-Humara et al. 2019). The term "chest masculinization" should be understood here as mastectomy (surgical removal of breast tissue).

It is also generally required to document at least 12 months of gender-affirming hormones administration due to gender dysphoria before surgical interventions and to discuss the long-term outcomes of such procedures with the patient (Hembree et al. 2017; Salas-Humara et al. 2019), however WPATH requires only 6 months period of hormonal treatment before gonadectomy or "gender affirming" genital surgery (Coleman et al. 2022).

With respect to the age when the patient would be able to give an informed consent, both the age of legal informed consent and sufficient mental capacity of the patient should be taken into account (Coleman et al. 2022; Hembree et al. 2017; Salas-Humara et al. 2019). Physicians of various specialties and other professionals dealing with transgender youth should be aware of the applicable legal regulation, in particular those related to minors.

Coleman et al. (2022), have stated that in some of young people the experience of gender diversity might result neither in embodying an opposite gender than assigned at birth nor in the need for medical interventions. Moreover, they have noted that any decisions on starting gender-affirming interventions without detailed and multidisciplinary diagnostics might be associated with the risk of non-optimal interventions with respect to the best long-term interest of young persons. The evidence of positive impact of acceptance and affirmation on mental

health improvement (regardless of whether medical interventions were undertaken) has also been stressed in the cited paper.

Despite the publication of subsequent recommendations, in the case of children and young adolescents with gender dysphoria, basic bioethical dilemmas remain unresolved: first–regarding the choice of course of action ("careful observation" carrying the risk of intensifying dysphoria, or "gender affirmation" with all its medical consequences) and the second one–regarding the discrepancy between the requirement to obtain the patient's informed consent for irreversible medical interventions related to the potential loss of fertility and the recommendation to implement these procedures at the onset of puberty (which usually occurs before reaching the age of understanding the consequences of decisions made and required for the legal capacity to give informed consent to medical procedures) (Baron and Dierckxsens, 2022).

The last issue concerning management of patients with gender dysphoria is uncertainty about their long-term effects. The need for further studies assessing the effects of gender-affirming hormone administration on physical and mental health of transgender patients is underlined even by advocates of these therapies (Coleman et al. 2022; Salas-Humara et al., 2019). In a very recent paper, Conflitti, Spaziani, Pallotti, Tarsitano, Di Nisio at al. (2023) have pointed at the risk of unsatisfaction with the results of changes and future regrets related to gender-affirming hormone treatment and surgery, especially in the context of the lost fertility.

After period of expanding indications for gender-affirming treatment and the tendency to start it at an increasingly younger age, the opposite trends have appeared in recent years, and this is the case in countries where quite extensive use of medical interventions has been allowed so far. In Sweden, the National Board of Health and Welfare (Socialstyrelsen 2022), central *national* authority for social and health services under the Ministry of *Health* and Social Affairs, has stated that the risks of puberty blockers and gender-affirming hormones "currently outweigh the possible benefits" for minors and "the treatment should be offered only in exceptional cases", despite previous approval for such interventions in 2015. This change of approach is supported by three factors: the continued lack of scientific evidence concerning both efficacy and safety of hormonal treatments offered to adolescents with gender incongruence, the new knowledge about the phenomenon of detransition of young adults who underwent gender-affirming therapy (Littman 2021) and unexplained increase in the number of adolescents (especially registered as girls) seeking care for gender incongruence. Moreover, Swedish authorities (Socialstyrelsen 2022) recommend following recommendations of psychiatrists from more than 20 years ago: Cohen-Kettenis and van Goozen (1997), and Smith, van Goozen and Cohen-Kettenis (2001). Similar tendencies in other countries are reported in a recent paper of Black (2023).

At this point, it is worth recalling once again that the sole purpose of affirmative therapies is to improve mental health by changing the phenotype (secondary and tertiary sex characteristics). Hormonal therapies and irreversible surgical interventions are undertaken in people with normal structure and function of genital organs and gonads, and restoring the state before they were carried out is extremely difficult, and in most cases even impossible.

With regard to children and adolescents with gender dysphoria or incongruence, the aspect of the broadly understood body dissatisfaction that may appear in due to different reasons seems to be insufficiently taken into account. In general population, body dissatisfaction may be related to psychological problems (depressive mood, eating disorders, low self-esteem). It has been documented that among children with gender incongruence, greater body dissatisfaction with the genital area correlated with psychological problems (Verveen, van der Miesen, de Graaf, Kreukels, de Vries, A and Steensma 2023).

7. Special problems in caring for children and adolescents with gender dysphoria

"Gender-affirming" therapy is used in people with gender dysphoria, i.e. those who feel discomfort related to their own sexual characteristics, whose

registered gender, gonadal and phenotypic sex are consistent and there is no somatic disease affecting the sex glands and genital organs. Hormonal interventions, and especially irreversible surgical procedures, involve the deprivation of the patient's normal gonads (ovaries, testicles) and/or sexual organs, which may have a significant negative impact on the mental state in the event of the desire to return to the original sex or even just the finding that gender change did not meet expectations regarding the solution of mental problems, and additionally had negative consequences for reproductive health. Taking into account the possible mental lability of teenagers, also in terms of their own gender identification, it seems necessary to be very careful when undertaking this type of medical procedures in minors.

This statement seems of special importance in the context of dramatically increasing number of adolescents (especially girls) who declare gender incongruence. There is some evidence that the explanation of this trend should include the influence of media and culture (Marianowicz-Szczygieł, 2022). As documented in a recent survey, Polish young transgender persons get information about hormone therapy or surgical procedures mainly from the Internet The relationship between the occurrence of dysphoria and functioning in a peer group in which there are other transgender-identifying persons has been conformed in a survey study on U.S. adolescents published by Littman (2018).

Young people entering the phrase "transition" may be the first to go to, for example, the portal. TRANZYCJA.PL, where they will find information clearly indicating that "after gender reconciliation during medical and/or social transition, gender inconsistency is cured", which may encourage taking such actions without realizing their real consequences. In this situation, it is necessary to provide all people with the problem of gender nonconformity with reliable information about the possibilities and limitations of modern medicine in all aspects of therapy, even before is onset.

Apart from the very important legal, bioethical and religious aspects (beyond the scope of this study) related to undertaking irreversible medical interventions in people with gender dysphoria, and to collecting and freezing gonad tissue or gametes in order to obtain biological offspring in the future through assisted reproductive techniques, while taking into account only "technical" limitations at the current stage of development of medical techniques, it should be emphasized that in the case of children and adolescents (especially in the initial stages of puberty), maintaining fertility and reproductive health requires at least postponing (and, if possible, avoiding) the use of hormonal therapies and surgical procedures, in particular those involving the removal of the gonads and genitals.

Summary

People with gender dysphoria and gender incongruence problems require individual (personalized) treatment in each case, with respecting their dignity and the way they perceive their own gender. Providing real help to such people requires comprehensive expertise (and therefore should be carried out in a multidisciplinary team) and awareness of not only the possibilities, but above all the limitations of the therapies offered and the irreversible nature of some medical interventions.

This is particularly important in relation to children and adolescents, in whom, before starting treatment, on the one hand, developmental defects, genetic and hormonal disorders must be excluded, and on the other hand, the search for their own gender identity during puberty, temporary identification with a gender different from their own biological sex and finally the influence of the peer group and/or social should be taken into account. It seems that the scale of potential and documented complications of hormonal therapies and surgical interventions (see Table 3) offered to patients for the purpose of "gender affirmation" justifies postponing their implementation until after adulthood, when their actual nature can be discussed in detail and fully informed consent. This approach can also protect minors from the consequences of medical procedures of which they were not fully aware, even if they thought they un-

Table 3. Complications of hormone therapies and "gender-affirming" surgeries

Persons K/M	**Persons M/K**
Hormonal therapies	
Puberty blockers	
Blocking normal sexual maturation in somatically healthy people Slowing down the rate of growth (reducing the pubertal growth spurt) Adverse effect on bone mineral density and body composition	
Primary or secondary amenorrhea Poor development or atrophy of the mammary glands	Inhibition of testicular development Impaired testosterone secretion Inhibition of spermatogenesis
Sex steroids	
Testosterone	Estrogens
Usually acceleration of growth rate, but possible shortening of growth period with early administration of high doses of testosterone (lower final height)	Shortening of the growth period with early administration of high doses of estrogen (lower final height)
Clitoral hypertrophy Atrophy of the vaginal epithelium Acne severity Androgenetic alopecia Lowering the voice Changes in body shape	Hypogonadotropic hypogonadism (testosterone deficiency) Hyperprolactinemia Gynecomastia Eunuchoid silhouette Increase of fat tissue
Increased risk of thromboembolism / cardiovascular disease	
Potentially increased risk of breast cancer, uterine cancer and ovarian cancer	Potentially increased risk of breast cancer and prostate cancer
Surgery	
Ovariectomy	Removal of the testicles
Permanent and irreversible infertility (cryopreservation options limited to mature gonads) Permanent and irreversible estrogen deficiency	Permanent and irreversible infertility (cryopreservation options limited to mature gonads and sperm) Permanent and irreversible testosterone deficiency
Hysterectomy	Removal of the penis
Loss of ability to get pregnant (except donor uterus transplant)	Permanent change in the appearance and the loss of function of the male external genitalia
"Reconstructive" procedures of the genital organs	
Urethrocutaneous fistulas and urethral strictures	Rectovaginal fistulas

derstood the information received, and additionally have "knowledge" from peers or from websites run by "transition" propagators.

The basic condition for undertaking any medical interventions should be to discuss with the patient and parents the consequences of using hormonal preparations, including those that are distant and insufficiently assessed, taking into account infertility and oncological aspects. It is not allowed to refrain from excluding other causes of lack of acceptance of one's gender, which requires conducting a reliable and in-depth psychological or even psychiatric assessment. The patients with problems with gender identification should receive appropriate psychological help, with full respect for their dignity and understanding of the suffering they experience. It is necessary to individualize and optimize the procedures in each case. Education in the field of dealing with children and adolescents with gender dysphoria should be taken into account by the staff of medical and educational facilities (family doctors and pediatricians, teachers, school counselors and psychologists, catechists). Lack of substantive knowledge or relying on media information can cause a lot of harm, and in turn, lack of empathy can lead to the loss of trust of an already wounded young person. On the other hand, one must not avoid precisely presenting to a minor the actual nature of the medical actions to be taken against him

or her. It is necessary to consider the terminology used, where de facto mutilating procedures and the use of drugs leading to significant and sometimes irreversible changes in the functioning of the body, including infertility, are euphemistically referred to as "affirming". Additionally, society lacks reliable knowledge about the scale of temporary gender identity disorders among children and adolescents, and such information is not provided by supporters of the so-called early adoption of "affirmation therapies".

In a systemic approach to the difficulties experienced by children and adolescents with problems related to gender dysphoria, it would certainly be helpful to develop national standards of psychological and medical care based on documented knowledge, with particular emphasis on the distinct stages of development (childhood, adolescence, adults) and complications or lack of sufficient evidence of the safety of medical procedures proposed by some bodies that consider themselves experts in the field in question. Improving the situation in the field of care for children and adolescents with gender dysphoria and gender nonconformity disorders certainly requires substantive discussion on the issues discussed, both among scientific authorities and people directly caring for children and adolescents, as well as appropriate legislative and organizational actions, taking into account, first of all, the protection of minors against the too easy adoption of irreversible or potentially irreversible medical interventions or procedures with not fully documented safety and effectiveness. It seems that it is necessary to use the experience not only of countries developing "gender-affirming" therapies, but also–and perhaps even primarily–of countries and expert teams that withdraw consent to carry out such procedures in favor of more conservative treatment and psychological care.

Bibliography

Agencja Oceny Technologii Medycznych i Taryfikacji, Wydział Oceny Technologii Medycznych, (2023). *Cyproteron i estradiol we wskazaniu: Transseksualizm (ICD10: F64.0).* (From:) https://bipold.aotm.gov.pl/assets/files/off/2023/RPT/OT.422.1.9-10.2023_cyproteron_estradiol_07042023.pdf (access: 09.07.2023).

Åhs, J.W., Dhejne, C., Magnusson, C., Dal, H., Lundin, A., et al. (2018). Proportion of adults in the general population of Stockholm County who want gender-affirming medical treatment. *PLoS One*, *13*(10), e0204606. https://doi.org/10.1371/journal.pone.0204606

Alcon, A., Kennedy, A., Wang, E., Piper, M., Loeliger, K., et al. (2021). Quantifying the Psychosocial Benefits of Masculinizing Mastectomy in Trans Male Patients with Patient-Reported Outcomes: The University of California, San Francisco, Gender Quality of Life Survey. *Plastic and Reconstructive Surgery*, *147*(5), 731e-740e. https://doi.org/10.1097/PRS.0000000000007883

American Academy of Child & Adolescent Psychiatry, (2018). Policy Statement. *Conversion Therapy.* (From:) https://www.aacap.org/AACAP/Policy_Statements/2018/Conversion_Therapy.aspx (access: 09.07.2023).

American Psychiatric Association, (2006). Diagnostic and Statistical Manual of Mental Disorders (4th ed., Text Revision). *The American Journal of Psychiatry, 152*(8). https://doi.org/10.1176/ajp.152.8.1228

American Psychiatric Association, (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://psycnet.apa.org/doi/10.1176/appi.books.9780890425596

American Psychiatric Association, (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.) https://doi.org/10.1176/appi.books.9780890425787

Barnard, J.T., Cakir, O.O., Ralph, D., Yafi, F.A. (2021). Technological Advances in Penile Implant Surgery. *The Journal of Sexual Medicine*, *18*(7), 1158–1166. https://doi.org/10.1016/j.jsxm.2021.04.011

Baron, T., Dierckxsens, G. (2022) 'Two dilemmas for medical ethics in the treatment of gender dysphoria in youth. *Journal of Medical Ethics*, *48*(9), 603–607. https://doi.org/10.1136/medethics-2021-107260

van Bever, Y., Brüggenwirth, H.T., Wolffenbuttel, K.P., Dessens, A.B., Groenenberg, I.A.L., et al. (2020). Under-reported aspects of diagnosis and treatment addressed in the Dutch-Flemish guideline for comprehensive diagnostics in disorders/differences of sex development. *Journal of Medical Genetics*, *57*(9), 581–589. https://doi.org/10.1136/jmedgenet-2019-106354

Black, J. (2023). Gender dysphoria in young people is rising – and so is professional disagreement. *British Medical Journal, 380*-382. https://doi.org/10.1136/bmj.p382

Butler, G., De Graaf, N., Wren, B., Carmichael, P. (2018). 'Asssment and support of children and adolescents with gender dysphoria, *Archives of Disease in Childhood*, *103*(7), 631–636. https://doi.org/10.1136/archdischild-2018-314992

van Caenegem, E., Wierckx, K., Elaut, E., Buysse, A., Dewaele, A., et al. (2015). Prevalence of Gender Nonconformity in Flanders, Belgium. *Archives of Sexual Behavior*, *44*(5), 1281–1287. https://doi.org/10.1007/s10508-014-0452-6

Charakterystyka produktu leczniczego "Androtop". (From:) https://rejestrymedyczne.ezdrowie.gov.pl/api/rpl/medicinal-products/35836/characteristic (access: 09.07.2023).

Charakterystyka produktu leczniczego "Testosteronum prolongatum". (From:) https://rejestrymedyczne.ezdrowie.gov.pl/api/rpl/medicinal-products/19508/characteristic (access: 09.07.2023).

Chlebowski, R.T., Manson, J.E., Anderson, G.L., Cauley, J.A., Aragaki, A.K., et al. (2013). Estrogen plus progestin and breast cancer incidence and mortality in the Women's Health Initiative Observational Study. *Journal of the National Cancer Institute*, *105*(8), https://doi.org/10.1093/jnci/djt043

Cohen-Kettenis, P.T., van Goozen, S.H. (1997). Sex reassignment of adolescent transsexuals: a follow-up study. *Journal of American Academy of Child & Adolescent Psychiatry, 36*(2), 263-271.

Colebunders, B., Brondeel, S., D'Arpa, S., Hoebeke, P., Monstrey, S. (2017). An Update on the Surgical Treatment for Transgender Patients. *Sexual Medicine Reviews*, *5*(1), 103–109. https://doi.org/10.1016/j.sxmr.2016.08.001

Coleman, E., Bockting, W.,. Botzer, M., Cohen-Kettenis, P., DeCuypere, G., et al. (2012). Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People, Version 7. *International Journal of Transgenderism*, *13*(4), 165-232, https://doi.org/10.1080/15532739.2011.700873

Coleman, E., Radix, A.E., Bouman, W.P., Brown, G.R., de Vries, A.L. C., et al. (2022). Standards of Care for the Health of Transgender and Gender Diverse People, Version 8. *International Journal of Transgender Health*, *23*(S1), S1-S259. https://doi.org/10.1080/26895269.2022.2100644

Conflitti, A.C., Spaziani, M., Pallotti, F., Tarsitano, M.G., Di Nisio, A., Paoli, D., Lombardo, F. (2023). Update on bioethical, medical and fertility issues in gender incongruence during transition age. *Journal of Endocrinological Investigation, Apr 18 (ahead of print)*. https://doi.org/10.1007/s40618-023-02077-5

Crissman, H.P., Berger, M.B., Graham, L.F., Dalton, V.K. (2017). Transgender demographics: A household probability sample of US adults, 2014. *American Journal of Public Health*, *107*(2), 213-215. https://doi.org/10.2105/AJPH.2016.303571

D'Angelo, R., Syrulnik, E., Ayad, S., Marchiano, L., Kenny, D.T., Clarke, P. (2021). One Size Does Not Fit All: In Support of Psychotherapy for Gender Dysphoria. *Archives of Sexual Behavior*, *50*(1), 7-16. https://doi.org/10.1007/s10508-020-01844-2

Day, D.-L., Klit, A., Lang, C.L., Mejdahl, M.K., Holmgaard, R. (2023). High Self-Reported Satisfaction After Top Surgery in Gender-Affirming Surgery: A Single-Center Study. *Transgender Health, 8*(2), 124-129. https://doi.org/10.1089/trgh.2021.0091

Dora, M., Grabski, B., Dobroczyński, B. (2021). Gender dysphoria, gender incongruence and gender nonconformity in adolescence – Changes and challenges in diagnosis. *Psychiatria Polska*, *55*(1), 23–37. https://doi.org/10.12740/PP/OnlineFirst/113009

Eisenberg, M.E., Gower, A.L., McMorris, B.J., Rider, G.N., Shea, G., Coleman, E. (2017). Risk and Protective Factors in the Lives of Transgender/Gender Nonconforming Adolescents. *The Journal of Adolescent Health*, *61*(4), 521–526. https://doi.org/10.1016/j.jadohealth.2017.04.014

Friesen, L., Söder, O., Rydelius, P. (2017). Kraftig ökning av könsdysfori bland barn och unga, *Läkartidningen*, *114*, 1-5. (From:) https://lakartidningen.se/klinik-och-vetenskap-1/artiklar-1/klinisk-oversikt/2017/02/kraftig-okning-av-konsdysfori-bland-barn-och-unga (access: 09.07.2023).

Gawlik, A., Antosz, A., Kasparek, K., Nowak, Z., Grabski, B. (2022). Gender confirmation hormonal treatment use in young Polish transgender binary and non-binary persons. *Endokrynologia Polska, 73*(6), 922-927. https://doi.org/10.5603/EP.a2022.0088

Glintborg, D., T'Sjoen, G., Ravn, P. and Andersen, M.S. (2021). Management of Endocrine Disease: Optimal feminizing hormone treatment in transgender people. *European Journal of Endocrinology*, *185*(2), R49–R63. https://doi.org/10.1530/EJE-21-0059

Gottlieb, L. and Cripps, C. (2023) 'An update on gender-affirming phallus construction using the radial forearm free-flap.', *Neurourology and Urodynamics*, *42*(5), 963–972. https://doi.org/10.1002/nau.25103

Grabski, B., Rachoń, D., Czernikiewicz, W., Dulko, S., Jakima, S., et al. (2020). Zalecenia Polskiego Towarzystwa Seksuologicznego dotyczące opieki nad zdrowiem dorosłych osób transpłciowych–stanowisko panelu ekspertów. *Psychiatria Polska, 187*, 1-8. https://doi.org/10.12740/PP/OnlineFirst/125785

Hembree, W.C., Cohen-Kettenis, P.T., Gooren, L., Hannema, S.E., Meyer, W.J., et al. (2017) Endocrine Treatment of Gender-Dysphoric / Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline, *The Journal of Clinical Endocrinology & Metabolism*, *102*(11), 3869–3903. https://doi.org/10.1210/jc.2017-01658

Indremo, M., Jodensvi, A.C., Arinell, H., Isaksson, J., Papadopoulos, F.C. (2022). Association of Media Coverage on Transgender Health With Referrals to Child and Adolescent Gender Identity Clinics in Sweden. *JAMA Network Open*, *5*(2), e2146531. https://doi.org/10.1001/jamanetworkopen.2021.46531

Jarin, J., Pine-Twaddell, E., Trotman, G., Stevens, J., Conard, L.A., Tefera, E., Gomez-Lobo, V. (2017). Cross-Sex Hormones and Metabolic Parameters in Adolescents With Gender Dysphoria. *Pediatrics*, *139*(5). https://doi.org/10.1542/peds.2016-3173

Jasuja, G.K., de Groot, A., Quinn, E.K., Ameli, O., Hughto, J.M.W., et al. (2020). Beyond Gender Identity Disorder Diagnoses Codes: An Examination of Additional Methods to Identify Transgender Individuals in Administrative Databases. *Medical Care*, *58*(10), 903–911. https://doi.org/10.1097/MLR.0000000000001362

Johns, M.M., Lowry, R., Andrzejewski, J., Barrios, L.C., Demissie, Z., McManus, T., Rasberry, C.N., Robin, L., Underwood, J.M. (2019). Transgender Identity and Experiences of Violence Victimization, Substance Use, Suicide Risk, and Sexual Risk Behaviors Among High School Students–19 States and Large Urban School Districts, 2017. *Morbidity and Mortality Weekly Report*, *68*(3), 67–71. https://doi.org/10.15585/mmwr.mm6803a3

Kuyper, L., Wijsen, C. (2014). Gender identities and gender dysphoria in the Netherlands. *Archives of Sexual Behavior*, *43*(2), 377–385. https://doi.org/10.1007/s10508-013-0140-y

Lehmann, K., Leavey, G. (2023). Systematic review: Psychological/psychosocial interventions for the families of gender diverse youth under 18 years old. *Clinical Child Psychology and Psychiatry*, *28*(3), 1160–1174. https://doi.org/10.1177/13591045231169093

Littman, L. (2018). Parent reports of adolescents and young adults perceived to show signs of a rapid onset of gender dysphoria. *PLoS One, 13*(8), e0202330. https://doi.org/10.1371/journal.pone.0202330

Littman, L. (2021). Individuals Treated for Gender Dysphoria with Medical and/or Surgical Transition Who Subsequently Detransitioned: A Survey of 100 Detransitioners. *Archives of Sexual Behavior*, *50*(8), 353-3369. https://doi.org/10.1007/s10508-021-02163

van der Loos, M.A. T.C., Klink, D.T., Hannema, S.E., Bruinsma, S., Steensma, T.D., et al. (2023). Children and adolescents in the Amsterdam Cohort of Gender Dysphoria: trends in diagnostic- and treatment trajectories during the first 20 years of the Dutch Protocol. *The Journal of Sexual Medicine*, *20*(3), 398–409. https://doi.org/10.1093/jsxmed/qdac029

Marianowicz-Szczygieł, A. (2022). Wzrost zaburzeń tożsamości płci wśród dzieci i młodzieży – dane z 10 krajów. Możliwe wyjaśnienia, wnioski dla rodziców. *Kwartalnik Naukowy Fides et Ratio, 49*(1), 122–141. https://doi.org/10.34766/fetr.v49i1.1060

Matsuno, E., Israel, T. (2018). Psychological interventions promoting resilience among transgender individuals: Transgender resilience intervention model (TRIM). *The Counseling Psychologist, 46*(5), 632–655. https://doi.org/10.1177/0011000018787261

Medycyna praktyczna. Indeks leków. Estradiol. (From:) https://indeks.mp.pl/leki/desc.php?id=256 (access: 09.07.2023).

Mędraś, M., Józków, P. (2010). Transseksualizm — aspekty diagnostyczne i terapeutyczne. *Endokrynologia Polska, 61*, 412-416.

Nordenström, A., Ahmed, S.F., van den Akker, E., Blair, J., Bonomi, M., et al. (2022). Pubertal induction and transition to adult sex hormone replacement in patients with congenital pituitary or gonadal reproductive hormone deficiency: an Endo-ERN clinical practice guideline. *European Journal of Endocrinology*, *186*(6), G9–G49. https://doi.org/10.1530/EJE-22-0073

Pasternak, K., Francis, D.O. (2019). An update on treatment of voice-gender incongruence by otolaryngologists and speech-language pathologists. *Current Opinion in Otolaryngology & Head and Neck Surgery*, *27(6)*, 475–481. https://doi.org/10.1097/moo.0000000000000582

Poleszak, J., Szabat, P., Szabat, M., Wójcik, M., Boreński, G., Janowska, M., Karakuła, H. (2019). Suppression of puberty with GnRH analogues in adolescents with Gender Dysphoria. *Journal of Education, Health and Sport*, *9*(9), 378–385.

Poudrier, G., Nolan, I.T., Cook, T.E., Saia, W., Motosko, C.C., et al. (2019). Assessing Quality of Life and Patient-Reported Satisfaction with Masculinizing Top Surgery: A Mixed-Methods Descriptive Survey Study. *Plastic and Reconstructive Surgery*, *143*(1), 272–279. https://doi.org/10.1097/PRS.0000000000005113

Reisner, S.L., Poteat, T., Keatley, J., Cabral, M., Mothopeng, T., Dunham, E., Holland, C.E., Max, R., Baral, S.D. (2016). Global health burden and needs of transgender populations: a review. *Lancet*, *388*(10042), 412–436. https://doi.org/10.1016/S0140-6736(16)00684-X

Richards, C., Maxwell, J., Mccune, N. (2019). Use of puberty blockers for gender dysphoria: A momentous step in the dark. *Archives of Disease in Childhood*, *104*(6), 611–612. https://doi.org/10.1136/archdischild-2018-315881

Robacha, A. (2021). Zaburzenia płci psychicznej. (W:) J. Słowikowska-Hilczer (red.), *Andrologia. Zdrowie mężczyzny od fizjologii do patologii,* 103-119, Warszawa: PZWL.

Robinson, I.S., Blasdel, G., Cohen, O., Zhao, L.C., Bluebond-Langner, R. (2021). Surgical Outcomes Following Gender Affirming Penile Reconstruction: Patient-Reported Outcomes From a Multi-Center, International Survey of 129 Transmasculine Patients. *The Journal of Sexual Medicine*, *18*(4), 800–811. https://doi.org/10.1016/j.jsxm.2021.01.183

Roden, R.C. (2023). Reversible interventions for menstrual management in adolescents and young adults with gender incongruence. *Therapeutic Advances in Reproductive Health*, *17*, 26334941231158252. https://doi.org/10.1177/26334941231158251

Rodriguez-Wallberg, K., Obedin-Maliver, J., Taylor, B., Van Mello, N., Tilleman, K., Nahata, L. (2023). 'Reproductive health in transgender and gender diverse individuals: A narrative review to guide clinical care and international guidelines. *International Journal of Transgender Health*, *24*(1), 7–25. https://doi.org/10.1080/26895269.2022.2035883

Salas-Humara, C., Sequeira, G.M., Rossi, W. and Dhar, C.P. (2019). Gender affirming medical care of transgender youth, *Current Problems in Pediatric and Adolescent Health Care*, 49(9). https://doi.org/10.1016/j.cppeds.2019.100683

Smyczyńska, J. (2020). Okres prekoncepcyjny i ciąża jako czas troski o zdrowie prokreacyjne potomstwa – znaczenie mechanizmów epigenetycznych. *Kwartalnki Naukowy Fides et Ratio*, *43*(3), 223–237. https://doi.org/10.34766/fetr.v43i3.307

Smyczyńska, J. (2021). Aspekty endokrynologiczne diagnostyki i terapii osób transseksualnych. (W:) B. Kmieciak (red.), *Między chromosomem a paragrafem*, 13-35, Warszawa: Wydawnictwo Instytutu Wymiaru Sprawiedliwości.

Smith, Y.L., van Goozen, S.H., Cohen-Kettenis, P.T. (2001). Adolescents with gender identity disorder who were accepted or rejected for sex reassignment surgery: a prospective follow-up study. *Journal of American Academy of Child & Adolescent Psychiatry, 40*(4), 472-81.

Socialstyrelsen: National Board of Health and Welfare (2022). Care of children and adolescents with gender dysphoria. Report 2022-3-7799. (From:) https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/kunskapsstod/2022-3-7799.pdf (access: 09.07.2022).

Statistics Canada, (2022). *Canada is the first country to provide census data on transgender and non-binary people*. (From:) https://www150.statcan.gc.ca/n1/en/daily-quotidien/220427/dq220427b-eng.pdf?st=I3VW0jgh (access: 10.07.2023).

TRANZYCJA.PL Aktualności (2022) Co oznaczają zmiany w klasyfikowaniu transpłciowości w ICD-11? (From:) https://tranzycja.pl/aktualnosci/zmiany-w-klasyfikacji-icd11/ (access: 10.07.2023).

Turban, J.L., Beckwith, N., Reisner, S.L., Keuroghlian, A.S. (2020). Association between recalled exposure to gender identity conversion efforts and psychological distress and suicide attempts among transgender adults. *JAMA Psychiatry, 77*(1), 68–76. https://doi.org/10.1001/jamapsychiatry.2019.2285

U.S. Food and Drug Administration (2014). *FDA evaluating risk of stroke, heart attack and death with FDA-approves testosterone products. Safety Announcement* [01-31-2014].

Verveen, A., van der Miesen, A.I. R., de Graaf, N.M., Kreukels, B.P. C., de Vries, A.L. C., Steensma, T.D. (2023). Body Image in Adolescents with Gender Incongruence and Its Association with Psychological Functioning. *International Journal of Environmental Research and Public Health*, *20*(4). https://doi.org/10.3390/ijerph20043349

Vita, R., Settineri, S., Liotta, M., Benvenga, S., Trimarchi, F. (2018). Changes in hormonal and metabolic parameters in transgender subjects on cross-sex hormone therapy: A cohort study. *Maturitas, 107*, 92-96. https://doi.org/10.1016/j.maturitas.2017.10.012

Wang, B., Hengel, R., Ren, R., Tong, S. and Bach, P.V. (2020). Fertility considerations in transgender patients. *Current Opinion in Urology*, *30*(3), 349–354. https://doi.org/10.1097/MOU.0000000000000748

World Health Organization, (2018). *International Classification of Diseases 11th Revision*. (From:)https://icd.who.int/en (access: 09.07.2023).

World Health Organization, (2019). *International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10)-WHO Version for 2019-covid-expanded* (From:) https://icd.who.int/browse10/2019/en#/F60-F69 (access: 09.07.2023).

Zazula, M. (2021). Transseksualizm i geny. ((W:) B. Kmieciak (red.), *Między chromosomem a paragrafem*, 37-60, Warszawa: Wydawnictwo Instytutu Wymiaru Sprawiedliwości.

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Attitudes of students at Lublin universities towards transplantation and their personal values[1]

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Abstract: *Background:* Nowadays, transplantation is the only effective method for saving human lives when organs fail. Its choice in clinical practice encounters numerous barriers along the way, related to religious, ethical, social, and moral considerations. Nowadays, there are many changes in the hierarchy of values of young adults, and it is therefore important to analyse their impact on the perception of socio-cultural processes, including transplantation. *Aim of the study:* To analyse values and their influence on attitudes towards organ transplantation among students at Lublin universities. *Material and methods:* The study was conducted using a diagnostic survey method, with a survey technique. A self-administered survey questionnaire and a standardised tool List of Personal Values (*Lista wartości osobistych, LWO),* bearing a label were used. The study involved 205 respondents studying at three universities in Lublin (Medical University, Catholic University of Lublin, Maria Curie–Skłodowska University). Statistical analyses were performed using the SPSS Statistics package. Relationships between attitudes towards transplantation and sociodemographic variables and values were analysed using Kruskal-Wallis H tests and Spearman's rho correlation coefficient. A graphical presentation of the results was made using summary tables and bar charts. *Results and conclusions:* Hierarchy of personal values has no influence on attitudes towards transplantation. Age, gender, type of university and religion are not related to students' attitudes towards the transplant procedure. There are correlations between place of residence and attitude towards religious practice and students' attitudes towards transplantation.
Keywords: transplantation, students, attitude

Introduction

Transplantation therapy is still controversial in the medical community and raises numerous ethical dilemmas in various social groups. The main aspects initiating discussions on this issue are commercialisation, accessibility, depreciation of human dignity and issues of respect for patient and family autonomy. Transplan-

1 Article in polish language: Postawy studentów lubelskich uczelni wyższych wobec transplantacji a ich wartości osobiste https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Pawl.pdf

tation medicine is governed by basic medical ethical norms as well as aspects and social phenomena such as respect for autonomy, beneficence, nonmaleficence, and justice (Kotomska, Tataj-Puzyna, Danielewicz, 2019; Rajab & Singh, 2018; Chen et al., 2020).

Today, the value hierarchy is used in pedagogy, psychology, sociology and philosophy. Its creator is the phenomenologist Max Scheler (after: Żuk, 2016). According to him, the lowest in the hierarchy are sensory values, which include pleasure and pain. Slightly higher are vital values such as power, weakness, nobility, and meanness (so-called vices and virtues). Above these are spiritual values: knowledge of truth, righteousness and lawlessness, as well as beauty and ugliness. At the highest, we see religious values, which include holiness, happiness, despair, and that which is opposed to these values (Bourke, 1994; Perz, 2020).

Nowadays, there is a shift in the hierarchy of values. Constant changes in the environment we live in, economic, political or social changes result in the disappearance of traditional values in favour of modern values that meet current human needs. It is, therefore, necessary to systematically update and study the impact of these changes on the perception of socio-cultural processes, including those relating to aspects of medicine in its broadest sense.

1. Own study

1.1. The aim of the study

This study aims to analyse the influence of personal values on the attitudes towards the transplantation of students from Lublin Universities.

1.2. Material and method

The study was based on the diagnostic survey method, the research technique was the survey, and the research tool was the standardised survey questionnaire List of Personal Values (*Lista wartości osobistych, LWO*) in the Polish adaptation according to Zygfryd Juczyński and the author's survey questionnaire assessing the respondents' attitudes towards organ transplantation. The questionnaires were accompanied by a metric containing basic socio-demographic data, religion, and attitude to religion, as well as place, faculty, level and year of study. Respondents were informed of the anonymity of the survey and that the data would only be used for scientific purposes. To provide a uniform representation of the respondents' attitudes towards transplantation, an overall index was constructed; it was the sum of the points awarded to the respondents for the individual answers to the questions in the author's survey questionnaire. Each question was scored on a five-point Likert Scale, where 1 represented a negative attitude towards transplantation and 5 a positive attitude. The scale constructed in this way was characterised by high reliability of $\alpha = 0.752$. The number of possible scores ranged from 15 to 85 points. The higher the score, the more positive the respondent's attitude towards transplantation.

The statistical package SPSS Statistics version 25 was used for statistical analyses. The level of $\alpha < 0.05$ was considered statistically significant. Inference of the possible proportion of responses in the study population was made based on the adopted 95% confidence intervals. Relationships between attitudes towards transplantation and sociodemographic variables and values were analysed using Kruskal-Wallis H tests and Spearman's rho correlation coefficient. A graphical presentation of the results was made using summary tables and bar charts.

1.3. Characteristics of the surveyed group

The study was conducted in a group of 205 students of Lublin universities such as the Medical University of Lublin, the Catholic University of Lublin, the Maria Curie-Skłodowska University, between January and March 2022 on the premises of the above-mentioned universities.

The average age of respondents was 21.8, with a standard deviation of 2.59. Half of the respondents were under 22. The youngest respondent was 18 years old, while the oldest respondent was 41. The vast majority of respondents (88.78%) were female. Every tenth respondent (11.22%) was male. More than half of the respondents (59.51%) came from the city, while about 40% (40.49%) lived in the countryside. A quantitative description of the other independent variables is provided in Figures 1., 2. and Table 1.

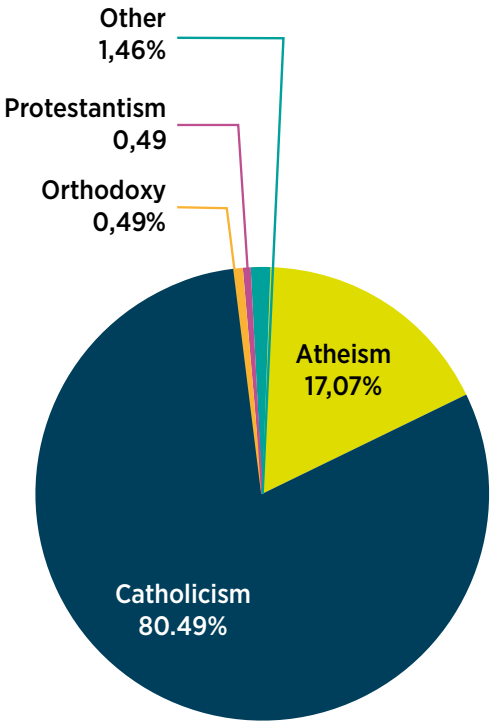

Figure 1. Religion of respondents.

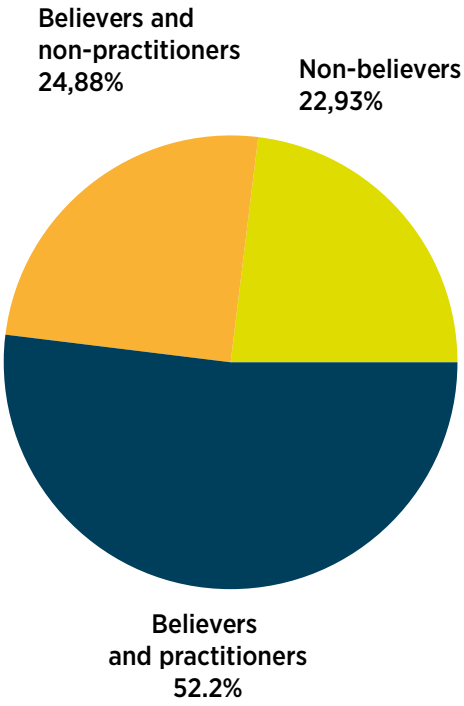

Figure 2. Respondents attitudes to the faith.

Table 1. Distribution of variables relating to respondents' place and stage of education

University of the respondents					
Medical University in Lublin	41,95%	Catholic University of Lublin	26,34%	Maria Curie-Skłodowska University	31,71%
Degree of study of respondents					
First-cycle studies (Bachelor's degree)	31,71%	Second-cycle studies (Master's degree)	22,44%	Single Master's degree	43,9%)
Study year of respondents					
1st year	20,98%	2nd year	36,59%	3rd year	18,54%
4th year	8,29%	5th year	15,12%		

2. Results

In the first stage of compiling the data obtained, the attitudes of the respondents towards transplantation and its relationships with the independent variables and the values held by the respondents were analysed. Percentage data on the moral aspects of transplantation are presented in Table 2. Inferences on the possible proportion of responses in the study population using a 95% confidence interval are presented in Table 3.

Survey participants were also asked about their attitude towards transplantation depending on the living or deceased donor. The data obtained are presented together with the proportions of responses in the table in Table 4. Respondents rated the subjective efficacy of transplantation, which in this study was 8.49 points with a standard deviation of 1.17 and the 95% confidence interval for the mean was between 8.33 and 8.65. These analyses allow us to conclude that in the surveyed population, students rate the efficacy of transplantation quite highly (Chart 1.).

Table 2. Moral aspects of transplantation according to respondents

The variant of the answer	Conduct incompatible with ethics and/ or religion (%)	Study of phenomena occurring in the human body (%)	Saving the lives of people whose bodies are unable to function without a transplant (%)	Transplantation of organs, tissues, and cells in whole or in part (%)	Non-compliant behaviour (%)	Heroic deed/ action (%)
strongly agree	2,44	8,78	80,00	84,88	5,37	37,56
agree	0,98	23,41	15,61	11,71	2,93	32,68
neutral	5,37	11,71	0,98	0,49	2,44	17,56
disagree	16,59	27,32	1,46	0,98	14,15	7,80
strongly disagree	74,63	28,78	1,95	1,95	75,12	4,39

Table 3. Ranges of response proportion ratios in the study population with a 95% confidence interval

The variant of the answer	Conduct incompatible with ethics and/ or religion (%)	Study of phenomena occurring in the human body (%)	Saving the lives of people whose bodies are unable to function without a transplant (%)	Transplantation of organs, tissues, and cells in whole or in part (%)	Non-compliant behaviour (%)	Heroic deed/ action (%)
strongly agree	0,33 - 4,55	4,91 - 12,65	74,52 - 85,48	79,97 - 89,78	2,28 - 8,45	30,93 - 44,19
agree	0,00 - 2,32	17,62 - 29,21	10,64 - 20,58	7,31 - 16,11	0,62 - 5,23	26,26 - 39,1
disagree	11,49 - 21,68	21,22 - 33,42	0,00 - 3,11	0,00 - 2,32	9,38 - 18,92	4,13 - 11,48
strongly disagree	68,68 - 80,59	22,58 - 34,98	0,06 - 3,84	0,06 - 3,84	69,2 - 81,04	1,59 - 7,19

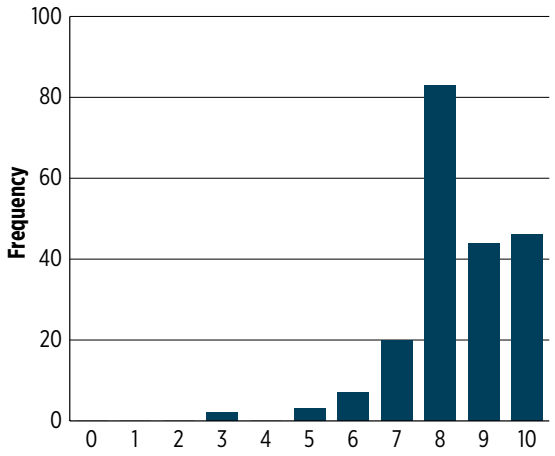

Chart 1. Effectiveness of transplantation according to respondents.

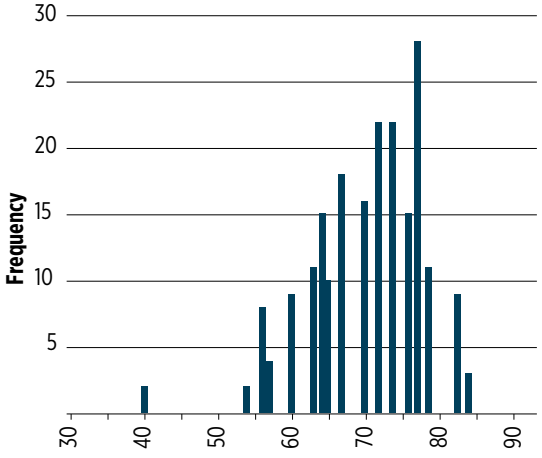

Figure 2: Respondents' attitudes towards transplantation..

Table 4. Attitudes to transplantation by living and deceased donor

Transplantation from living people				
The variant of the answer	n	%	95% confidence interval	
			Lower bound	Higher bound
strongly disapprove	4	1,95	0,06	3,85
disapprove	1	0,49	0,00	1,44
neutral/don't know	15	7,32	3,75	10,88
approve	39	19,02	13,65	24,40
strongly approve	146	71,22	65,02	77,42

Transplantation from deceased people				
The variant of the answer	n	%	95% confidence interval	
			Lower bound	Higher bound
disapprove	1	0,49	0,000	1,442
neutral/don't know	4	1,95	0,058	3,845
approve	29	14,15	9,376	18,917
strongly approve	171	83,41	78,323	88,506

The average intensity of attitude towards transplantation was 70.38 points with a standard deviation of 7.28, the 95% confidence interval indicated that the true score in the population could be between 71.38 and 70.65. Half of the respondents scored no higher than 72 points. The skewness and kurtosis coefficients (SKEW = -0.64; KURT = 0.49) did not indicate that the distribution of respondents' scores on the scale examining attitudes towards transplantation differed significantly from a normal distribution. However, the Kolmogorov-Smirnov test showed statistically significant differences between the distribution of scores obtained on the scale in question and a normal distribution, KS = 0.095; p = 0.000. Figure 2. shows the distribution of respondents overall attitudes towards organ and tissue transplantation.The analyses conducted showed no statistically significant correlations between attitudes towards transplantation and age, gender, place of education and religion. Statistically significant, weak correlations were found between the place of residence and attitude towards transplantation–higher results were obtained by respondents living in the city.

Table 5. Attitudes towards transplantation versus sociodemographic variables and attitudes towards religion

Variable	Category	Attitude towards transplantation				Kruskal–Wallis H test			
		M	SD	n	Mr	H	df	p	ε^2
Sex	female	70,33	7,34	182	102,52	0,108	1	0,742	0,001
	male	70,78	6,96	23	106,83				
Place of residence	city	71,07	7,71	122	110,35	4,639	1	0,031	0,023
	village	69,37	6,52	83	92,19				
University	Medical University in Lublin	71,94	6,28	86	114,66	5,978	2	0,050	0,030
	Catholic Uniwersity of Lublin	69,63	7,77	54	97,52				
	Maria Curie-Skłodowska University	68,94	7,80	65	92,13				
Religion	Catholicism	69,92	7,18	165	99,05	4,838	4	0,304	0,024
	Orthodoxy	69,00	-	1	82,50				
	Protestantism	77,00	-	1	161,50				
	Other	70,33	9,61	3	104,83				
	Atheism	72,40	7,61	35	120,37				
Attitudes to the religion	believing, practising	68,82	7,28	107	89,87	12,406	2	0,002	0,061
	believing, non-practising	71,35	6,77	51	110,48				
	non-beliving	72,87	7,08	47	124,77				

Table 6. Ranks assigned to values by respondents

Values	average weight	Ranks					
		0	1	2	3	4	5
		%	%	%	%	%	%
love, friendship	4,15	2,93	2,44	6,34	9,76	21,95	56,59
good health, physical and mental fitness	3,39	13,17	4,39	4,88	12,68	37,56	27,32
sense of humour, wit	0,50	74,63	11,22	6,83	4,88	1,95	0,49
intelligence, sharpness of mind	1,88	30,73	9,27	23,90	20,98	7,32	7,80
knowledge, wisdom	1,66	37,56	11,22	18,05	18,05	10,73	4,39
happiness, satisfaction	1,42	40,49	14,63	20,00	15,61	5,85	3,41
courage, decisiveness	0,45	72,68	15,61	6,83	3,41	1,46	0,00
kindness, gentleness	1,28	48,78	15,12	9,27	13,66	12,20	0,98
pleasing external appearance, presentation	0,09	93,17	4,88	1,95	0,00	0,00	0,00
wealth and assets	0,22	85,85	10,24	1,46	1,46	0,49	0,49

Table 7. Respondents' values and attitudes towards transplantation

Values	Attitudes towards transplantation	
	rho	p
love, friendship	-0,052	0,455
good health, physical and mental fitness	-0,077	0,270
sense of humour, wit	-0,070	0,318
intelligence, sharpness of mind	0,108	0,123
knowledge, wisdom	0,088	0,212
happiness, satisfaction	0,023	0,739
courage, decisiveness	0,043	0,538
kindness, gentleness	-0,055	0,433
pleasing external appearance, presentation	-0,052	0,459
wealth and assets	0,034	0,627

The analyses conducted showed statistically significant, weak relationships between attitude to religion and attitude towards transplantation. The highest results (most positive attitude) were obtained by non-believers, followed by believers, non-practising, and the lowest results by believers, practising. Statistically significantly believers, practitioners differed in their attitudes towards transplantation from believers, non-practitioners ($p = 0.008$), and non-believers ($p = 0$). Statistically significantly believers and non-practitioners differed in attitudes towards transplantation from non-believers ($p = 0.013$) (Table 5.)

In the next stage of compiling the collected data, the respondents' hierarchy of values was assessed; the results are presented in Table 6. The respondents valued love and friendship most highly, followed by good health, and physical and mental fitness. Intelligence, sharpness of mind, knowledge, wisdom, happiness and satisfaction, kindness, and gentleness were also important. Nice physical appearance, presentation, wealth, and possessions were rated lowest. The analyses conducted showed no statistically significant correlations between the rank attributed to the values studied and the respondents' attitudes towards transplantation (Table 7).

3. Discussion

Nowadays, transplantology is one of the most developing treatments for end-stage organ failure. Despite its dynamic development, there is still a shortage of organs for transplantation in Poland. The social campaigns conducted to date to promote this idea have not had a significant impact on increasing the number of donors. It is, therefore, necessary to consider the question of the

factors that are likely to influence consent for organ donation. Decision-making has several determinants, which include socio-demographic, personal, cultural, and religious factors. Identifying these makes it possible to determine attitudes towards transplantation (Lisowska, Budzińska, Ścieranka et al., 2017; Molina-Pérez et al., 2019; Alhawari et al., 2020). The present study analysed students' attitudes according to gender; age; place of residence, religion and attitude towards religious practice and the university where they study.

In Perkowska's doctoral dissertation, women (female students) were more favourable toward treatment using transplants for loved ones (p=0.0387) than men (Perkowska, 2018). In contrast, in the study conducted, both women and men were characterised by positive attitudes towards transplantation. The reason for. the absence of the above-described relationship may be the growing awareness and knowledge of organ transplantation, as well as changes in masculinity considered in cultural terms (Krupic et al., 2019).

Surveys carried out by CBOS in 2009 show that, of those aged 18 and over, around 70 % accept a transplant to save their lives while 6 % are opposed to this treatment process. Respondents aged 25-54 mostly consented to organ donation (CBOS, 2009). Our study (age range 18–41) did not show statistically significant correlations between respondents' attitudes towards organ transplantation and their age, which may be due to the different age ranges of respondents. Conclusions from the CBOS survey indicate that people aged 64 and above express an aversion to transplantation (CBOS, 2009).

In a 2013 study in Poland, researchers indicated that 80% of urban and 72% of rural respondents showed a positive attitude towards transplantation (they would agree to donate their organ to save the life of another person) (Ścisło, Partyka, Walewska et al., 2013). Our research showed statistically significant, weak correlations between the lace of residence and attitudes towards transplantation, The reasons for this correlation should be found in the higher level of awareness and medical knowledge of city dwellers (O'Dell et al., 2019; El-Agroudy et al., 2019).

The results of a study taking place in Barcelona showed that 1.70% of those surveyed did not agree to become organ donors. They argued their decision with their religion (Lomero et al., 2015). Respondents in the above study who were either Protestant or atheist showed more positive attitudes towards transplantation. Slightly lower were those who indicated a different religion, followed by Catholics and Orthodox believers. However, due to too small, disproportionate groups of respondents representing individual faiths, research should be conducted on a wider scale among a larger, more diverse group of respondents.

According to a survey conducted by CBOS in 2011, consent and opposition to organ harvesting after death depended on the attitude to the religion of the respondents: deeply religious, religious, rather non-believing and completely non-believing. The most favourable attitude appeared amcompletetely non-believers–96% of respondents expressed their consent, while 4% were opposed. A lesser approval was observed among rather non-believers (a positive decision was taken by 87% and a negative decision by 9%, and 4% of respondents were unable to answer this question). Among believers, 85% decided in favour of organ donation after death, 7% were against and 8% found it difficult to decide. The least favourability was shown among firm believers, where 75% of respondents agreed, while 14% would not agree to donate their organs after death. In turn, 11% of deeply religious respondents marked the answer as "difficult to say" (CBOS, 2011). Analyses of our research showed statistically significant weak correlations between attitude to religion and attitude to transplantation. The highest results (most positive attitude) were obtained by non-believers; followed by believers, non-practising, and the lowest by believers, practising. The variability in attitudes according to attitude towards religion may be due to stereotypes found in the group of practising believers and the teachings of the few Church representatives denying the compatibility of transplantation with the doctrines of the Catholic religion (Alhawari et al., 2020; Ríos et al., 2020).

Among students studying at the State Higher Vocational School in Wloclawek, approximately 90% show a positive attitude towards donating organs after death to save the lives of others, while such a willingness is expressed by 80% among surveyed Poles (Kamińska, Daszuta, 2019). In the study conducted, students at the Medical University of Lublin had a slightly

stronger attitude compared to students studying at the Catholic University of Lublin and the Maria Curie – Skłodowska University. However, there was no statistically significant relationship between the place of education and attitudes towards transplantation.

The results concerning the hierarchy of values in a group of junior high school students obtained by Boczkowska in 2016 from the Lubelskie Voivodeship indicate that the values indicated as important relate primarily to friends, family, and health. Low ranks were assigned to hedonistic values (Boczkowska, 2016). The study conducted indicates an analogous hierarchy of values in the student group. The junior high school students of the time are now in higher education, so there has not been a dramatic change in the values of young people over the years.

The strengths of the study were the size of the study group and the distribution of independent variables such as age, gender, age, and different place of education, while a limitation was the low diversity of the study group primarily in terms of religion.

The results obtained in this study may prove useful for developing effective tools to educate young people about organ, tissue, and cell transplantation. This tailored education could increase public awareness and thus lead to improved data on the number of transplanted organs in Poland.

Conclusions

1. Respondents' attitudes towards transplantation do not depend on their age.
2. The students' attitudes towards organ transplantation do not show a dependence on their gender. Both women and men show a positive attitude in this regard.
3. Respondents' attitudes towards transplantation depend on their place of residence. Students coming from the city are more favourable to a positive attitude than those coming from the countryside.
4. Respondents' attitude towards transplantation did not show significant dependencies on the type of university. However, the most positive attitude was found among respondents studying at the Medical University of Lublin.
5. Respondents' attitudes towards transplantation are significantly dependent on their attitudes towards faith. Non-believers had the most positive attitude towards transplantation; then believers, non-practitioners the least, while believers and practitioners had the least.[2]
6. Declared religion is not statistically significantly related to students' attitudes towards organ transplantation. With Protestants and atheists showing the most positive attitudes towards transplantation. Catholics and Orthodox believers were slightly lower.

Bibliography

Alhawari, Y., Verhoff, M.A., Ackermann, H., Parzeller, M. (2020). Religious denomination influencing attitudes towards brain death, organ transplantation and autopsy – a survey among people of different religions. *International Journal of Legal Medicine*, *134*(3), 1203-1212. https://doi.org/10.1007/s00414-019-02130-0

Boczkowska, M. (2016). Wartości osobiste preferowane przez młodzież gimnazjalną a wybrane wskaźniki socjodemograficzne. *Lubelski Rocznik Pedagogiczny*, 3, 223-240. https://doi.org/10.17951/lrp.2016.35.3.223

Bourke, V.J. (1994). *Historia etyki*. Warszawa: Wydawnictwo Krupski i S-ka.

Centrum Badania Opinii Społecznej, (2009). *Postawy wobec przeszczepiania narządów*. Warszawa: Wydawnictwo Fundacji CBOS.

Centrum Badania Opinii Społecznej, (2011). *Postawy wobec przeszczepiania narządów*. Warszawa: Wydawnictwo Fundacji CBOS.

Chen, A., Ahmad, M., Flescher, A., Freeman, W.L., Little, S. Martins, P.N., Ladin, K. (2020). Access to transplantation for persons with intellectual disability: strategies for non-discrimination. *American Journal of Transplantation*, *20*(8), 2009-2016. https://doi.org/10.1111/ajt.15755

2 The correlations obtained indicate the need to analyse the causes of this phenomenon (Quarterly Editor's note).

El-Agroudy, A.E., Jaradat, A., Arekat, M., Hamdan, R.M., AlQarawi, N., AlSenan, Z.K., Almarzooq, A.Y. (2019). Survey of medical students to assess their knowledge and attitudes toward organ transplantation and donation. *Saudi Journal of Kidney Diseases and Transplantation*, *30*(1), 83-96.

Kamińska, M., Daszuta, K. (2019). *Wiedza i opinie studentów na temat transplantacji narządów.* (From:) https://wyd.edu.pl/images/Czasopisma_naukowe/Pielegniarstwo/Pielkegniarstwo1/pilegniarstwo21/IwP_2019_2/IwP_2019_2_Kaminska_Daszuta.pdf (access: 20.01.2023).

Kotomska, M., Tataj-Puzyna, U., Danielewicz, R. (2019). Transplantacja narządów ludzkich bioetycznym wyzwaniem dla młodzieży. *Kwartalnik Naukowy Fides et Ratio*, *37*(1), 379-391. https://doi.org/10.34766/fetr.v1i37.57

Krupic, F., Westin, O., Hagelberg, M., Sköldenberg, O., Samuelsson K. (2019). The influence of age, gender and religion on willingness to be an organ donor: Experience of religious Muslims living in Sweden. *Journal of Religion and Health*, *58*(3), 847-859. https://doi.org/10.1007/s10943-018-0670-7

Lisowska, D., Budzińska, K., Ścieranka, M. (2017). Attitudes of students of Jan Grodek State High Vocational School in Sanok towards organ donation. *Journal of Education, Health and Sport*, *7*, 1684-1699.

Molina-Pérez, A., Rodríguez-Arias, D., Delgado-Rodríguez, J., Morgan, M., Frunza, M., Randhawa, G., Schicktanz, S. (2019). Public knowledge and attitudes towards consent policies for organ donation in Europe: a systematic review. *Transplantation Reviews*, *33*(1), 1-8. https://doi.org/10.1016/j.trre.2018.09.001

O'Dell, H.W., McMichael, B.J., Lee, S., Karp, J.L., VanHorn, R.L., Karp, S.J. (2019). Public attitudes toward contemporary issues in liver allocation. *American Journal of Transplantation*, *19*(4), 1212-1217. https://doi.org/10.1111/ajt.15227

Perkowska, M.M. (2018). *Postawy studentów białostockich uczelni wobec transplantacji. Stan, uwarunkowania, implikacje pedagogiczne.* (From:) https://repozytorium.uwb.edu.pl/jspui/bitstream/11320/7797/1/M_Perkowska_Postawy_studentow_bialostockich_uczelni_wobec_transplantacji.pdf (access: 20.01.2023).

Perz, T. (2020). Świat wartości w ujęciu Maxa Schelera – konsekwencje pedagogiczne. *Edukacja Humanistyczna, 1*(42), 77-88.

Rajab, T.K., Singh, S.K. (2018). Donation after cardiac death heart transplantation in America is clinically necessary and ethically justified. Circulation. *Heart Failure, 11*(3). https://doi.org/10.1161/CIRCHEARTFAILURE.118.004884

Ríos, A., Carrillo, J., López-Navas, A.I., Martínez-Alarcón, L., Martinez-Insfran, L.A., Ayala-García, M.A., Ramírez, P. (2020). Impact of Catholicism on the Attitude Toward the Donation of Organs Among African Residents in Spain. *In Transplantation Proceedings*, *52*(5), 1432-1434. https://doi.org/10.1016/j.transproceed.2020.02.064

Ścisło, L., Partyka, E., Walewska, E. (2013). Postawy i wiedza mieszkańców wsi i miast na temat transplantacji narządów. *Hygeia Public Health*, *48*(1), 40-45.

Żuk, G. (2016). *Edukacja aksjologiczna. Zarys problematyki.* Lublin: Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej.

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Delta Questionnaire – tool adaptation in a group of people with mild intellectual disability and a preliminary analysis of its psychometric properties[1]

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Abstract: The aim of the presented research was an adaptation of Delta Questionnaire by Radosław Drwal in the group of people with mild intellectual disability and in the group of adolescents within the intellectual norm, as well as a preliminary analysis of its psychometric properties. The tool enables measurement of locus of control understood as a personality dimension (Drwal, 1995). The questionnaire was subjected to psychometric verification in research involving adolescents (178 adolescents with mild intellectual disability and 179 within the intellectual norm). The choice of respondents was arbitrary. The research was carried out in the context of resilience theory. For this reason, the analysis included results obtained from adolescents who have experienced a variety of difficulties in the course of their life. What is more, students with mild intellectual disability diagnosed with a genetic syndrome and adolescents with multiple disabilities were excluded from the study. The first stage of work on the adaptation of the Delta Questionnaire was verification of descriptive statistics and distribution analysis. Then, a reliability analysis of subscales was carried out. For this purpose, due to the dichotomous nature of the answers in the questionnaire, the Kuder-Richardson method was used. The next stage of the research was a confirmatory factor analysis. Finally, the tool was standardized. The obtained results allow us to conclude that the Delta Questionnaire is a tool which enables reliable and accurate measurement of locus of control in a group of adolescents with mild intellectual disability.
Keywords: adolescence, intellectual disability, locus of control, tool adaptation

Introduction

The concept of locus of control has been analysed in psychological research since the beginning of the second half of the 20th century (Filipiak, Łubianka, 2019). It is considered "a significant determinant of behaviour of each person" (Ziółkowska, 2019, p. 142). To be more precise, locus of control is considered a dimension of personality which has a significant effect on an individual's functioning: taking decisions, social activity, life achievements or aspirations. It is a variable that allows us to explain many relations that can be observed between an individual and behaviour or situation. To properly understand the nature of this concept, it is worth reviewing Julian Rotter's theory of social learning.

1. Locus of control – theoretical aspect

Locus of control has decisive influence on individual's functioning and beliefs as to what determines the outcomes of undertaken activities (Rotter, 1966, after: Majewicz, 2002). We can define it as "an individual's generalised expectation regarding the nature of the factors which determine the consequences of one's behaviour" (Polański, 2018, p. 245).

Following the Theory of Social Learning, there are three groups of factors that shape behaviour. These are: expectancies, reinforcement, and psychological situations (Kościelak, 2010). Expectancies are defined

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as: "subjective probability with which a person expects that, in a given situation, her or his behaviour will lead to a particular reinforcer." (Kościelak, 2010, p. 40). It should be noted that the probability will depend on generalized expectations that have their origin in other sequences and on the reinforcement value. Another group of factors which will influence given behaviours is reinforcements (Kościelak, 2010). These are understood as "everything that results in appearance of an orientation or as a type of behaviour" (Kościelak, 2010, p. 40). It is worth noting that behaviour is a result of several reinforcements, which affect the individual with different strength – because they differ in terms of their value. The last group of factors, in turn, social situations, are necessary to predict human behaviour in a reliable manner. These factors are related to categorization of events that take place in a human life. They allow an individual to perceive and interpret some of them as identical, due to, for example, similarity of their reinforcements (Kościelak, 2010).

According to the Rotter's Theory of Social Learning, a person can fulfil their needs through instrumental behaviour. Reinforcements that a person receives increase their expectation that in the future particular behaviour will result in similar reinforcement (Rotter, Chance, Phares, 1972). It should be noted that impact of such reinforcement on person's behaviour will be partially dependant on whether the person interprets it as a result of their own behaviour and activity. Activation and engagement will differ depending on whether the individual considers the situation a result of his actions or fate (Rotter, 1966). Therefore, in line with Rotter's theory, in order to predict human behaviour, it is essential to know not as much the objective features of a situation as the way in which the situation is perceived and interpreted by the person, and the meaning that the person assigns to it. What is more, it should be noted that casual relationships between reinforcements and behaviours can be placed on a continuum (Drwal, 1995). It is believed that "when a person perceives reinforcement as subsequent to his actions, but not entirely consistent with his actions, then in our culture it is usually perceived as a result of luck, chance, fate, powerful others or unpredictable because of the complexity and magnitude of forces surrounding the person" (Rotter, 1966, after: Drwal, 1995, p. 199-200). Such interpretation is called external locus of control (Drwal, 1995). However, if "a person perceives that results are consistent with his behaviour or his own relatively permanent characteristics, we define it as internal locus of control" (Rotter, 1966, after: Drwal, 1995, p. 200). In summary, individuals with an internal locus of control believe that life situations that they take part in are a consequence of their actions or skills. In turn, people with an external locus of control consider the effects of their activities to be a result of external factors, such as fate or luck (Ziółkowska, 2019).

When we analyse the concept of locus of control, it is important to point out that "it is not only the situations that differ in the degree to which a person perceives that their own behaviour rather than the behaviour of others determines reinforcements – but it is also that people may differ in the degree to which the same event in the same situation is perceived as a function of their characteristics or characteristics of others" (Rotter et al., 1972, after: Drwal, 1995, p. 200). Therefore, it is believed that locus of control is an individual characteristic of a person.

The development of locus of control is influenced by the existence of reinforcements, which depends on several factors: the child-parent relationships, parental attitudes, educational methods, child's intelligence, sex and age, as well as environmental factors (Kościelak, 2010). This has been confirmed by research aimed to track the development of this variable carried out in a group of children in their early childhood. Mark Stephens has demonstrated there that the development of locus of control is strongly influenced by an individual's intellectual development and intra-family relations. Moreover, it additionally depends on specific aspects related to mother's behaviour (protectiveness, warmth) and on good relations between parents and the child (Stephens, 1973, after: Kościelak, 2010). Notably, similar results were obtained by such researchers as Walter Katkovsky, Virginia C. Crandall and Suzanne Good (1967) and Daniel Solomon, Kevin Busse, Robert Parelius (1971).

Locus of control is a variable which can, to some extent, be subject to change. Some researchers maintain that an internal locus of control increases during life, which is related to an individual's growing

possibilities to exert influence on the environment. Higher stability and accompanying confidence will be conducive to an internal locus of control. Conversely, situations shrouded in uncertainty and belief of lack of influence will contribute to an increased external locus of control (Nowicki, Strickland, 1973). This is well illustrated by analyses conducted in a group of young men placed in a juvenile detention centre. It has been shown that locus of control changed during the men's stay in the centre: at the beginning and at the end they demonstrated a more external locus of control. This can be related to lack of confidence and helplessness caused by the changed life situation (Kościelak, 2010). In summary, we could say that "a shift towards an external locus of control occurs under the conditions of chance, or in life difficulties, while a shift towards an internal locus of control is associated with confidence in effectiveness of one's own actions" (Kościelak, 2010, p. 48). Additionally, when an individual believes it is not possible to change their current life situation or experiences helplessness, it can lead to an increase in external locus of control. Successful life events and confidence in one's influence, on the other hand, may lead to a rise in internal locus of control (Kościelak, 2010).

2. Locus of control in the context of adolescents with mild intellectual disability

Although the period of adolescence is considered by some researchers as a time of transition from the external locus of control to the internal one (Oleszkowicz, 2006), such a situation may not always take place in the group of young people with disabilities. Bearing in mind that the changes taking place in this aspect stem from developmental, situational, and relational factors (Kościelak, 2010; Ziółkowska, 2019), it should be noted that the excessively protective attitude towards children, often manifested by parents/guardians, will be conducive to an external location of control. Moreover, researchers who analyse this issue suggest that differences in locus of control may result from the possibilities of choice, which in case of adolescents with intellectual disability are limited, and from the resulting feelings of helplessness (Guess, Benson, Siegel-Causey, 1985; Stancliffe, 2001). Therefore, it is currently believed that individuals with mild intellectual disability (compared to peers in the intellectual norm) are significantly more often characterized by an external locus of control. This statement is confirmed by the research conducted in this area, a brief description of which will be presented below.

The opinion that students with intellectual disability manifest an external locus of control more often than their peers within intellectual norm was confirmed in research conducted by Michael Wehmeyer (1993, 1994). Particular attention should be paid to the analyses carried out by this researcher together with Susan Palmer (1997). Research conducted by these authors involved a group of students with intellectual disability, a group of students with learning difficulties and adolescents in the intellectual norm. A total of 431 adolescents took part in the research. The analysis of the results allowed to conclude that students with learning difficulties and students with intellectual disabilities more often manifested an external locus of control compared to their peers within the intellectual norm. It should also be noted that, based on the results obtained, Wehmeyer and Palmer showed that in the case of students within intellectual norm, locus of control shifted towards more internal as they grew older. In the group of students with intellectual disabilities, on the other hand, the pattern was the opposite–older adolescents more often showed an external locus of control than younger students with this disability (Wehmeyer, Palmer, 1997).

Further significant analyses were carried out by Karrie Shogren, James Bovaird, Susan Palmer, Michael Wehmeyer (2010). These studies, similarly to the analyses of Wehmeyer, Palmer (1997), were conducted in a group of students with intellectual disabilities, in a group of adolescents with learning disabilities and among adolescents within the intellectual norm. A total of 564 adolescents participated in the study. The analysis of obtained results confirms conclusions from previous research, which indicated differences in locus of control among students in these groups. For example, it was demonstrated that students with intellectual disability at the age of 8

have a stronger external locus of control than their peers. Additionally, these individuals do not show a tendency to increase or decrease in this variable between the age of 8 and 20 (Shogren, Bovaird, Palmer, Wehmeyer, 2010).

It is also worth mentioning the results of the analyses carried out by Joseph Seyram Agbenyeg and Prosper Deku (2016). The researchers attempted to use a modified version of the locus of control scale in order to check the susceptibility of adolescents with disabilities to physical and/or sexual violence. The research was conducted in special schools in Ghana. One hundred seven students participated in the study (31.8% of adolescents with disability of sight, 37.4% of adolescents with hearing disability and 30,8% of individuals with intellectual disability). The results of the analyses showed that 37.38% of the surveyed students had an external locus of control. In turn, an internal locus of control was found in 62.62% of the adolescents participating in the research (Agbenyega, Deku, 2016). The obtained results are not consistent with the results of studies conducted, among others, by Wehmeyer and Palmer (1997) or Shogren et al. (2010). The visible differences may result from the heterogeneous group of respondents included in the analyses of Agbenyega and Deku (2016). In addition, the place of residence of the surveyed adolescents could have influenced the results.

To sum up, we can conclude that knowledge about locus of control is necessary to understand the social functioning of young people with mild intellectual disability. Therefore, it is necessary to find an accurate and reliable tool to measure this variable.

3. Psychometric analysis of Delta questionnaire

Radosław Drwal's Delta questionnaire allows for measurement of locus of control understood as a dimension of personality. It refers to the beliefs of an individual regarding their abilities to control their own fate in daily life situations. The obtained results make it possible to determine whether the surveyed person tends towards external reinforcement control or internal self-control (Drwal, 1995).

The questionnaire consists of 24 statements. The subjects respond to each statement by marking T (true) if they agree with it, or F (false) if they believe that the given statement is false. The results of the questionnaire are expressed in two scales: the locus of control scale (LOC) and the lie scale (LS). High scores on the LOC scale are interpreted as an external locus of control, while high scores on the LS scale indicate the individual's tendency to present themselves in an excessively favourable light. The studies carried out so far allow us to conclude that the Delta questionnaire may be applied for example in experimental studies. However, it should be used with caution for the purposes of individual diagnosis or prognosis (due to the small number of items in the scales and the reliability which does not exceed 0.70) (Drwal, 1995).

The scales of the Delta questionnaire are characterized by good psychometric properties. The reliability of the tool was verified with the use of three methods in different groups. The coefficient of absolute stability test-retest, depending on the length of the intervals between measurements, was: LOC–0.79, LS–0.80; LOC- 0.51- LS- 0.59; LOC- 0.38, LS-0.52. The inter-half equivalence coefficient–using the Spearman-Bown formula–was based on the correlation between the even and odd half of the scale: LOC–0.68, LS–0.79. In turn, the internal consistency coefficient, calculated based on the Kuder-Richardson formula, was: LOC–0.83, LS–0.60 (Drwal, 1978; Drwal, 1995).

4. Psychometric properties of the questionnaire in own research

4.1. Method

The aim of the performed analyses was to present the adaptation process of the Delta Questionnaire in a group of adolescents with mild intellectual disability and a group of adolescents in the intellectual norm. First, the descriptive statistics and distribution were verified, as well as the tool's internal reliability in reference to the surveyed group. Subsequently, the confirmatory factor analysis was carried out. The last

stage of the analysis was to standardize the results and prepare the norms. Statistical analyses were carried out with the use of IBM SPSS Statistics 25. Importantly, the research design received a positive opinion of the Research Ethics Commission of Department of Philosophy at the Jagiellonian University in Krakow.

4.2. Respondents

The research involved a group of 357 students (178 students with mild intellectual disability and 179 students within the intellectual norm). Considering the diverse etiology of mild intellectual disability, students with a diagnosis of a genetic syndrome and students with multiple disabilities were excluded from the study. In addition, since the theoretical basis of this research was the concept of resilience, only the results of those respondents who experienced various types of difficulties during their lives were included in the analysis. Under life obstacles and difficulties we should understand for example: growing up in an environment with an increased risk of pathology, divorce or separation of parents/guardians, loss of contact with a significant other or their death, serious illness of one of the parents/guardians or the student himself, disability.

The research involved students between the age of 12 and 19. More specifically, the average age of respondents from the group of adolescents with mild intellectual disability was 16 years old. The youth with mild intellectual disability attended special school complexes (45.5%) and special educational centres (54.5%) in the Małopolska province. In turn, young people within the intellectual standard attended primary schools (23.5%), general secondary schools (48.6%) and technical secondary schools (27.9%), also in the Małopolska province. In the group of students with mild intellectual disability, 52.2% of the respondents were men. The group of adolescents within the intellectual norm included 54.2% of men.

4.3. Results

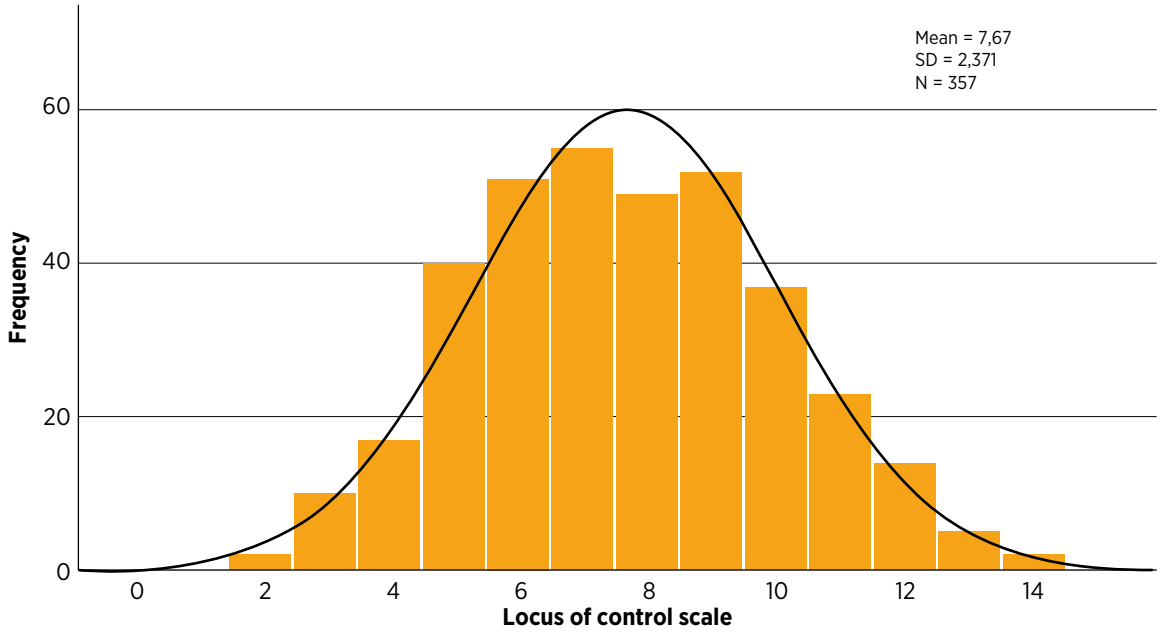
The Delta Questionnaire by Drwal consists of 24 statements with a two-dimensional answer structure (true/false). The structure of the tool is divided into two scales: the locus of control scale (LOC) and the lie scale (LS) (Drwal, 1995). In the first step, the descriptive characteristics and distribution of the results obtained by the respondents were verified. The detailed data are provided in Table 1 and Figures 1 and 2.

The result of the Kolmogorow-Smirnow test turned out to be statistically significant, which means that the distribution deviated significantly from the normal distribution. However, it should be noted that the skewness of the distribution did not exceed the conventional absolute value of 1, which means that the distribution was asymmetric to a slight extent.

Table 1. Descriptive statistics with Kolmogorow-Smirnow test for the Delta Questionnaire for the whole group and divided into groups of adolescents in the intellectual norm and with mild intellectual disability

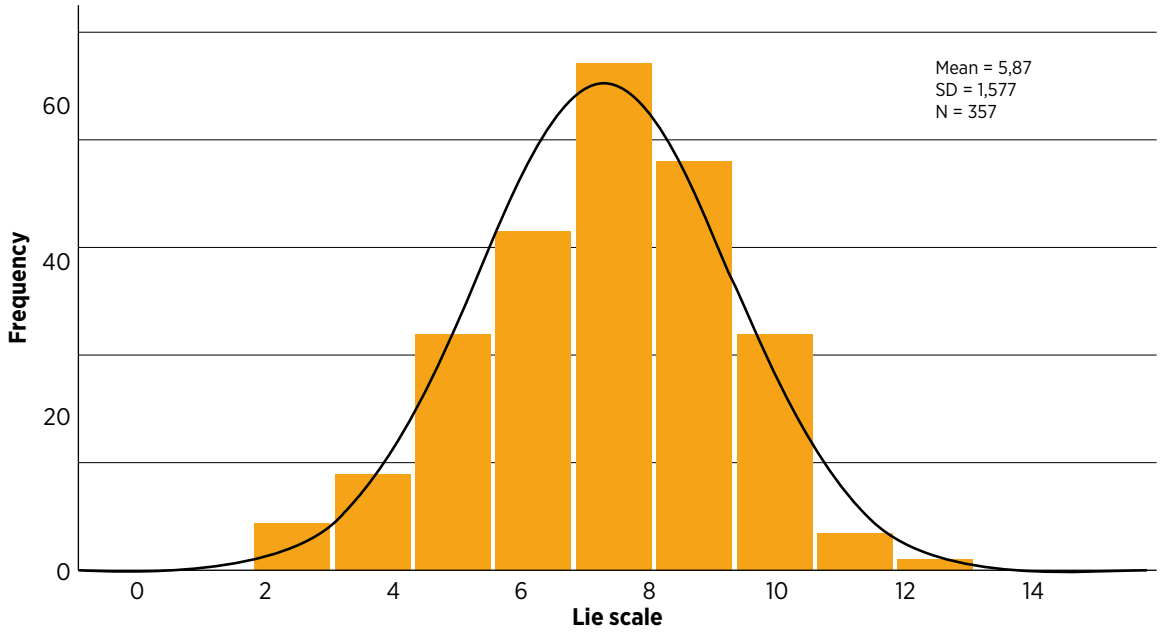
		n	*M*	*Me*	*SD*	*Sk.*	*Kurt.*	*Min.*	*Max.*	*D*	*p*
Adolescents with mild intellectual disability	Locus of control scale	178	8.77	9	2.18	-0.07	-0.39	3	14	0.11	0,000
	Lie scale	178	5.77	6	1.65	-0.09	-0.42	2	10	0.14	0,000
Adolescents within the intellectual norm	Locus of control scale	179	6.57	6	2.01	0.23	-0.12	2	12	0.11	0,000
	Lie scale	179	5.96	6	1.50	-0.47	0.15	2	9	0.19	0,000
Whole group	Locus of control scale	357	7.67	8	2.37	0.13	-0.44	2	14	0.10	<0,001
	Lie scale	357	5.87	6	1.58	-0.27	-0.21	2	10	0.16	<0,001

Source: own elaboration.



Source: own elaboration.

Figure 1. Distribution of results for the whole group for the locus of control scale for the Delta Questionnaire.



Source: own elaboration.

Figure 2. Distribution of results for the whole group for the lie scale for the Delta Questionnaire.

Table 2. Standardization of the Delta Questionnaire in a group of adolescents in the intellectual norm and with mild intellectual disability

Adolescents with intellectual disability (n = 178)		Adolescents in intellectual norm (n = 179)		Sten	
Locus of control scale	Lie scale	Locus of control scale	Lie scale		
<4	<2			1	Very low
5	3	1	0	2	Low
6	4	2	2	3	
7		3	3	4	Average
8	5	4	4-5	5	
9	6	5	6	6	
10	7	6	7	7	
11-12	8	7	8	8	High
13	9	8	9	9	
14	10	9-11		10	Very high

Source: Own elaboration.

4.3.1. Reliability analysis of the Delta Questionnaire

Due to the dichotomous nature of the answers in the questionnaire, the analysis of the reliability of individual scales in the group was carried out using the Kuder-Richardson method (KR-20) and amounted to 0.87 for the locus of control scale and 0.74 for the lie scale. Based on these results, both scales should be considered reliable.

4.3.2. Confirmatory factor analysis of the Delta Questionnaire

The CFA carried out in all observations $n = 357$ demonstrated a very good fit of the model RMSEA = 0.03, CFI = 1. The above analyses showed that the tool can be considered reliable and reflects the analysed concept at an adequate level.

4.3.3. Standardization of the Delta Questionnaire

The Delta Questionnaire was prepared by Drwal for scientific purposes and group assessment. The original version was not standardized (Drwal, 1995). In this study, it was decided to convert the raw scores into the sten scale, separately for adolescents in the intellectual norm and adolescents with mild intellectual disability. The sten scale was chosen as the most adequate, considering the low range of raw scores (min. = 2, max. = 14). The results are presented in Table 2.

Conclusions

Since "locus of control is an important determinant of behaviour of every person, including those who experience disability" (Ziółkowska, 2019, p. 142), it is important to identify accurate and reliable tools for measuring it. One of them is the Delta Questionnaire by Radosław Drwal. This tool allows us to study locus of control, understood as a dimension of personality. In this approach, it is associated with a person's beliefs about the possibility of controlling their fate during everyday life situations. Specifically, the obtained results allow to determine whether the respondent tends towards external reinforcement control or internal self-control (Drwal, 1995).

The psychometric verification of the Delta Questionnaire and the preliminary analysis of its psychometric properties were carried out in a group of people with mild intellectual disability and adolescents in the intellectual norm. In total, 357 respondents fulfilling

the criteria described in the article took part in the research. The first stage of the study was verification of descriptive statistics and distribution of results obtained from adolescents. In the next stage, a reliability analysis of particular scales and confirmatory factor analysis were conducted. Finally, the tool was standardized. After conducting statistical analyses, it can be concluded that, due to its satisfactory psychometric properties, Drwal's Questionnaire can be successfully used in the indicated groups of people.

Bibliography

Agbenyega, J.S., Deku, P. (2016). Using a modified version of locus of control scale to explore children with disabilities' perceived vulnerability to physical and sexual assault in three special schools in Ghana. *Cogent Social Sciences*, *2*(1), 1256751. https://doi.org/10.1080/23311886.2016.1256751

Drwal, R.Ł. (1978). Poczucie kontroli jako wymiar osobowości-podstawy teoretyczne, techniki badawcze i wyniki badań. (W:) L. Wołoszynowa (red.), *Materiały do nauczania psychologii,* 307-345. Warszawa: Wydawnictwo Naukowe PWN.

Drwal, R.Ł. (1995). Poczucie kontroli jako wymiar osobowości-podstawy teoretyczne, techniki badawcze i wyniki badań. (W:) R.Ł. Drwal, P. Brzozowski, P. Oleś (red.), *Adaptacja kwestionariuszy osobowości. Wybrane zagadnienia i techniki,* 199-227. Warszawa: Wydawnictwo Naukowe PWN.

Filipiak, S., Łubianka, B. (2019). Poczucie kontroli w okresie wczesnej adolescencji wśród uczniów z dwóch etapów edukacji. *Psychologia rozwojowa*, *24*(1), 85–96.

Guess, D., Benson, H.A., Siegel-Causey, E. (1985). Concepts and Issues Related to Choice-Making and Autonomy among Persons with Severe Disabilities. *Journal of the Association for Persons with Severe Handicaps*, *10*(2), 79-86. https://doi.org/10.1177/154079698501000202

Katkovsky, W., Crandall, V.C., Good, S. (1967). Parental antecedents of children's belief in internal-external control of reinforcement in intellectual achievement situations. *Child Development*, *38*(3), 765-776.

Kościelak, R. (2010). *Poczucie umiejscowienia kontroli i przekonania o własnej skuteczności w zdrowiu i chorobie*. Kraków: Oficyna Wydawnicza Impuls.

Majewicz, P. (2002). *Obraz samego siebie a zachowanie młodzieży niepełnosprawnej ruchowo*. Kraków: Wydawnictwo Naukowe Akademii Pedagogicznej.

Nowicki, S., Strickland, B.R. (1973). A locus of control scale for children. *Journal of Consulting and Clinical Psychology, 40*(1), 148-154.

Oleszkowicz, A. (2006). *Bunt młodzieńczy: Uwarunkowania. Formy. Skutki*. Warszawa: Wydawnictwo Scholar.

Polański, G. (2018). Lokalizacja kontroli adolescentów a korzystanie z internetu. *Edukacja – Technika – Informatyka*, *3*(25), 245- 250.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1-28.

Rotter, J.B., Chance, J.E., Phares, E.J. (1972). *Applications of a social learning theory of personality*. New York: Holt, Rinehart & Winston.

Shogren, K.A., Bovaird, J.A., Palmer, S.B., Wehmeyer, M.L. (2010). Locus of Control Orientations in Students with Intellectual Disability, Learning Disabilities and No Disabilities: A Latent Growth Curve Analysis. *Research and Practice for Persons with Severe Disabilities*, *35*(3-4), 80-92. https://doi.org/10.2511/rpsd.35.3-4.80

Solomon, D., Houlihan, K.A., Busse, T.V., Parelius, R.J. (1971). Parent behavior and child academic achievement, achievement striving, and related personality characteristics. *Genetic Psychology Monographs, 83*(2), 173-273.

Stancliffe, R.J. (2001). Living with support in the community: Predictors of choice and self-determination. *Mental Retardation and Developmental Disabilities Research Reviews, 7*(2), 91-98. https://doi.org/10.1002/mrdd.1013

Wehmeyer, M.L. (1993). Perceptual and psychological factors in career decision-making of adolescents with and without cognitive disabilities. *Career Development for Exceptional Individuals*, *16*, 135-146.

Wehmeyer, M.L. (1994). Perceptions of self-determination and psychological empowerment of adolescents with mental retardation. *Education & Training in Mental Retardation & Developmental Disabilities, 29*(1), 9-21.

Wehmeyer, M.L., Palmer, S.B. (1997). Perceptions of control of students with and without cognitive disabilities. *Psychological Reports, 81*(1), 195-206.

Ziółkowska, B. (2019). Radzenie sobie ze stresem młodzieży niepełnosprawnej fizycznie w świetle problematyki umiejscowienia kontroli. *Niepełnosprawność. Dyskursy pedagogiki specjalnej*, *36*, 141-158.

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Visuospatial game in PTSD symptoms alleviation: intervention overview and clinical studies results[1]

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Abstract: The aim of this article is to present the possibility of using the puzzle game Tetris as an aid in treating people suffering from post-traumatic stress disorder (PTSD). This intervention was first proposed Holmes and her team (2009), who postulate its high effectiveness, especially when alleviating one of hallmark symptoms of PTSD – intrusions. It was assumed that the visuospatial nature of the game would interfere with the formation of the perceptual and sensory memory trace of the traumatic event, as both processes compete for a limited pool of visual working memory resources. In principle, this should translate into a reduced number of intrusions and the intensity of symptoms of post-traumatic stress disorder, while not damaging the volitional, verbal memory of the event itself. The effectiveness of the intervention has been confirmed by the team in laboratory setting using real-life trauma analogues (trauma film paradigm). This paper discusses the results of studies involving clinical groups, testing the effectiveness of the intervention, and thus the validity of the proposal itself. In each of the studies cited, after memory reactivation, people who experienced an actual trauma and/or had a diagnosis of post-traumatic stress disorder were asked to play Tetris for a short time (approx. 15-20 minutes). The number of intrusions occurring in the following days was tracked along with, in some cases, other indicators of psychological well-being. Regardless of the type of traumatic event, the time elapsed since it occurred, and the protocol used, each of the cited studies reported a reduction in the number of intrusions and a corresponding decrease in the severity of PTSD symptoms. The intervention turned out to be easy to use, universally effective and not interfering with other therapeutic approaches, therefore making it a valuable and noteworthy addition to treatment programs for people suffering from post-traumatic stress disorder, leading to an improvement of their mental health and general functioning.
Keywords: intrusions; PTSD; Tetris; trauma; visuospatial games

Introduction

Since their creation in the late 1950s, early 1960s, and further commercialization in the 1970s, the popularity of computer games has been steadily rising. In particular, the intensive growth of player numbers in recent years is related to factors such as affordability of home gaming systems (e.g. consoles), more powerful computers and graphics capabilities of mobile devices (e.g. smartphones), the emergence of digital game distribution platforms (e.g. Steam) and universal internet access. The Google for Games report (2021) estimates that the total number of gamers around the world currently oscillates around 3 billion, which is over 40% of the world's population. Given their popularity, it is not surprising that computer games are also of interest to the scientific community, raising numerous questions about the possible consequences of gaming as well as the general usefulness of such activity. Some of the research has focused on the possible negative effects, exploring, among other things, the issues of aggression in players (e.g. Anderson, Shibuya, Ihori, Swing, Bushman, et al., 2010) or the possibility of addiction (e.g. Stevens, Dorstyn, Delfabbro, King, 2021). Currently, however, games potential is more frequently being harnessed to improve functioning of various groups of individuals. Computer games have been successfully used e.g. to help deal with obesity in children and adolescents (e.g. Andrade,

1 Article in polish language: Gra wizualno-przestrzenna w łagodzeniu objawów PTSD: charakterystyka interwencji i wyniki badań klinicznych https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Czer.pdf

Correia, Coimbra, 2019) or to increase mobility and balance of the elderly (e.g. Pacheco, de Medeiros, de Oliviera, Vieira, de Cavalcanti, 2020). Particular attention is currently being paid to the possibility of using games to improve mental health, such as to reduce the level of anxiety or depression (e.g. Ioannou, Papastavrou, Avraamides, Charalambous, 2020) or symptom intensity in specific phobias (e.g. Freitas, Velosa, Abreu, Jardim , Santos, et al., 2021). The purpose of this article is to characterize in more detail one of such proposals, aimed at reducing the severity of symptoms of post-traumatic stress disorder, and to review data from clinical trials proving its effectiveness.

1. Post-traumatic stress disorder (PTSD) and intrusions

Post-traumatic stress disorder (PTSD) may occur in response to an extremely stressful experience that poses a threat to the health, life or bodily integrity of a person. Such an event, called traumatic, may affect the individual directly or indirectly, when they witness it without participation. Most common examples of traumatic events include warfare, a natural cataclysm or catastrophe, being involved in a car accident or a victim of assault, kidnapping or imprisonment. Both the diagnostic manual of the American Psychiatric Association DSM-V (2018) and the WHO medical classification ICD-11 (2022) indicate similar diagnostic criteria for the syndrome. The symptoms of PTSD include, first of all, intrusions, i.e. involuntary, distressing memories of a traumatic event in the form of thoughts, images, dreams or so-called flashbacks, containing a component of derealization, where a person feels as if they found themselves in the threatening situation they experienced all over again. Another symptom is persistent avoidance, i.e. running away from emotions or thoughts related to the trauma as well as from people, activities or places that could remind the individual of the event. A person suffering from PTSD is also characterized by negative changes in mood and cognitive processes, including i.a. dissociative amnesia (inability to remember the details of the event), self-blame and negative beliefs about oneself or alienation. Finally, PTSD also manifests itself in changes in the natural reactivity and arousal level of the individual, who may become hyper-vigilant, irritable and prone to outbursts or taking unnecessary risks. Symptoms often develop within a few months of the traumatic event and significantly impair individuals functioning in personal, social or professional areas of life (see e.g.: Jellestad, Vital, Malamud, Taeymans, Mueller-Pfeiffer, 2021).

Prevalence estimates of PTSD are quite varied. For example, Schein, Houle, Urganus, Cloutier, Patterson-Lomba et al. (2021) indicate the prevalence of the syndrome within a year of the event ranging from 2.3% to 9.1% in the general population of the United States. In specific populations the estimates may be higher, in the case of soldiers for example, who are more exposed to trauma due to their profession, they range from 6.7% to as much as 50.2% per year. In European countries the incidence of post-traumatic stress disorder is slightly lower, ranging from about 1.1% to 2.9% in the general population (Trautmann & Wittchen, 2018). The number of people struggling with post-traumatic stress disorder is therefore not negligible in the global perspective, nor is the impact of symptoms on the functioning of such individuals, even more so, as PTSD also co-occurs with higher levels of general anxiety, depression and psychological distress, where the correlation coefficients can reach as high as 0.70 (e.g. Unseld, Krammer, Lubowitzki, Jachs, Baumann, et al., 2019). Among the psychotherapeutic approaches cognitive-behavioral therapy seems to be effective in reducing PTSD symptoms as well as exposure therapy, including sessions conducted in virtual reality, and EMDR therapy (Eye Movement Desensitization and Reprocessing[2]; e.g. Eshuis, van Gelderen, van Zuiden, Nijdam, Vermetter, et al., 2021; Lewis, Roberts, Andrew, Starling, Bisson, 2020). Pharmacotherapy can also be helpful, often in combination with therapeutic interventions;

2 EMDR therapy involves reactivation of a traumatic or otherwise difficult memory with concurrent engagement in a simple sensory-motor task (usually eyeball movement in a specific pattern) in order to change the way it is being cognitively processed.

antidepressants such as fluoxetine or sertraline and antipsychotics such as quetiapine yield good results (e.g.: Hoskins, Bridges, Sinnerton, Nakamura, Underwood, et al., 2021; Mavranezouli, Megnin-Viggars Daly, Dias, Welton, et al., 2020).

Despite the existence of a number of recognized methods of treatment and therapy, the management of PTSD poses various difficulties. For example, psychotherapy assumes the need to verbalize and recall a traumatic situation, which may result in retraumatization that strengthens the symptoms of PTSD, especially when such therapy is conducted very shortly after the traumatic event (e.g. Zohar, Juven-Wetzler, Sonnino , Cwikel-Hamzany, Balaban, et al., 2011). Similarly, the use of prescribed medications may be associated with experiencing side effects (e.g. Ehret, 2019). Some patients also show resistance to them (see e.g. Abdallah, Averill, Akiki, Raza, Averill, et al., 2019). Both psychotherapy and pharmacotherapy may also be unavailable to various groups of patients due to their costs or difficult access to health care, e.g. in certain geographical locations. Therefore, there is a constant need to introduce new forms of treatment or interventions aimed at alleviating PTSD symptoms that would be accessible and safe for patients and improve their daily functioning and quality of life. Attention is also drawn to the particular need for therapies focusing on reducing the number of intrusions, which seem to not only cause great distress to the sufferers, but can also lead to further consolidation of the traumatic memory through its involuntary, constant activation.

2. *Tetris* game as a „cognitive vaccine" against intrusions

Holmes, James, Coode-Bate and Deeprose (2009) were the first to suggest the possibility of alleviating symptoms of post-traumatic stress disorder using a simple, commercial game. The research team focused their attention on the classic puzzle game *Tetris*, designed and published by Alexei Pajitnov in 1985. The game is played on a rectangular board (tetrion), where the player's task is to form lines from blocks of various shapes (tetrominoes), falling down from upper part of the board, by moving and rotating them around. Once a line is formed, it disappears from the tetrion, creating more space for more tetrominoes. With lines being created and removed, the ever falling speed of subsequent blocks increases, inciting precise manipulation, and thus the game rendered more difficult. *Tetris* has undergone countless adaptations and expansions that change the parameters and modes of the gameplay (there are, among others, multiplayer or virtual reality versions) as well as conversions to various platforms (stationary and portable computers and consoles, smartphones and tablets). This makes the game flexible and customizable to the preferences and needs of a particular player, as well as easily accessible, thanks to which *Tetris* remains one of the most popular games of all time (Tyler, 2022).

Tetris raised a particular interest of Holmes team (2009) as it is believed to demand increased visuospatial processing. The game requires the player to imagine the shape of tetrominoe after turning it as well as to predict its fit into a specific place between the blocks already on the board. Therefore, it engages the processes of mental rotation and spatial visualization, loading visual working memory (see: Pilegard, Mayer, 2018). These speculations were confirmed in empirical research. For example, Lau-Zhu, E. Holmes, Butterfield and J. Holmes (2017) showed that the number of points obtained in a short game of *Tetris* correlated significantly with measures of visuospatial working memory efficiency. At the same time, the game score was related neither to intelligence of the participants nor the efficiency of their verbal working memory. This indicates that the game influences selected cognitive processes only. The conclusion was further supported by the results of Milani, Grumi and Di Blasio (2019) who verified the possibility of improving visuospatial functions using a 3-day game training (45 minutes a day). A positive, albeit small, impact of the game on the performance in tasks measuring selected components of working memory, such as the ability to perform mental rotations or spatial visualization, was observed. Interestingly, the size of the training effect for individual processes depended on the game variants of two-dimensional or three-dimensional

tetrominoes. The special involvement of visuospatial processes when playing *Tetris* was also confirmed by Angren, Hoppe, Singh, Holmes and Rosén (2023) using neuroimaging methods. Increased activation was observed, among others, in the inferior temporal cortex, the fusiform and angular gyri, the occipital cortex, the hippocampus, as well as the cerebellum and the premotor cortex. These structures are involved in identifying and classifying shapes, the perception of their location in space, as well as motor planning (activity resulting from the need to press keys while playing was controlled for during the experiment). What is important, as the authors themselves point out, studies focused on neurocorrelates of intrusive memories have found dysfunctions of brain areas similar to those activated by the *Tetris* game.

As part of their proposal, Holmes et al. (2009) indicate that in the case of PTSD one of the more troublesome symptoms are the aforementioned intrusions. They are visual in nature and a consequence of increased sensory processing at encoding stage of the traumatic event. As working memory has a limited capacity, the introduction of a second task with similar characteristics and cognitive requirements (i.e. the *Tetris* game) will cause both to compete for a limited pool of resources, and consequently, interference. As a result of redirecting some of the resources towards the gameplay, mental images related to the traumatic event are weakened, which translates into their less clear and incomplete encoding within the memory trace. This, in turn, should result in a reduced number of visual intrusions and flashbacks experienced. What's more, the authors postulate that this intervention can be effective not only right after the experienced trauma, but also when a few hours had passed (a 6-hour window was suggested). It is due to the duration of memory trace consolidation, a process prolonged in time, still ongoing even when the original stimulus or situation no longer affects the individual. This is not without practical significance; it is rarely possible to provide a person with psychological help right after a traumatizing event.

Holmes et al. (2009) tested the effectiveness of the proposal in experimental setting, using the so-called trauma movie paradigm. Participants were shown a 12-minute video compilation of real-life traumatizing scenes depicting mutilation and accidents, including fatalities. It is assumed that such a stimulus is an approximation of a true traumatic event so the content of the film is subjected to similar memory processing rules and may result in intrusions (see, e.g.: Asselbergs, van Bentum, Riper, Cuijpers, Holmes, et al., 2023; James, Lau-Zhu, Clark, Visser, Hagernaars, et al., 2016a). After watching the film and a 30-minute break, the participants in the experimental group played *Tetris* for 10 minutes or had no activity in the control group. Over the next 7 days, participants from both groups recorded the number of visual intrusions they experienced each day concerning the videos they watched. Based on the results, the effectiveness of the intervention using the game was confirmed, the participants experienced on average 3 times less intrusions than those in the control group. Interestingly, both groups remembered a similar number of details about the movies they watched after a week. This result shows that the introduction of a visuospatial game during memory encoding disturbs the memorization of the visual aspect of the event only, not its general memory. Based on the obtained results, the authors propose the use of *Tetris* gameplay as a "cognitive vaccine" against intrusions and flashbacks after experiencing trauma. It is a proposition worth considering as patients engagement in such intervention does not require experience with computer games, specialized equipment or involving high costs.

The above results were replicated in subsequent studies (e.g.: Hagenaars, Holmes, Klassen, Elzinga, 2017; Holmes, James, Kilford, Deeprose, 2010; James, Bonsall, Hoppitt, Tunbridge, Geddes, et al., 2015; James, Lau- Zhu, Tickle, Horsch, Holmes, 2016b; Lau-Zhu, Henson, Holmes, 2019), while also deepening understanding of the effects *Tetris* may have on PTSD symptomatology. For example, the possibility that the game offers a mere distraction after experiencing trauma, interfering with memory encoding, was excluded. The use of a verbal game, devoid of the visuospatial component, did not lead to the reduction of intrusions after watching traumatizing films. Similarly, engaging in the game before experiencing negative events was also not effective, suggesting retroactive interference mechanism, not

a proactive one (which is at odds with the idea of a "vaccine"). It was also confirmed that the window of effectiveness of the intervention is wider than originally thought, as *Tetris* successfully reduced the number of intrusions even when administered 24 hours after the trauma. Despite some criticism (see e.g.: Cristea, Naudet, Shanks, Hardwicke, 2017) and clear need for further research, there are many indications that the proposed intervention may actually be effective.

3. Verification of intervention effectiveness in clinical setting

All previously cited publications tested the usefulness of the proposed intervention in laboratory setting only, where traumatic memories were artificially evoked using specially prepared visual materials. It is obvious that this is only an approximation of traumatic events experienced by participants and witnesses in real life. To conclude on the protective effect of playing *Tetris* in the context of PTSD formation, it was necessary to test its effectiveness in studies with higher ecological validity, involving clinical groups and people with real trauma experience. These studies also provided additional data on the well-being and mental health of people who underwent the described intervention.

Horsch, Vial, Favrod, Harari, Blackwell and colleagues (2017) were among the first to verify the usefulness of *Tetris* against intrusions and the intensity of PTSD symptoms. The study was conducted in a hospital neonatology ward with women who had experienced an emergency caesarean section. The procedure was necessary due to a life-threatening condition of the mother or child, thus qualifying as a traumatizing event. Within 6 hours of the c-section, participants had played *Tetris* for a minimum of 15 minutes; the control group consisted of women with a similar experience who were not offered any type of intervention. Symptom diaries kept for a subsequent week showed a significant difference in the number of intrusions, which was almost 50% lower in the intervention group compared to the control group. Lower indicators of post-traumatic stress symptoms intensity were also found, primarily concerning re-experiencing of the traumatizing event, which confirms the effectiveness of the intervention, although the authors admit that the stability of this effect for periods longer than one week was unknown. It is also important to note that the vast majority of patients considered engaging in a computer game to be an acceptable form of intervention during that difficult time.

These results were replicated and extended by Deforges, Fort, Stujifzand, Holmes, and Horsch (2022) who examined a group of women who had experienced a traumatic birth between 7 months and as many as 7 years earlier and reported ongoing intrusions related to that event. In order to reactivate memories, before playing the game, women recalled the course of their traumatic childbirth, and the study itself was carried out in the same hospital where they previously gave birth (contextual clues). The participants then engaged in a 20-minute game of *Tetris*, after which they tracked the occurrence of intrusion for a month. A significant decrease in the number of intrusions, the overall intensity of PTSD as well as its individual components, re-experiencing trauma, persistent avoidance, increased arousal and reactivity, negative thoughts and feelings were observed, compared to the period before the intervention, improving the functioning of the women. The decrease reached as much as 80%, remaining at the same level after a month for the majority of the participants. The study proved, in addition to replicating Horsch et al.'s (2017) results, that the intervention can target already consolidated traumatic memories. However, it is assumed that they must be reactivated, recalling and re-experiencing a traumatic event makes memory trace susceptible to changes owning to reconsolidation mechanism (memory re-coding). Secondly, the stability of therapeutic effects in a longer time duration than the originally studied week was also clear. Finally, here again the intervention was highly acceptable to the participants.

In a study by Iyadurai, Blackwell, Meiser-Stedman, Watson, Bonsall and colleagues (2018), the effectiveness of *Tetris* interventions was tested in a group of people who had experienced a different type of traumatic event. The research was conducted

in the emergency department of one of the hospitals, where participation was offered to people who had been involved in car accidents up to 3 hours earlier. After reactivating the memory and describing subsequent actions taken since the event, the subjects played *Tetris* for 20 minutes, while the control group was not given any activity. After a week during which participants tracked event-related intrusions, there were statistically significant differences between the groups. The number of intrusions related to the traumatic event was almost 3 times lower in the intervention group compared to the passive control group. This also manifested in the results of the appropriate subscale of the tool measuring the intensity of PTSD symptoms. The differences between the groups, however, disappeared after 1 month. Nevertheless, respondents reported that the gaming intervention was helpful without being burdensome.

A similar group was also studied by Kanstrup, Singh, Göransson, Widoff, Taylor et al. (2021a). People who found themselves in the emergency department were asked to play a 20-minute game of *Tetris* within 72 hours of the traumatic event they participated in. The control group, in turn, was asked to listen to a podcast of similar duration. In both groups, reactivation of memories was used, similarly to previously cited studies, making them sensitive to change in the process of reconsolidation. However, unlike Iyadurai et al. (2018), possible changes in well-being and general functioning of the participants were tracked for as long as 6 consecutive months. The obtained results confirmed the effectiveness of the intervention, the gaming group recorded statistically fewer intrusions related to the traumatic event than the active control group. The effect was evident to both a week and a month after the intervention. It was also visible when PTSD questionnaire scores were taken into consideration. Differences were shown for the intrusion and persistent avoidance subscales, in favor of the intervention group, which were still visible after 3 and 6 months, proving the stability of the therapeutic effect over time. What is more, the study also used other measures of psychological well-being. The *Tetris*-playing group reported significantly lower levels of anxiety and depression symptoms than the control group, and rated their sleep quality and health higher, an effect that was observed throughout the whole six-month period. These results clearly indicate that a brief intervention using a visuospatial game can have a wide range of benefits for mental health.

The *Tetris* game intervention has also been used successfully in research involving groups of war refugees. In Holmes, Ghaderi, Eriksson, Olofsdotter Lauri, Kukacka and colleagues (2017) study, young Syrians and Iraqis residing in Sweden were asked to participate. The aim of the week-long project was to assess the feasibility of *Tetris* intervention to reduce the number of intrusions they experienced. The second goal was to improve cognitive functioning of participants who reported having difficulty concentrating due to intrusions. The participants were to play *Tetris* on their own smartphones for up to 20 minutes each day after reactivating memories of traumatic events, as well as track intrusions and attention deficits using a diary. It was observed that the number of reported intrusions was strongly correlated with the intensity of attentional difficulties (0.64) and a single intrusion occupied the participants' attention for several minutes after its occurrence. In the opinion of the respondents, everyday involvement in the game was effective against intrusions and ruminations related to traumatic events, and the game itself was a relaxing and acceptable activity. This result is important because the intervention using *Tetris* is linguistically and culturally neutral, which is important when working with groups of people who do not speak the language of mental health professionals fluently. What is more, the relationship between the number of intrusions and attentional parameters suggests that along with intrusions alleviation the subjects should also observe an improvement in cognitive functioning. This may, in turn, make it easier to learn a new language, which is one of the key factors for successful adaptation to a new environment.

An extension of the above project is Kanstrup, Kontio, Geranmayeh, Olofsdotter Lauri, Molds and colleagues (2021b) study with a small group of refugees from Afghanistan and Iran experiencing intrusions related to warfare, violence and fleeing the country. Similarly to previously cited studies, the participants had to reactivate the memory of

a difficult experience and then play a 20-minute game of *Tetris* on their smartphone. The number of intrusions and other indicators of mental health were tracked using diaries. A significant decrease in the number of intrusions was observed during the intervention compared to one-week period preceding it. Their smaller number, in turn, translated into an improved functioning in various areas increasing, among others, the sense of control, the ability to regulate emotions or the degree of attentional focus. The study also showed that the intervention did not require supervision by a mental health professional, self-administered sessions were as effective as sessions led by a psychologist or psychiatrist. Moreover, the results of the study indicate that during reactivation of memories it is possible to use the so-called hotspots, requiring focusing on one specific aspect of the traumatic situation (e.g. the image of a boat or tank) in order to recall it, instead of the mental image of the full event. Working with hotspots proved to be as effective as eliciting a complete memory, while reducing the risk of retraumatization and causing participants less concern about their reactions when the memory is successfully reactivated.

Finally, it is worth mentioning the study by Butler, Herr, Willmund, Gallinat, Kühn and colleagues (2020), which is unique as it also tracked structural and functional changes in the brains of people undergoing the *Tetris* intervention. The project involved war veterans suffering from PTSD who were subjected to a 6-week EMDR therapy. As part of the intervention, they were asked to play for a total of 60 minutes a day; the control group received no additional task. After the basic treatment, the intensity of PTSD, anxiety and depression symptoms was assessed in both groups. Both the intervention group and the control group showed a decrease in PTSD symptoms, also maintained at the follow-up examination 6 months later. Similarly, just after the end of treatment both groups reported a decrease in the intensity of anxiety, but only in the *Tetris* group it progressed over the next months, being cumulatively greater. The fMRI study additionally showed that the volume of the hippocampus increased only in those who played visuospatial game. This is important because in people suffering from PTSD this volume decreases, correlating with the severity of the syndrome. The greater the increase in volume observed, the greater the reported improvement in functioning after 6 months. This study is important for two reasons. Firstly, it indicates that the intervention using the *Tetris* game not only does not reduce the effectiveness of other therapeutic interventions, but also seems to work synergistically with them. Second, the intervention appears to have specific brain correlates and a specific, identifiable mechanism of action.

Concluding remarks

In all of the clinical group studies cited in this article, the intervention involving playing *Tetris* was found to be effective. It is impossible not to notice many benefits associated with the use of the discussed intervention. Firstly, research confirms its universal effectiveness, regardless of the type of trauma or the time that has passed since the event. Moreover, it seems that the introduction of a short game in the period immediately after a traumatic event does not lead to retraumatization. Secondly, intervention using *Tetris* does not seem to interfere with other forms of therapy, on the contrary, it may enhance their effects. Thirdly, the game is non-verbal, so it is culturally and linguistically neutral and can be used in groups with poor language comprehension. Fourthly, the intervention seems to be flexible – despite the lack of a uniform protocol regarding, among others, duration, both of its entirety and a single session or gameplay parameters (e.g. difficulty, graphics and sound settings of the game), its positive impact on the well-being and functioning of patients is reported. The fact that this type of intervention is highly accessible to almost every person, requires virtually no costs as many of the available variants of the *Tetris* game are available for free, and can also be administered by the person themselves, without the supervision of specialists, is also worth noting. Finally, in virtually all of the cited studies, gaming was an accepted, easy-to-learn form of activity that did not burden patients and brought pleasure, which is important for compliance with therapeutic recommendations.

Of course, further research is necessary, including both experimental and laboratory studies, aimed at gaining a deeper understanding of the mechanism in which the visuospatial game affects the symptomatology of post-traumatic stress disorder, as well as determining the universality of this effect in relation to the game itself. It is also unreasonable to expect that making such a game the central part of therapeutic efforts would resolve PTSD and its symptoms. It seems, however, worth considering to introduce such an activity into therapeutic programs as an auxiliary or supporting the primary forms of treatment. The research results indicate the safety of its use and, at the same time, the possibility of contributing to a greater or faster reduction of the symptoms of post-traumatic stress disorder, especially intrusion, leading to functional improvements and greater well-being.

Bibliography

Abdallah, C.G., Averill, L.A., Akiki, T.J., Raza, M., Averill, C.L., Gomaa, H., Adikey, A., Krystal, J.H. (2019). The neurobiology and pharmacotherapy of posttraumatic stress disorder. *Annual Review of Pharmacology and Toxicology, 59*, 171-189. https://doi.org/10.1146/annurev-pharmtox-010818-021701

Anderson, C.A., Shibuya, A., Ihori, N., Swing, E.L., Bushman, B.J., Sakamoto, A., Rothstein, H.R., Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: a meta-analytic review. *Psychological Bulletin, 136*(2), 151–173. https://doi.org/10.1037/a0018251

Andreade, A., Correia, C.K., Coimbra, D.R. (2019). The psychological effects of exergames for Children and adolescents with obesity: a systematic review and meta-analysis. *Cyberpsychology, Behavior, and Social Networking, 22*(11), 724-735. http://doi.org/10.1089/cyber.2019.0341.

Angren, T., Hoppe, J.M., Singh, M., Holmes, E.A., Rosén, J. (2023). The neural basis of Tetris gameplay: implicating the role of visuospatial processing. *Current Psychology, 42,* 8156-8163. https://doi.org/10.1007/s12144-021-02081-z

Asselbergs, J., van Bentum, J., Riper, H., Cuijpers, P., Holmes, E., Sijbrandij, M. (2023). A systematic review and meta-analysis of the effect of cognitive interventions to prevent intrusive memories using the trauma film paradigm. *Journal of Psychiatric Research, 159*, 116-129. https://doi.org/10.1016/j.jpsychires.2023.01.028

Butler, O., Herr, K., Willmund, G., Gallinat, J., Kühn, S., Zimmermann, P. (2020). Trauma, treatment and Tetris: video gaming increases hippocampal volume in male patients with combat-related posttraumatic stress disorder. *Journal of Psychiatry and Neuroscience, 45*(4), 279–287. https://doi.org/10.1503/jpn.190027

Cristea, I.A., Naudet, F., Shanks, D.R., Hardwicke, T.E. (2018). Post-retrieval Tetris should not be likened to a 'cognitive vaccine'. *Molecular Psychiatry, 23*(10), 1972–1973. https://doi.org/10.1038/mp.2017.222

Deforges, C., Fort, D., Stuijfzand, S., Holmes, E.A., Horsch, A. (2022). Reducing childbirth-related intrusive memories and PTSD symptoms via a single-session behavioural intervention including a visuospatial task: a proof-of-principle study. *Journal of Affective Disorders*, *303,* 64-73. https://doi.org/10.1016/j.jad.2022.01.108

Ehret, M. (2019). Treatment of posttraumatic stress disorder: focus on pharmacotherapy. *Mental Health Clinician, 9*(6), 373-382. https://doi.org/10.9740/mhc.2019.11.373

Eshuis, L.V., van Gelderen, M.J., van Zuiden, M., Nijdam, M.J., Vermetten, E., Olff, M., Bakker, A. (2021). Efficacy of immersive PTSD treatments: A systematic review of virtual and augmented reality exposure therapy and a meta-analysis of virtual reality exposure therapy. *Journal of Psychiatric Research, 143,* 516-527. https://doi.org/10.1016/j.jpsychires.2020.11.030

Freitas, J.R.S., Velosa, V.H.S., Abreu, L.T.N., Jardim, R.L., Santos, J.A. V., Peres, B., Campos, P.F. (2021). Virtual reality exposure treatment in phobias: a systematic review. *Psychiatric Quarterly, 92*, 1685–1710. https://doi.org/10.1007/s11126-021-09935-6

Google for Games (2021). *Beyond 2021: where does gaming go next? Global gaming market and consumer research report.* (From:) https://games.withgoogle.com/reports/beyondreport/ (access: 01.07.2023)

Hagenaars, M.A., Holmes, E.A., Klaassen, F., Elzinga, B. (2017). Tetris and Word games lead to fewer intrusive memories when applied several days after analogue trauma. *European Journal of Psychotraumatology, 8*(1), 1–14. https://doi.org/10.1080/20008198.2017.1386959

Holmes, E.A., Ghaderi, A., Eriksson, E., Olofsdotter Lauri, K., Kukacka, O.M., Mamish, M., James, E.L., Visser, R.M. (2017). 'I can't concentrate': a feasibility study with young refugees in Sweden on developing science-driven interventions for intrusive memories related to trauma. *Behavioural and Cognitive Psychotherapy, 45*(2), 97-109. https://doi.org/10.1017/S135246581600062X

Holmes, E.A., James, E.L., Coode-Bate, T., Deeprose, C. (2009). Can playing the computer game "Tetris" reduce the build-up of flashbacks for trauma? A proposal from cognitive science. *PloS one, 4*(1), e4153. https://doi.org/10.1371/journal.pone.0004153

Holmes, E.A., James, E.L., Kilford, E.J., Deeprose, C. (2010). Key steps in developing a cognitive vaccine against traumatic flashbacks: visuospatial Tetris versus verbal Pub Quiz. *PloS one, 5*(11), e13706. https://doi.org/10.1371/journal.pone.0013706

Horsch, A., Vial, Y., Favrod, C., Harari, M.M., Blackwell, S.E., Watson, P., Iyadurai, L., Bonsall, M.B., Holmes, E.A. (2017). Reducing intrusive traumatic memories after emergency caesarean section: A proof-of-principle randomized controlled study. *Behaviour Research and Therapy, 94*, 36–47. https://doi.org/10.1016/j.brat.2017.03.018

Hoskins, M.D., Bridges, J., Sinnerton, R., Nakamura, A., Underwood, J.F. G., Slater, A., Lee, M.R. D., Clarke, L., Lewis, C., Roberts, N.P., Bisson, J.I. (2021). Pharmacological therapy for post-traumatic stress disorder: a systematic review and meta-analysis of monotherapy, augmentation and head-to-head approaches. *European Journal of Psychotraumatology, 12*(1), 1802920. https://doi.org/10.1080/20008198.2020.1802920

Ioannou, A., Papastavrou, E., Avraamides, M.N., Charalambous, A. (2020). Virtual reality and symptoms management of anxiety, depression, fatigue, and pain: a systematic review. *Sage Open Nursing, 6*, 1-13. https://doi.org/10.1177/2377960820936163

Iyadurai, L., Blackwell, S.E., Meiser-Stedman, R., Watson, P.C., Bonsall, M.B., Geddes, J.R., Nobre, A.C., Holmes, E.A. (2018). Preventing intrusive memories after trauma via a brief intervention involving Tetris computer game play in the emergency department: a proof-of-concept randomized controlled trial. *Molecular Psychiatry, 23*(3), 674–682. https://doi.org/10.1038/mp.2017.23

James, E.L., Bonsall, M.B., Hoppitt, L., Tunbridge, E.M., Geddes, J.R., Milton, A.L., Holmes, E.A. (2015). Computer game play reduces intrusive memories of experimental trauma via reconsolidation-update mechanisms. *Psychological Science, 26*(8), 1201-1215. https://doi.org/10.1177/0956797615583071

James, E.L., Lau-Zhu, A., Clark, I.A., Visser, R.M., Hagernaars, M.A., Holmes, E.A. (2016a). The trauma film paradigm as an experimental psychopathology model of psychological trauma: intrusive memories and beyond. *Clinical Psychology Review, 47,* 106-142. https://doi.org/10.1016/j.cpr.2016.04.010

James, E.L., Lau-Zhu, A., Tickle, H., Horsch, A., Holmes, E.A. (2016b). Playing the computer game Tetris prior to viewing traumatic film material and subsequent intrusive memories: examining proactive interference. *Journal of Behavior Therapy and Experimental Psychiatry, 53*, 25–33. https://doi.org/10.1016/j.jbtep.2015.11.004

Jellestad, L., Vital, N.A., Malamud, J., Taeymans, J., Mueller-Pfeiffer, C. (2021). Functional impairment in Posttraumatic Stress Disorder: a systematic review and meta-analysis. *Journal of Psychiatric Research, 136,* 14-22. https://doi.org/10.1016/j.jpsychires.2021.01.039

Kanstrup, M., Kontio, E., Geranmayeh, A., Olofsdotter Lauri, K., Moulds, M.L., Holmes, E.A. (2021b). A single case series using visuospatial task interference to reduce the number of visual intrusive memories of trauma with refugees. *Clinical Psychology and Psychotherapy, 28*(1), 109–123. https://doi.org/10.1002/cpp.2489

Kanstrup, M., Singh, L., Göransson, K.E., Widoff, J., Taylor, R.S., Gamble, B., Iyadurai, L., Moulds, M.L., Holmes, E.A. (2021a). Reducing intrusive memories after trauma via a brief cognitive task intervention in the hospital emergency department: an exploratory pilot randomised controlled trial. *Translational Psychiatry, 11*(1), 30. https://doi.org/10.1038/s41398-020-01124-6

Lau-Zhu, A., Henson, R.N., Holmes, E.A. (2019). Intrusive memories and voluntary memory of a trauma film: differential effects of a cognitive interference task after encoding. *Journal of Experimental Psychology: General, 148*(12), 2154-2180. https://doi.org/10.1037/xge0000598

Lau-Zhu, A., Holmes, E.A., Butterfield, S., Holmes, J. (2017). Selective association between Tetris game play and visuospatial Working Memory: a preliminary investigation. *Applied Cognitive Psychology, 31*, 438-455. https://doi.org/10.1002/acp.3339

Lewis, C., Roberts, N.P., Andrew, M., Starling, E., Bisson, J.I. (2020). Psychological therapies for post-traumatic stress disorder in adults: systematic review and meta-analysis, *European Journal of Psychotraumatology, 11*(1), 1729633. https://doi.org/10.1080/20008198.2020.1729633

Mavranezouli, I., Megnin-Viggars, O., Daly, C., Dias, S., Welton, N.J., Stockton, S., Bhutani, G., Grey, N., Leach, J., Greenberg, N., Katona, C., El-Leithy, S., Pilling, S. (2020). Psychological treatments for post-traumatic stress disorder in adults: a network metaanalysis. *Psychological Medicine*, 1–14. https://doi.org/10.1017/S0033291720000070

Milani, L., Grumi, S., Di Blasio, P. (2019). Positive effects of videogame use on visuospatial competencies: the impact of visualization style in preadolescents and adolescents. *Frontiers in Psychology, 10,* 1226. https://doi.org/10.3389/fpsyg.2019.01226

Pacheco, T.B. F., de Medeiros, C.S. P., de Oliveira, V.H. B., Vieira, E.R., de Cavalcanti, F.A. C. (2020). Effectiveness of exergames for improving mobility and balance in older adults: a systematic review and meta-analysis. *Systematic Reviews, 9*, 163. https://doi.org/10.1186/s13643-020-01421-7

Pilegard, C., Mayer, R.E. (2018). Game over for Tetris as a platform for cognitive skill training. *Contemporary Educational Psychology*, *54*, 29-41. https://doi.org/10.1016/j.cedpsych.2018.04.003

Schein, J., Houle, C., Urganus, A., Cloutier, M., Patterson-Lomba, O., Wang, Y., King, S., Levinson, W., Guérin, A., Lefebvre, P., Davis, L.P. (2021). Prevalence of post-traumatic stress disorder in the United States: a systematic literature review. *Current Medical Research and Opinion, 37*(12), 2151-2161. https://doi.org/10.1080/03007995.2021.1978417

Stevens, M.W., Dorstyn, D., Delfabbro, P.H., King, D.L. (2021). Global prevalence of gaming disorder: a systematic review and meta-analysis. *The Australian and New Zealand Journal of Psychiatry, 55*(6), 553–568. https://doi.org/10.1177/0004867420962851

Szulc, A., Wciórka, J., Rymaszewska, J., Pilecki, M., Gałecki, P., Sidorowicz, S. (2018). *Kryteria diagnostyczne zaburzeń psychicznych DSM 5* [DSM 5 diagnosic criteria for mental disorders]. Wrocław: Edra Urban & Partner.

Trautmann, S., Wittchen, H-U. (2018). Trauma and PTSD in Europe. (In:) C.B. Nemeroff, C. Marmar (eds.), *Post-traumatic stress disorder,* 133-146. New York: Oxford University Press.

Tyler, D. (2022). *20 most popular games of all time.* Game Designing. (From:)https://www.gamedesigning.org/popular-video-games/ (access: 01.07.2023).

Unseld, M., Krammer, K., Lubowitzki, S., Jachs, M., Baumann, L., Vyssoki, B., Riedel, J., Puhr, H., Zehentgruber, S., Prager, G., Masel, E.K., Preusser, M., Jaeger, U., Gaiger, A. (2019). Screening for post-traumatic stress disorders in 1017 cancer patients and correlation with anxiety, depression, and distress. *Psycho-Oncology, 28*(12), 2382–2388. https://doi.org/10.1002/pon.5239

World Health Organization. (2022). *ICD-11: International classification of diseases (11th revision)*. https://icd.who.int/

Zohan, J., Juven-Wetzler, A., Sonnino, R., Cwikel-Hamzany, S., Balaban, E., Cohen, H. (2011). New insights into secondary prevention in post-traumatic stress disorder. *Dialogues in Clinical Science, 13*(3), 301-309. https://doi.org/10.31887/DCNS.2011.13.2/jzohar

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The significance of high sensitivity in shaping abnormal eating behaviors in young adult women[1]

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Abstract: "High sensitivity" is a relatively new construct, especially in Polish psychology. Although it is sometimes a subject of controversy in the scientific world, it seems to have explanatory significance, helping to understand the mechanism of human functioning in various spheres. The purpose of the research project was to explore the relationships between the intensity of sensitivity and eating behaviors in young adult women. The sample consisted of 213 participants in young adulthood (i.e., from 20 to 35 years old). The selection of respondents was purposeful, and the inclusion criteria were gender and age. The *High Sensitivity Scale* by Elaine Aron, adapted by Agata Borzyszkowska, and the *Questionnaire of Eating-Related Behaviors* by Nina Ogińska-Bulik and Leszek Putyński were used to measure the main variables. As a result of the analysis of the obtained research material, the main assumption about the existence of a relationship between the intensity of sensitivity and eating behaviors in the examined women was confirmed. The higher the level of sensitivity intensity, the higher the tendency for abnormal eating behaviors. A correlation was also found between the difference in real and ideal body mass and eating behaviors, both in their general dimension, emotional eating, and dietary restrictions. Additionally, it was documented that the greater the difference between real and ideal body mass, the greater the tendency of the examined women to exhibit abnormal eating behaviors. A partial relationship between the assessment of the adequacy of support and the burden of stress with eating behaviors was also confirmed.
Keywords: high sensitivity, eating-related behaviors, women, young adulthood

Introduction

The issue of high sensitivity of sensory processing has recently become a popular topic of consideration, not only in the field of science. As a result, there are many colloquial expressions in the public space describing highly sensitive people as, e.g., overly sensitive, too emotional, tearful, oversensitive, or neurotic (Baryła-Matejczuk, 2019). However, these terms do not accurately reflect the specifics of their functioning and can even be hurtful.

The author of the construct "high sensory processing sensitivity" is Elaine Aron, whose monograph, *The High Sensitive Person* (1996), contributed to the popularization of the issue. According to the author, interindividual differences in sensory processing are a genetically and environmentally conditioned temperament trait with both positive and negative connotations (Aron, Aron, 1997). High sensitivity refers to internal and external stimuli of a physical, emotional, and social nature, and can be placed on a continuum – from low to high, depending on the degree of intensity (Greven et al., 2019). People characterized by a high level of sensory processing sensitivity are identified as highly sensitive (HSP) (Aron, Aron, 1997). Although this trait is often associated with introversion, neuroticism, extraversion, and openness, according to E. Aron and A. Aron (1997), it is a fully separate construct. Surely, however, people with a high intensity of sensory processing sensitivity more often than others experience tension and anxiety on a daily basis, compare themselves more frequently

1 Article in polish language: Znaczenie wysokiej wrażliwości dla kształtowania nieprawidłowych zachowań związanych z jedzeniem u młodych dorosłych kobiet https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Mame.pdf

with others, worry about what others think about them, how they are evaluated, which lowers their self-esteem (E. Aron, 2017).

Sensory processing sensitivity is largely conditioned by the specific functioning of the nervous system (Baryła-Matejczuk, 2019). Functional studies of this trait using magnetic resonance imaging (fMRI) prove its connection with brain neuronal structure (Acevedo, E. Aron, Pospos, Jessen, 2017; E. Aron, A. Aron, Jagiellowicz, 2012; Chen, He, Chen, He, 2011). It has been shown (Assary, Zavos, Krapohl, Keers, Pluess, 2020) that 47% of the variance of high sensitivity can be explained by genetic factors, and 53% by environmental factors. Among the latter, the family environment is mentioned (E. Aron, 2017; Baryła-Matejczuk, 2019). It has been proven that adults who showed a high level of sensitivity and perceived their childhood as unhappy obtained higher results in the range of negative emotionality and social introversion than respondents who also had a high level of sensitivity but assessed their childhood as happy (E. Aron, A. Aron, 1997). If the environment of a child with a high level of sensitivity is unsupportive, it increases the risk of behavioral problems and psychopathology, both in childhood and adulthood (Greven et al., 2019). On the other hand, when people with high sensory processing sensitivity experience positive life events, and their family environment is supportive, they can develop in an above-average way (Pluess, 2015).

Eating behaviors are defined as actions and ways of behaving directly related to satisfying nutritional needs (Korwin-Szymanowska, Tuszyńska, 2015). Physiological hunger appears gradually as a consequence of a deficiency of food components, and its result is the mobilization of the body to actions aimed at acquiring and taking food (Juruć, Wierusz-Wysocka, Bogdanski, 2011). However, people reach for food not only under the influence of physiological hunger but also as a result of so-called "emotional hunger" (Czepczor, Brytek-Matera, 2017). The latter appears suddenly, under the influence of affect, provokes to take food despite a feeling of fullness, and often a feeling of guilt arises after eating. Therefore, food intake is a strategy for dealing with negative emotions or bad mood, but at the same time, it serves several other socio-cultural functions – it is a way of expressing feelings, defining one's identity, a tool of control, or a source of power (Jaworski, Fabisiak, 2017; Ziółkowska, Wycisk, 2019).

There have been introduced several concepts explaining the psychological mechanism of overeating, especially in emotional situations. According to one of them (Heatherton, Baumeister, 1991; after: Evers, Stok, de Ridder, 2010), overeating is an attempt to escape from negative self-awareness to avoid analyzing information that threatens the *ego*. The masking theory, on the other hand, states that excessive food consumption is a form of diverting attention from the real source of suffering, e.g., loneliness (Herman, Polivy, 1988; after: Evers et al., 2010). It can be assumed that emotions – especially negative ones – affect overeating, and it, in turn, indicates that the source of the primary problem is a lack of adaptive affect regulation strategies. Meanwhile, improper nutrition in young adulthood results in an increased risk of health problems in later life, and above all, it is harmful to women in the reproductive period (Vien, 2015).

1. Purpose and method

In the population of young people, many anti-health behaviors are observed, including in the field of nutrition (Brytek-Matera, Charzyńska, 2009). Food is easily accessible, necessary to maintain vital functions, and also serves as a regulator of emotions and stress by stimulating the reward system (Mendoza, 2019). Meanwhile, proper nutrition of the body, especially in the period when women work intensively and also make a decision about motherhood, is extremely important.

At the same time, it is estimated that even 30% of the population (Greven et al., 2019) experiences high sensory processing sensitivity, which is important for the psychophysical functioning of a human being (Acevedo et al., 2017; Chen et al., 2011). It was assumed, therefore, that people with high intensity of this temperamental trait may use food to a greater extent than the rest of the population for affect regulation, which means that they are more exposed to the development of abnormal eating behaviors (extremely – bulimia or compulsive eating).

In connection with the above, exploratory studies (without a comparison group) were planned in a correlational model, in which the explanatory variable was sensitivity, understood as a temperament trait describing both positive and negative interpersonal differences in environmental sensitivity (E. Aron, A. Aron, 1997). On the other hand, the explained variable was behaviors related to eating, i.e., complex actions and ways of behaving that are associated with satisfying nutritional needs, conditioned by environmental, cultural factors, the functioning of the hormonal system, and the knowledge that an individual has about food (Ogińska-Bulik, Putyński, 2000).

In own research, additional variables were also controlled, such as: body mass index [BMI = weight/height^2], the difference between actual and ideal body weight expressed in kilograms, having a partner *vs.* not having a partner, and also the level of satisfaction with the relationship, assessment of the adequacy of support, and the severity of experienced stress determined on a 4-point scale, where 0 means "not at all", and 3 "very strongly."

The main research problem was formulated in the form of a question: Is there a relationship between the intensity of sensitivity and eating behaviors in women in the studied sample?

Own research was conducted via the Internet (survey in the *Google* form) from March 2022 to April 2022. Purposeful selection was applied, and the inclusion criteria for the study were female gender and age from 20 to 35 years old. Exclusion was based on the failure to meet the required criteria. 220 women participated in the study, however, the material included in the final analysis was from 213 respondents. The remaining seven did not meet the inclusion criteria and/or the required data was incomplete.

Among the study participants, the oldest woman was 35 and the youngest was 20 years old, with an average age of 25.94 (SD = 5.13). Most women are students (82 people), 76 work, 41 combine work and study, and 14 are not engaged in any of these activities. The majority of the respondents are in a relationship (123 people), of which 118 are satisfied with it. 192 women declared having support, and 179 of them rated it as adequate for their needs. Most of the respondents currently feel stress (160 people), of which 130 find it hinders their daily functioning. An average BMI value in the study group is 23.70. The largest discrepancy between the current and ideal body weight is 65, and the smallest is 0.

To measure the main variables, the following were used: 1) *Food-Related Behavior Questionnaire* (FRBQ) by N. Ogińska-Bulik and L. Putyński and 2) Elaine Aron's *High Sensitivity Scale* in the Polish adaptation by Agata Borzyszkowska. The first tool consists of 30 statements to which respondents relate by choosing one of two answers – "yes" or "no". Due to the nature of overeating, three factors are distinguished: 1) "habitual eating", 2) "emotional eating", and 3) "dietary restrictions". The overall score allows determining the general tendency towards improper nutritional behaviors, and the scores within the subscales allow determining the type of irregularity. Normalization studies showed that the internal consistency of the questionnaire, measured by Cronbach's alpha coefficient, is satisfactory and amounts to 0.89 (Ogińska-Bulik, 2000), and in own research to 0.88.

The second tool – the *High Sensitivity Scale* (HSS) by Elaine Aron in the adaptation of Agata Borzyszkowska (unpublished material obtained from the Author of the adaptation) – allows determining the degree of environmental sensitivity of the respondent. It consists of 27 questions, to which respondents relate by choosing an answer on a 7-point scale, where 1 means "not at all," and 7 means "extremely." The higher the score, the greater the sensitivity to both negative and positive stimuli (E. Aron, 2017). Normalization studies showed that the internal consistency of the questionnaire, measured by Cronbach's alpha coefficient, is satisfactory and amounts to 0.94, and in own research to 0.90.

To verify the hypotheses, the Statistica 12 program was used for statistical analysis. To check the reliability of the research tools used, Cronbach's alpha coefficient was used, and to verify the relationships between variables, Pearson's linear coefficient *r* and Spearman's rank correlation coefficient Rs was used.

Table 1. Test Shapiro-Wilk – eating behaviors and intensity of sensitivity (N=213)

	M	Mdn	SD	Min	Max	Sk.	Kurt.	W	P
KZZJ	12.97	12	6.70	0	29	0.25	-0.82	0.97	0.001
Habitual eating	4.21	4	2.89	0	10	0.37	-0.90	0.94	< 0.001
Emotional eating	4.89	5	2.48	0	10	0.19	-0.78	0.96	< 0.001
Dietary restrictions	4.29	4	2.95	0	10	0.19	-0.19	0.94	< 0.001
SWW	4.98	5.11	0.89	2.70	6.78	-0.36	-0.37	0.98	0.009

Table 2. Pearson correlation coefficient – relationship between the intensity of sensitivity and eating behaviors (N=213)

	KZZJ		Habitual eating		Emotional eating		Dietary restrictions	
	R	p	R	P	R	P	R	p
SWW	0.28*	0.000	0.19*	0.007	0.33**	0.000	0.23*	0.001

*low correlation, ** moderate correlation ,*** high correlation

2. Results

Statistical analyses began by establishing the distribution of main variables in the study sample (Table 1).

The results obtained prove that behaviors related to eating in general, "habitual eating," "emotional eating," and "dietary restrictions," as well as sensitivity, do not have a normal distribution. However, the skewness and kurtosis parameters are within the limits of -2 to 2, so parametric tests can be used in further analyses (Bedyńska, Cypryańska, 2013). The average score for eating behaviors overall is 12, the highest is 29, and the lowest is 0. On the subscales: "habitual eating" – the average score is 4.2, the highest is 10, and the lowest is 0; "emotional eating" – the average score is 4.89, the highest is 10, and the lowest is 0; "dietary restrictions" – the average score is 4.29, the highest is 10, and the lowest is 0. Meanwhile, the average score on the *High Sensitivity Scale* is 4.98, the highest is 6.78, and the lowest is 2.70.

To answer the main research question, the relationship between sensitivity intensity and eating behaviors in the studied women was examined by conducting a correlation analysis using Pearson's r coefficient *r* (Table 2).

Table 3. Pearson correlation coefficient – correlation between the BMI value and eating behaviors (N=213)

	BMI	
	R	P
KZZJ	0,09	0,164
Habitual eating	0,02	0,771
Emotional eating	0,13	0,066
Dietary restrictions	0,10	0,164

In the study sample, there is a weak positive relationship between the intensity of sensitivity and the overall result in the field of eating behaviors. Additionally, sensitivity intensity is positively related to all FRBQ factors – weakly with "habitual eating" and "dietary restrictions", and moderately with "emotional eating." This means that the higher the level of sensitivity, the higher the level of habitual eating – regardless of the feeling of fullness, under the influence of affect, and the greater use of restrictions in the diet." This in turn

Table 4. Pearson correlation coefficient – correlation between the difference between the current and expected body weight and eating behaviors (N=213)

	KZZJ		Habitual eating		Emotional eating		Dietary restrictions	
	R	p	R	P	R	P	R	p
The difference between the current and expected body weight	0.17*	0.009	0.12	0.073	0.18*	0.009	0.14*	0.036

*low correlation, ** moderate correlation, *** high correlation

Table 5. Spearman's rank correlation coefficient –relationship between the adequacy of support and the burden of stress and eating behaviors (N=213)

	KZZJ		Habitual eating		Emotional eating		Dietary restrictions	
	R	p	R	P	R	P	R	p
The adequacy of support	0.09	0.192	0.01	0.848	-0.14*	0.049	- 0.14	0.055
The burden of stress	0.31**	0.000	0.20*	0.010	0.29*	0.000	0.31**	0.000

*low correlation. ** moderate correlation. *** high correlation

provided an answer to the main research question by demonstrating a significant relationship between the level of sensitivity and the eating behaviors of the studied women.

As mentioned, the own research also controlled for several secondary variables. This allowed for the verification of their relationships with the main variables. First, the correlation between the BMI value and eating behaviors and their dimensions in the studied women was checked (Table 3).

No association between the BMI value and eating behaviors and their dimensions in the study sample was found ($r = 0.09$; $p = 0.164$), but it was proven (Table 4) that the difference between the current and expected body weight is significantly related to eating behaviors.

It was found that in the group of studied women there is a positive, weak relationship in terms of the discrepancy between real and ideal body weight and overall eating behaviors as well as "emotional eating" and "dietary restrictions". This means that the greater the disparity between the real and ideal body weight, the greater the tendency of the studied women to exhibit abnormal eating behaviors, especially in terms of eating under the influence of affect and following a dietary regime.

Next, the relationship between the adequacy of support and the burden of stress and eating behaviors and their dimensions was checked (Table 5).

Analysis of the research material showed that the adequacy of support in the studied sample is weakly associated with "emotional eating", with a greater sense of inadequacy of support leading to a greater tendency of the studied women to eat under the influence of emotions. At the same time, positive

Table 6. Spearman's rank correlation coefficient– relationship between the sensitivity intensity and the adequacy of support and the burden of stress (N=213)

	SWW	
	Rs	p
The adequacy of support	-0.14*	0.054
The burden of stress	0.30**	0.000

*low correlation. ** moderate correlation. *** high correlation

relationships (from weak to moderate) were noted between the assessment of stress burden and overall eating behaviors and all their dimensions, indicating that the higher the assessment of stress burden, the greater the intensity of abnormal eating behaviors.

Correlations between the adequacy of support and stress burden with sensitivity intensity were also examined in the studied group of women (Table 6).

It turned out that in the studied sample there is a weak negative relationship between sensitivity intensity and the assessment of support adequacy, meaning the higher the sensitivity intensity, the lower the adequacy of support is rated among the studied women. Moreover, a moderate positive relationship between sensitivity intensity and stress burden assessment was proven. Thus, the greater the sensitivity intensity in the studied sample, the more stress is felt by the studied women as burdensome.

3. Discussion

As indicated by the analysis of literature sources conducted by the authors – no studies have been described to date in which correlations between eating behaviors and the intensity of sensory processing sensitivity were verified in the framework designed by the authors. However, this does not mean that the issue of sensitivity was overlooked in these studies. For example, the relationship between atypical sensory processing and high sensitivity (Saure, Lepistö-Paisley, Raevuori, Laasonen, 2022) and high sensitivity and disturbed body perception (Sagardoy et al., 2015) in individuals with *anorexia nervosa* was verified and confirmed. However, in the studies of Tasuku Kitajima and his team (2022), which compared the functioning of children and adolescents diagnosed with *anorexia nervosa* (AN) and healthy ones, it was proven that avoiding sensory stimuli in the clinical group may be a kind of "scar" (consequence/defect) due to chronic hunger, not the cause of anorexia nervosa.

In contrast, Naish and Harris (2012) verified the relationship between high sensitivity and a tendency towards obesity. It turned out that food intake was much higher for people with high sensitivity compared to those with low intensity of this trait. Moreover, individual results in terms of sensory sensitivity were positively correlated with self-description of emotional eating, suggesting that people more sensitive to the sensory properties of food have a more intense perception of tastiness, leading to greater food consumption. Farrow and Coulthard (2012; 2018) in their research – similar to Bell and Wildbur (2017) – proved that picky eating and food neophobia are linked to anxiety and sensory sensitivity.

Thus, it can be recognized that the results of our own research regarding the documentation of the relationship between eating behaviors (primarily emotional eating) and high sensory processing sensitivity are consistent with the findings of other researchers. However, it should be noted that the referenced project was carried out in the general population, while the cited studies were conducted among individuals with disturbed relationships to food and their own bodies.

In our study, it was also shown that it is not so much the BMI value, but the difference between actual and ideal body weight that is related to eating behaviors and all their dimensions – habitual eating, emotional eating, and dietary restrictions. This observation is consistent with numerous reports. Muennig, Jia, Lee, Lubetkin (2008) proved that the difference between actual and desired body weight is a stronger predictor of mental health than body mass index (BMI). According to Steineberg and his team (2023), a significant difference in terms of actual and expected weight poses a greater risk of relapse in people with anorexia nervosa than a low BMI. Meanwhile, Zarychta and colleagues (2022) showed that young people who had a smaller discrepancy between actual and ideal body weight were more satisfied with their physicality, thus being less prone to adopting unhealthy eating practices.

In our own studies, we also proved that a lack of perceived support and a subjectively estimated higher level of stress positively correlate with abnormal eating behaviors. This result is consistent with the findings of other authors. For example, Łuczak (2016) empirically documented that the global stress level of the subjects significantly correlates with emotional eating and habitual eating. The latter is

related to stress factors such as lack of support and a feeling of psychological burden. In other studies (Potocka, Mościcka, 2011), it was noted that the more the women studied focused on emotions, the more they manifested abnormal eating habits. Those who felt high levels of stress thought about food more often, snacked in secret, and viewed food as an important part of their lives compared to those who experienced average stress levels.

Based on the collected empirical material, we also confirmed the relationship between the intensity of sensitivity and the evaluation of the adequacy of support and the severity of stress in the study sample. Studies indicate (Greven et al., 2019) that high sensory processing sensitivity increases – on one hand – the risk of stress-related problems in response to a negative environment, but if the environment is favorable, it can also be beneficial. Haberlin (2015) argues that particularly talented people may suffer from subjectively higher stress levels due to their characteristics, such as perfectionist tendencies and increased sensitivity. Therefore, we can conclude that the findings from our research are consistent with the existing reports of researchers.

Summary

In summary, based on the collected research material, the main assumption about the occurrence of the relationship between the intensity of sensitivity and eating behaviors in the studied women was confirmed. The higher the level of intensity of sensitivity, the greater the propensity for abnormal eating behaviors. However, no co-variation of BMI and overall eating behaviors and their dimensions was found. Nevertheless, a correlation was demonstrated between the difference in actual and ideal body weight and eating behaviors, both in their general dimension and in terms of emotional eating and dietary restrictions. Additionally, the analysis results documented that the greater the difference between actual and ideal body weight, the greater the propensity of the studied women to exhibit abnormal eating behaviors. Furthermore, a partial relationship between the assessment of the adequacy of support and the severity of stress and eating behaviors was confirmed. It turned out that: 1) the stronger the feeling of inadequacy of support among the studied women, the greater their tendency to eat under the influence of emotions and 2) the higher the level of stress they perceived as burdensome, the greater the tendency to various types of abnormal eating behaviors they revealed.

Although the referenced studies have some limitations (e.g., they were conducted *online*, a correlational research model was used, and no control group was selected), their results seem to have explanatory significance, enriching knowledge about the mechanisms of functioning of highly sensitive people. Additionally, they fit into the stream of research that perceives high sensitivity as a risk factor for forming an abnormal relationship to eating in a non-clinical population and thus may form the basis for designing various forms of prevention, especially in the population of young women.

Bibliography

Acevedo, B., Aron, E., Pospos, S., Jessen, D. (2017). The functional highly sensitive brain: a review of the brain circuits underlying sensory processing sensitivity and seemingly related disorders. *Philosophical Transactions of the Royal Society B: Biological Sciences,* 374–381. https://doi.org/10.1098/rstb.2017.0161

Aron, E. (2017). *The Highly Sensitive Person. How to Thrive When the World Overwhelms You.* Londyn: Harper Collins Publishers.

Aron, E.N., Aron, A. (1997). Sensory-processing sensitivity and its relation to introversion and emotionality. *Journal of Personality and Social Psychology, 73*, 345–368. https://doi.org/10.1037/0022-3514.73.2.345

Aron, E.N., Aron, A., Jagiellowicz, J. (2012). Sensory processing sensitivity: A review in the light of the evolution of biological responsivity. *Personality and Social Psychology Review, 16*(3), 262–282. https://doi.org/10.1177/1088868311434213

Aron, E.N. (1996). *The Highly Sensitive Person*. Broadway Books.

Assary E., Zavos H.M.S., Krapohl E., Keers R., Pluess M. (2020). Genetic architecture of Environmental Sensitivity reflects multiple heritable components: a twin study with adolescents. *Molecular Psychiatry, 26*, 4896–4904. https://doi.org/10.1038/s41380-020-0783-8

Baryła-Matejczuk M. (2019). A model of support for highly sensitive children of preschool and early school age. *Avances en Psicología Clinica, 272-280.*

Bedyńska, S., Cypryańska, M. (2013). *Statystyczny drogowskaz.* Warszawa: Szkoła Wyższa Psychologii Społecznej.

Bell, K., Wildbur, D. (2017). Self-Disgust within Eating Disordered Groups: Associations with Anxiety. *Disgust Sensitivity and Sensory Processing, 25*(5), 373-380. https://doi.org/10.1002/erv.2529

Brytek-Matera, A., Charzyńska, E. (2009). Poznawcze i behawioralne determinanty zaburzeń odżywiania u kobiet z otyłością. *Endokrynologia, Otyłość i Zaburzenia Przemiany Materii, 5*(2), 45–50.

Chen, C., He, Q., Chen, C., He., L. (2011). Contributions of Dopamine-Related Genes and Environmental Factors to Highly Sensitive Personality: A Multi-Step Neuronal System-Level Approach. *Plos One, 6*(7), e21636. https://doi.org/10.1371/journal.pone.0021636

Coulthard, H., Williamson, I., Palfreyman, Z., & Lyttle, S. (2018). Evaluation of a pilot sensory play intervention to increase fruit acceptance in preschool children. *Appetite, 120*, 609–615. https://doi.org/10.1016/j.appet.2017.10.011

Czepczor, K., Brytek-Matera, A. (2017). *Jedzenie pod wpływem emocji*. Warszawa: Difin.

Eşkisu, M., Ağırkan, M., Çelik, O., Yalçın, R., Haspolat, N. (2022). Do the Highly Sensitive People Tend to have Psychological Problems Because of Low Emotion Regulation and Dysfunctional Attitudes? *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 40*, 683-706. https://doi.org/10.1177/0146167210371383

Evers, C., Stok, F.M., de Ridder, D.T. (2010). Feeding Your Feelings: Emotion Regulation Strategies and Emotional Eating. *Personality and Social Psychology Bulletin, 36*(6), 792-804. https://doi.org/10.1177/0146167210371383

Farrow, C.V., Coulthard, H. (2012). Relationships between sensory sensitivity, anxiety and selective eating in children. *Appetite, 58*(3), 842-6. https://doi.org/10.1016/j.appet.2012.01.017

Greven, C.U., Lionetti, F., Booth, C., Aron, E.N., Fox, E., Schendan, H.E., Pluess, M., Bruining, H., Acevedo, B., Bijttebier, P., Homberg, J. (2019). Sensory Processing Sensitivity in the context of Environmental Sensitivity: A critical review and development of research agenda. *Neuroscience & Biobehavioral Reviews, 98*, 287–305. https://doi.org/10.1016/j.neubiorev.2019.01.009

Haberlin, S. (2015). Don't stress: What do we really know about teaching gifted children to cope with stress and anxiety? *Gifted and Talented International, 30*(2), 146-151. https://doi.org/10.1080/15332276.2015.1137465

Jaworski, M., Fabisiak, A. (2017). Psychospołeczne determinanty wyboru żywności. *Zeszyty Naukowe Uczelni Vistula*, *54*(3), 17-29.

Juruć, A., Wierusz-Wysocka, B., Bogdański, P. (2011). Psychologiczne aspekty jedzenia i nadmiernej masy ciała. *Farmacja Współczesna, 4*, 119-126.

Kitajima, T., Otani, R., Inoue, T., Matsushima, N., Matsubara, N., Sakuta, R. (2022). Sensory processing in children and adolescents shortly after the onset of anorexia nervosa: a pilot study. *BioPsychoSocial Med*icine, 16-27. https://doi.org/10.1186/s13030-022-00256-z

Korwin-Szymanowska, A., Tuszyńska, L. (2015). Zachowania żywieniowe jako nieodłączny element edukacji zdrowotnej – raport z badań. (W:) A. Wolska-Adamczyk (red.), *Znaczenie racjonalnego żywienia w edukacji zdrowotnej,* 23-38. Warszawa: WSIiZ.

Łuczak, A. (2016). Czynniki stresogenne i sytuacje trudne oraz ich związek z emocjonalnym i nawykowym przejadaniem się i jego konsekwencjami w grupie *kierowców samochodów ciężarowych. Annales Universitatis Marie Curie-Skłodowska, 24(4),*193-206. https://doi.org/10.17951/j.2016.29.4.193

Mendoza, J. (2019). Eating Rewards the Gears of the Clock. *Trends in Endocrinology and Metabolism, 30*(5), 299-311. https://doi.org/10.1016/j.tem.2019.03.001

Muenning, P., Jia, H., Lee, R., Lubetkin, E. (2008). I Think Therefore I Am: Perceived Ideal Weight as a Determinant of Health. *American Journal of Public Health, 98*(3), 501-506. https://doi.org/10.2105/AJPH.2007.114769

Naish, K.R., Harris, G. (2012). Food intake is influenced by sensory sensitivity. PLoS One*, 7*(8):e43622. https://doi.org/10.1371/journal.pone.0043622

Ogińska-Bulik, N., Putyński, L. (2000). Kwestionariusz Zachowania Jedzeniowe Związane z Jedzeniem: konstrukcja i własności psychometryczne. *Folia Psychologica, 4*, 25-33.

Pluess, M. (2015). Individual Differences in Environmental Sensitivity. *Child Development Perspectives, 9*(3), 138-143. https://doi.org/10.1111/cdep.12120

Potocka, A., Mościcka, A. (2011). Stres oraz sposoby radzenia sobie z nim a nawyki żywieniowe wśród osób pracujących. *Medycyna Pracy, 62*(4), 377-388.

Sagardoy, R., Morales, G., Garcia, S., Julián, R., Fernández, A., Ostolaza, G., Martínez, G. (2015). Heightened sensitivity to somatosensory stimuli in anorexia nervosa: an exploratory study with the SASTCA scale. *Nutricion Hospitalaria, 31*(3), 1413-1422. https://doi.org/10.3305/nh.2015.31.3.8320

Saure, E., Lepistö-Paisley, T., Raevuori, A. Laasonen, M. (2022). Atypical Sensory Processing Is Associated With Lower Body Mass Index and Increased Eating Disturbance in Individuals With Anorexia Nervosa *Front. Psychiatry, 13*, https://doi.org/10.3389/fpsyt.2022.850594

Steinberg, D., Perry, T., Freestone, D., Hellner, M., Baker, J., Bohon, C. (2023). Evaluating differences in setting expected body weight for children and adolescents in eating disorder treatment. *International Journal of Eating Disorders, 56*(3), 595-603, https://doi.org/10.1002/eat.23868

Vien, C. (2015). Millennial women: How to woo a new generation of employees. *Journal of Accountancy, 220,* 26-30.

Zarychta, E., Mullan, B., Łuszczyńska, A. (2022). It doesn't matter what they say, it matters how they behave: Parental influences and changes in body mass among overweight and obese adolescents. *Appetite, 96*, 47-55. https://doi.org/10.1016/j.appet.2015.08.040

Ziółkowska, B., Wycisk, J. (2019). *Autodestruktywność dzieci i młodzieży.* Warszawa: Difin.

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New old life of patients after implantation of implantable cardioverter defibrillator[1]

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Abstract: The aim of this article is to provide a detailed description of patients' lives after implantation of an implantable cardioverter defibrillator (ICD). First, the basic function and mechanism of the device as well as the types of experienced shocks, including phantom shocks, are described. Then, the three most important dilemmas faced by patients are discussed: ICD implantation, battery replacement and device deactivation. Subsequently, the scientific literature on psychopathological symptoms in patients is reviewed. The latest results of research on anxiety and depression in patients with ICD are presented, and the relationship between anxiety and depression and experienced shocks is discussed in detail. The results of a few studies on the occurrence of stress and post-traumatic stress disorder in patients are also presented. In addition, the focus was on the perception of the implantation of a cardioverter defibrillator as a traumatic event. The aim of this article was also to discuss the quality of life of patients with a cardioverter defibrillator. The results of studies that indicate a deterioration, improvement or maintenance of the level of quality of life of patients comparable to those of healthy people are presented. In addition, a specific, important from the perspective of people with ICD aspect of the quality of life, which is the health-related quality of life, was discussed. The results of research in this area are also not unambiguous. In addition, predictors of health-related quality of life were indicated. The article also addresses the issue of changing the identity of patients after implantation of a cardioverter defibrillator. The results of research conducted in this field, which were most often of a qualitative nature, were discussed. In the discussion on the identity of people with ICD, changes in self-image were emphasized, but this issue was not a frequent subject of psychological research. Finally, the challenges faced by partners of patients with an implanted cardioverter defibrillator were characterized. Also in this area, most of the research was qualitative, and the data come from interviews with relatives of cardiac patients.
Keywords: identity, implantable cardioverter defibrillator, partner, psychopathology, quality of life

Introduction

An implantable cardioverter defibrillator (ICD) is a device surgically inserted under the skin, usually on the left side of the chest (Kazimierska, Suska-Bąk, Kowalik, Maciag & Smolis-Bąk, 2014). The device monitors cardiac activity and rapidly detects potentially fatal ventricular arrhythmias (Kuśmierz, Wleklik, Uchmanowicz, & Jaroch, 2016; Sobański, Brzezińska-Rajszys, Grodzicki et al., 2020). On sensing an irregular heartbeat, the ICD sends a strong electrical impulse to restore normal heart rhythm (Kazimierska et al., 2014). This can be done via antitachycardia pacing, which is not painful and barely noticeable by some patients, or high-energy shocks, felt by patients and usually painful (Kuśmierz et al., 2016; Sobański et al., 2020). Patients with an implantable cardioverter defibrillator sometimes report experiencing shocks despite the lack of evidence of their occurrence, which are referred to in the literature as phantom shocks (Bilanovic, Irvine, Kovacs et al., 2013; Ooi, He, Dong, & Wang, 2016). Depending on the methodology adopted, this phenomenon is reported to affect approximately 5–10% of patients (Amiaz et al., 2016; Starrenburg et al., 2014; Varghese, Geller & Ohlow, 2019).

Most patients with an ICD accept the need to use the device and the limitations associated with it (Januszkiewicz et al., 2022; Wójcicka, Lewandowski, Smolis-Bąk & Szwed, 2008). One year after ICD im-

1 Article in polish language: Nowe stare życie pacjentów po wszczepieniu kardiowertera defibrylatora https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Pale.pdf

plantation, the patients' level of psychological functioning is similar to that before the procedure (Burke, Hallas, Clark-Carter, White, & Connelly, 2003; Pedersen, Hoogwegt, Jordaens, & Theuns, 2013). Some people, however, find it challenging to adapt to the novel situation (Wójcicka et al., 2008). These patients consider the implantation of the ICD an unnecessary procedure – they have a negative viewpoint on follow-up evaluations, fail to observe medical recommendations and contemplate the removal of the device. Patients may perceive the ICD in two alternative ways – as an indicator of imminent death or as a life-saving device (Humphreys, Lowe, Rance & Bennett, 2016a).

Although living with an ICD brings a variety of challenges, patients describe different strategies for adapting to their new situation (Humphreys et al., 2016a). One such strategy is avoiding or limiting activities that they believe would cause a shock, such as sex or physical activity (Flemme, Hallberg, Johansson, & Strömberg, 2011; Humphreys et al., 2016a). Secondly, patients limit the sources which could provide them with information about the ICD to avoid inconsistent information and reduce anxiety (Humphreys et al., 2016a). Other tactics include: diverting their attention away from everyday problems, accepting their condition, determining new and achievable goals, and modifying previously set objectives (Flemme et al., 2011).

1. Making the decision

Making the decision to have an ICD implanted is a difficult time for patients. As found by Barisone et al. (2022), one of the most important motives quoted by cardiac patients when agreeing to such an intervention is the willingness to protect themselves against sudden death. Moreover, they express a sense of duty towards their family. At the same time, they are convinced that they practically have no other choice due to the risk to their lives. It should be noted that sometimes both patients and their relatives do not fully understand the mechanism and function of the ICD (Hill, McIlfatrick, Taylor, Dixon & Fitzsimons, 2022). This makes it difficult to make any device-related decisions (Lewis, Stacey & Matlock, 2014).

The second major decision facing patients is the aspect of battery replacement (Lewis et al., 2014). This particular issue has not been the subject of extensive research. Thylén et al. (2013) established that fewer than half of patients discuss battery replacement with their doctor. Those with a higher quality of life, under 65 years of age, carrying an ICD for a longer period of time, and those who have experienced a battery replacement before are more likely to do so.

ICD deactivation is an issue that raises a particularly large number of uncertainties and reflections, and many people are not even aware that such an option exists (Lewis et al., 2014). This is the third difficult decision that patients must face. This dilemma most often arises in relation to people nearing the end of their life who are receiving palliative care (Picco, 2020). According to expert opinion and clinical guidelines, ICD deactivation should be considered and discussed with the patient in an advanced disease stadium (Grądalski & Smyczyńska, 2015; Hill et al., 2022). The procedure is justified by the need to prevent pain and suffering associated with high-energy therapy (Sobanski et al., 2020). As heart failure progresses, the frequency of arrhythmias and, consequently, the frequency of device discharges increases, leading to the question of the balance of gains and losses associated with the ICD (Grądalski & Smyczyńska, 2015). The patients' final decision is dependent on numerous factors, including those linked to medical, ethical, medicolegal, religious and world outlook aspects (Sobański et al., 2020). According to patients, the potential deactivation of the ICD should be discussed before the device is implanted, which is rarely the case (Hill et al., 2022; Lee et al., 2017). This particular procedure is a relatively infrequent topic of discussion between doctors and patients. Goldstein, Lampert, Bradley, Lynn & Krumholz (2004) found that 30% of patients took part in such conversations, usually in the last days of their life. In a study by Herman, Stros, Curily, Kebzy & Osmancik (2013), almost half of the respondents indicated that they had never considered deactivating the device in an end-of-life situation. As many as 8% of people discussed the topic with their doctor, 40% wanted to take part in such a conversation, and around 40% of primary prevention patients and around 22% of

secondary prevention patients refused to raise the topic. Picco (2020) points out that patients should be aware, among others, that deactivating the ICD does not cause death and does not make it more painful, whereas defibrillation at the end of life can be painful, ineffective and stressful for the patient.

2. Anxiety and depression

Anxiety symptoms are frequently felt by both children (Eicken et al., 2006) and adults (Wójcicka et al., 2008) with an ICD. Matchett et al. (2008) point out that the feeling of anxiety is the strongest psychological symptom in patients, and it is most pronounced immediately after the implantation of the cardioverter defibrillator (van den Heuvel et al., 2022). Van der Lingen et al. (2023), in the process of carrying out the PSYCHE-ICD project, assessed the severity of anxiety symptoms in patients the day before device implantation. They found that almost a third of them presented mild to severe symptoms of anxiety. Such symptoms may continue for one (Pedersen et al., 2011) or even two years after ICD implantation (Frydensberg et al., 2020). Such anxiety, therefore, may develop into chronic anxiety. Furthermore, on occasion, relevant symptoms may develop over the subsequent years after the procedure (Pedersen et al., 2021). For this reason, patients should receive psychological support not only during the ICD implantation period but also in the following months and years. The source of patient anxiety may be the shocks (Tripp, Huber, Kuhl & Sears, 2019) and the device itself. Patients worry that the ICD may fail or stop working completely (Humphreys et al., 2016a; Moradi et al., 2022; Tagney, James & Albarran, 2003). Furthermore, they express concern about feeling pain during a shock (Humphreys et al., 2016a) and suffering an injury to the implantation site (Moradi et al., 2022). The fear of having to reduce sexual activity also plays a vital role (Dubin, Batsford, Lewis & Rosenfeld, 1996; Tagney et al., 2003).

Much attention has been paid by researchers to depression in ICD patients. Its symptoms can be observed at every stage of treatment. Van der Lingen et al. (2023) evaluated depression symptoms in patients the day before the implantation procedure. It emerged that a third of the patients presented symptoms of mild, moderate or severe depression. These data are significant given that initial symptom severity is correlated with symptom severity in subsequent months (Andersen et al., 2023; Freedenberg, Thomas & Friedmann, 2011). Moreover, depression symptoms may develop within the two years following the procedure (Pedersen et al., 2021). Oshvandi, Khatiban, Ghanei Gheshlagh & Razavi (2020) reviewed the available publications to assess the prevalence of depression in ICD patients. The researchers established that almost one in four patients experience this disorder. In an earlier review of the literature (Magyar-Russell et al., 2011), the indicators provided were slightly lower and pointed to depression symptoms in one in five people with an ICD.

As found by Zormpass et al. (2022), the severity of depression is associated with smoking, obesity and reduced quality of life. The researchers, therefore, advocate that the evaluation of depressive symptoms and lifestyle factors should form part of the treatment plan. Similar conclusions are put forward by Frydensberg et al. (2020), who recommend systematic screening for anxiety and depression not only immediately after ICD implantation but especially after 2-3 months, with a view of identifying high-risk patients.

Considering the features of the ICD, one of the key issues is the relation between the incidence of depression and anxiety in patients and the shocks they receive. Many researchers indicate that patients experience most strongly anxiety linked to the discharge of the device (Humphreys et al., 2016a; Mańkowska- Załuska et al., 2015; Maryniak, Szumowski, Orczykowski, Przybylski & Walczak, 2009; Schulz et al., 2013), which is a sudden and unexpected phenomenon (Barisone et al., 2022). Patients are apprehensive of not only the first shock but also every subsequent shock (Humphreys et al., 2016a). This is because a discharge of the ICD generates a conviction that the heart is not functioning properly, which further heightens anxiety (Barisone et al., 2022) and reminds patients of their mortality (Humphreys et al., 2016a). The research conducted by Pedersen, Hoogwegt, Jordaens & Theuns (2013) established that shocks significantly deteriorated the functioning of patients, as manifested in their anxiety

and depression. Ghezi et al. (2023) reviewed articles published up to August 2022 and concluded that the prevalence of anxiety and depression is particularly high in patients experiencing shocks. Rottmann, Skov, Andersen, Theuns & Pedersen (2018) came to a similar conclusion that shocks hinder adaptation to new situations, which can lead to undesirable symptomatology. It has to be emphasised, however, that this dependency is not confirmed by all researchers. The disparate concerns that patients have in relation to the ICD may be connected to their anxiety and depressive symptoms, regardless of the shocks experienced (Pedersen, van Domburg, Theuns, Jordaens, & Erdman, 2005). According to Kamphuis, De Leeuw, Derksen, Hauer & Winnubst (2003), manifestations of anxiety and depression are a response to perceived physical and psychological difficulties, independent of the ICD discharges. Lindekilde and her team (2022) found that baseline anxiety is, similarly to depression, associated with a higher risk of death, but not with the occurrence of ICD discharges. The lack of such a relationship is also pointed out by Dougherty & Hunziker (2009). Prudente (2005) indicates that phantom shocks can be a manifestation of anxiety and depression. Although the researcher emphasises the significant role of patients' awareness of this phenomenon, she highlights that there is no direct link between psychopathology and the occurrence of phantom shocks.

3. Stress and post-traumatic stress disorder

As many as 10-15% of ICD patients experience stress, and its symptoms can even be observed more than twenty years after device implantation (Thylén et al., 2014). Despite the above, researchers pay far less attention to stress and post-traumatic stress disorder in people with an implantable cardioverter defibrillator than to other psychological consequences of living with an ICD. An aspect frequently addressed in the literature is the role of the shocks patients experience in the aetiology of stress. However, it is impossible to unequivocally define this role based on the research performed to date. Thomas & Friedmann (2011) found that discharges of the ICD play a crucial role in generating stress in patients. By comparison, Thylén, Moser, Strömberg, Dekker & Chung (2016) indicate that stress in patients is much more strongly triggered by their anxieties connected to the ICD than by shocks themselves.

Experiencing cardiovascular disease and the need for an implantable cardioverter defibrillator can be a traumatic event for many patients (Ladwig et al., 2008), causing them to develop post-traumatic stress disorder (PTSD), characterised by repeated reliving of the trauma, avoidance of related stimuli and overstimulation (World Health Organization, 1992). This results from the fact that the shocks experienced can be traumatic stressors, reminding patients of their life-threatening illness (Neel, 2000). Important predictors of PTSD in ICD patients include younger age, the severity of depressive symptoms and type D personality (Habibović, Denollet & Pedersen, 2017). It was established that one in five patients develops full-blown post-traumatic stress disorder between two and six years after the implantation of an ICD (von Känel, Baumert, Kolb, Cho & Ladwig, 2011). Versteeg, Theuns, Erdman, Jordaens & Pedersen (2011) analysed PTSD symptoms in patients on two occasions – first three and then six months after ICD implantation. Three months after the procedure, almost 12% of the subjects met the diagnostic criteria for PTSD, and 60% of these patients still met the same criteria six months after the implantation. Furthermore, six months after the surgery, 4% of patients who previously did not meet the criteria for PTSD now did. Similar indicators were arrived at by Ghezzi et al. (2023) by diagnosing post-traumatic stress disorder in almost 13% of their study subjects. With regard to paediatric ICD patients, it was established that parents of these patients are more likely to meet the diagnostic criteria for PTSD than the children (Schneider et al., 2022). Versteeg et al. (2011) also found that the strongest predictor of PTSD during the first evaluation were the shocks experienced, but type D personality and high levels of anxiety before the procedure also played an important role. Feelings of anxiety and fear associated with the implantation of the ICD (but not shocks) were significant predictors of PTSD six months after surgery.

4. Quality of life

Having to live with an ICD and the prospect of potential shocks are factors with a negative impact on patients' quality of life. However, this particular dependency is not easy to describe. Some researchers point to a reduction in the quality of life in ICD patients (Lévesque et al., 2020; Thomas et al., 2006). The predictors of a decrease in the quality of life include female gender, not having a job outside the home, experiencing shocks, negative experiences with the ICD, higher levels of ICD anxiety and the presence of anxiety, depression and type D personality (Groeneveld, Matta, Suh, Heidenreich, & Shea, 2006; Miller et al., 2019; Sears, Lewis, Kuhl, & Conti, 2005). Anxiety and depression are also significant predictors of the quality of life in paediatric patients (DeMaso et al., 2004). In contrast, some researchers point to an improved quality of life after device implantation (Januszkiewicz et al., 2022; Januszkiewicz et al., 2023; Kindermann et al., 2021). As established by Bednarek et al. (2014), this is made possible by educating patients about the design and operating mechanism of the ICD, the method of its implantation and the basic recommendations for the time before and after the procedure. In contrast with the research discussed above, Da Silva et al. (2018) point to the lack of dependency of the quality of life on ICD discharges. They reviewed seven studies comprising almost six thousand participants.

A large share of researchers choose to focus on a specific aspect of the quality of life, i.e. health-related quality of life (HRQoL). Some studies indicate that health-related quality of life in ICD patients is lower than in healthy individuals (Magnusson, Mattsson, Wallhagen & Karlsson, 2021; Noyes et al., 2007). Health-related quality of life in children and adolescents was also found to be reduced and similar to that of cardiac patients (Pyngottu, Werner, Lehmann, & Balmer, 2019). Other researchers indicate that the level of health-related quality of life in ICD patients is similar to the level observed in the general population (van den Heuvel et al., 2022) and the population of cardiac patients treated using different methods (Bundgaard et al., 2019; Leosdottir et al., 2006), and that it increases over time (van den Heuvel et al., 2022). In a study by Israelsson, Thylén, Strömberg, Bremer & Årestedt (2018), most ICD patients with a history of cardiac arrest rated their health-related quality of life as acceptable and at a similar level to that of healthy individuals. When explaining these positive results, researchers point to regular follow-up visits and a heightened sense of control. In contrast, lower health-related quality of life compared to the general population was associated with being unemployed, having comorbidities, perceiving a decrease in control and having a type D personality. Other studies found that female gender (Israelsson et al., 2018; van den Heuvel et al., 2022), lower education (van den Heuvel et al., 2022) and high levels of anxiety and depression (Hammash et al., 2019) are important risk factors for reduced health-related quality of life.

5. New identity

One of the key topics that emerge in the narratives of patients with an ICD when they discuss changes in their lives is the change in their identity (Pasyar, Sharif, Rakhshan, Hossein Nikoo & Nava, 2017). This issue was primarily explored by means of qualitative research. Patients place particular emphasis on their reduced ability or inability to return to the roles they previously held, particularly their professional roles (Humphreys et al., 2016a; Moradi et al., 2022). Moreover, their attempts to reclaim their former self often generate feelings of disappointment (Humphreys et al., 2016a). Patients recognise themselves as disabled (Moradi et al., 2022) and emphasise their feelings of dependency, worthlessness and humiliation compared to how they felt in the past (Pasyar et al., 2017). According to research by Barisone et al. (2022), patients feel that their lives have changed dramatically, and the suggestions directed towards them about the need to lead a 'normal life' make them feel misunderstood. For this reason, ICD patients find support groups to be particularly useful. Such groups allow them to share their feelings with people with similar experiences.

After ICD implantation, patients have a different perception of their body, and their self-image also changes as a result. The sense of having a foreign

object inside their body makes it difficult for them to adapt to the new situation (Moradi et al., 2022; Pasyar et al., 2017). Patients are often surprised to find that the device is larger than they expected, that it protrudes from the body, its shape is clearly visible under the skin, and that the incision is under the collarbone instead of close to the heart (Humphreys et al., 2016a). Such a protrusion at the site of the device implantation or scarring evokes feelings of embarrassment (Frydensberg, Skovbakke, Pedersen & Kok, 2018). Furthermore, patients feel that their life is supported by a machine (Moradi et al., 2022). The device itself can be a source of physical discomfort. It is reported particularly by those patients who present difficulties in adapting to the new situation or those who were not convinced of the decision to have an ICD implanted (Humphreys et al., 2016a).

6. Partners of ICD patients

When discussing the lives of ICD patients, it is also important to mention how the implantation of the device affects the lives of their partners. They manifest similar levels of depressive symptoms (Pedersen et al., 2009; Rottmann et al., 2018), similar levels of stress (Van den Broek, Habibović & Pedersen, 2010) and higher levels of anxiety than the patients themselves (Pedersen et al., 2009; Rottmann et al., 2018). Van den Broek et al. (2010) established that the greatest concerns were raised by partners with regard to the care over ICD patients and potential overprotection, the change in roles previously performed, the feeling of helplessness and uncertainty resulting from shocks, the resumption of sexual activity the potential of shocks during sexual activity, and the patients' ability to drive. As part of their research, Humphreys et al. (2016b) conducted semi-structured interviews with eighteen partners of ICD patients. The respondents mentioned concerns linked to the risk of cardiac problems in the future; however, they did not always share these concerns with their partners. A considerable challenge for them was the change from a parallel relation to a relation between the carer and the person receiving care. For many respondents, the most important objective was the return to normality, understood as a return to the state before their loved ones fell ill.

Conclusion

Patients living with an implantable cardioverter defibrillator are faced with a variety of challenges – starting with the implantation decision and ending with the dilemma of having to decide about the deactivation of the device. Some studies show that following ICD implantation, patients adapt well to their new life. It should be remembered, however, that some patients find the adaptation process difficult. Patients may experience severe anxiety and present symptoms of depression. A large share of researchers link both anxiety and depression with the discharge of the device. That being said, research findings in this area are not consistent. Some researchers validate such a correlation, while some point to alternative grounds for the psychopathological symptoms. Most researchers agree that these symptoms can occur at any stage of an ICD patient's life – from implantation until the death of the patient. The implantation of the implantable cardioverter defibrillator is also a source of stress for the patient, with some patients meeting the diagnostic criteria for post-traumatic stress disorder. The difficulty in adapting to a new life with an ICD, as well as the emerging psychopathological symptoms, also have an effect on patients' quality of life. Some patients consider the ICD as a life-saving device, while others regard it as a tool that restricts and hinders their functioning. Moreover, ICD patients point to the changes taking place in their selfhood and their self-image. It is also important to mention that the implantation of the ICD has an effect on the life of partners of patients with an ICD. Finding the situation demanding, they also may experience symptoms of anxiety or depression.

Bibliography

Amiaz, R., Asher, E., Rozen, G., Czerniak, E., Glikson, M. & Weiser, M. (2016). Do implantable cardioverter defibrillators contribute to new depression or anxiety symptoms? A retrospective study. *International Journal of Psychiatry in Clinical Practice*, *20*(2), 101-105. https://doi.org/10.3109/13651501.2016.1161055

Andersen, C.M., Johansen, J.B., Wehberg, S., Nielsen, J.C., Riahi, S., Haarbo, J., Philbert, B.T. & Pedersen, S.S. (2023). Sex differences in the course of implantable cardioverter defibrillator concerns (Results from the Danish national DEFIB-WOMEN study). *Journal of Psychosomatic Research*, *164*, 111072. https://doi.org/10.1016/j.jpsychores.2022.111072

Barisone, M., Hayter, M., Ghirotto, L., Catania, G., Zanini, M., Dal Molin, A., Sasso, L., & Bagnasco, A. (2022). The experience of patients with an implantable cardioverter-defibrillator: a systematic review and meta-synthesis of qualitative studies. *European Journal of Cardiovascular Nursing*, *21*(7), 677-686. https://doi.org/10.1093/eurjcn/zvab135

Bednarek, A., Peregud-Pogorzelska, M., Kazmierczak, J., & Kornacewicz-Jach, Z. (2014). Jakość życia pacjentów po implantacji kardiowertera-defibrylatora. *Medycyna Ogólna i Nauki o Zdrowiu*, *20*(3), 256-259. https://doi.org/10.5604/20834543.1124653

Berg, S.K., Moons, P., Zwisler, A.D., Winkel, P., Pedersen, B.D., Pedersen, P.U., & Svendsen, J.H. (2013). Phantom shocks in patients with implantable cardioverter defibrillator: results from a randomized rehabilitation trial (COPE-ICD). *Europace*, *15*(10), 1463-1467. https://doi.org/10.1093/europace/eut087

Bilanovic, A., Irvine, J., Kovacs, A.H., Hill, A., Cameron, D., & Katz, J. (2013). Uncovering phantom shocks in cardiac patients with an implantable cardioverter defibrillator. *Pacing and Clinical Electrophysiology*, *36*(6), 673-683. https://doi.org/10.1111/pace.12116

Bundgaard, J.S., Thune, J.J., Nielsen, J.C., Videbæk, R., Haarbo, J., Bruun, N.E., ... & Mogensen, U.M. (2019). The impact of implantable cardioverter-defibrillator implantation on health-related quality of life in the DANISH trial. *EP Europace*, *21*(6), 900-908. https://doi.org/10.1093/europace/euz018

Burke, J., Hallas, C.N., Clark-Carter, D., White, D., & Connelly, D. (2003). The psychosocial impact of the implantable cardioverter defibrillator: a meta-analytic review. *British Journal of Health Psychology*, *8*(2), 165-178. https://doi.org/10.1348/135910703321649141

da Silva, K.R., Costa, R., Rodrigues, C.G., Schasechter, A., Nobre, M.C., Passman, R., & Mark, D.B. (2018). Quality of life in patients with implantable cardioverter–defibrillator: systematic review of randomized controlled trials. *European Journal of Cardiovascular Nursing*, *17*(3), 196-206. https://doi.org/https://doi.org/10.1177/1474515117739619

DeMaso, D.R., Lauretti, A., Spieth, L., Van Der Feen, J.R., Jay, K.S., Gauvreau, K., Walsh, E.P. & Berul, C.I. (2004). Psychosocial factors and quality of life in children and adolescents with implantable cardioverter-defibrillators. *The American Journal of Cardiology*, *93*(5), 582-587. https://doi.org/10.1016/j.amjcard.2003.11.022

Dougherty, C.M., & Hunziker, J. (2009). Predictors of implantable cardioverter defibrillator shocks during the first year. *Journal of Cardiovascular Nursing*, *24*(1), 21-28. https://doi.org/10.1097/01.JCN.0000317473.42801.a8

Dubin, A.M., Batsford, W.P., Lewis, R.J., & Rosenfeld, L.E. (1996). Quality of life in patients receiving implantable cardioverter defibrillators at or before age 40. *Pacing and Clinical Electrophysiology*, *19*(11), 1555-1559. https://doi.org/10.1111/j.1540-8159.1996.tb03180.x

Eicken, A., Kolb, C., Lange, S., Brodherr-Heberlein, S., Zrenner, B., Schreiber, C., & Hess, J. (2006). Implantable cardioverter defibrillator (ICD) in children. *International Journal of Cardiology*, *107*(1), 30-35. https://doi.org/10.1016/j.ijcard.2005.02.048

Flemme, I., Hallberg, U., Johansson, I., & Strömberg, A. (2011). Uncertainty is a major concern for patients with implantable cardioverter defibrillators. *Heart & Lung*, *40*(5), 420-428. https://doi.org/10.1016/j.hrtlng.2011.02.003

Freedenberg, V., Thomas, S.A., & Friedmann, E. (2011). Anxiety and depression in implanted cardioverter-defibrillator recipients and heart failure: a review. *Heart Failure Clinics*, *7*(1), 59-68. https://doi/org/10.1016/j.hfc.2010.08.008

Frydensberg, V.S., Skovbakke, S.J., Pedersen, S.S., & Kok, R.N. (2018). Body image concerns in patients with an implantable cardioverter defibrillator: a scoping review. *Pacing and Clinical Electrophysiology*, *41*(9), 1235-1260. https://doi.org/10.1111/pace.13421

Frydensberg, V.S., Johansen, J.B., Möller, S., Riahi, S., Wehberg, S., Haarbo, J., Philbert, B., Jørgensen, O.D., Larsen, M.L., Nielsen, J.C., & Pedersen, S.S. (2020). Anxiety and depression symptoms in Danish patients with an implantable cardioverter-defibrillator: prevalence and association with indication and sex up to 2 years of follow-up (data from the national DEFIB-WOMEN study). *EP Europace*, *22*(12), 1830-1840. https://doi.org/10.1093/europace/euaa176

Ghezzi, E.S., Sharman, R.L., Selvanayagam, J.B., Psaltis, P.J., Sanders, P., Astley, J.M., Knayfati, S.,Batra, V. & Keage, H.A. (2023). Burden of mood symptoms and disorders in implantable cardioverter defibrillator patients: a systematic review and meta-analysis of 39 954 patients. *Europace*, *25*(6), euad130. https://doi.org/10.1093/europace/euad130

Goldstein, N.E., Lampert, R., Bradley, E., Lynn, J., & Krumholz, H.M. (2004). Management of implantable cardioverter defibrillators in end-of-life care. *Annals of Internal Medicine*, *141*(11), 835-838. https://doi.org/10.7326/0003-4819-141-11-200412070-00006

Grądalski, T., & Smyczyńska, M. (2015). Dezaktywacja wszczepialnego kardiowertera-defibrylatora u kresu życia. *Palliative Medicine/Medycyna Paliatywna*, *7*(3), 201-204.

Groeneveld, P.W., Matta, M.A., Suh, J.J., Heidenreich, P.A., & Shea, J.A. (2006). Costs and quality-of-life effects of implantable cardioverter-defibrillators. *The American Journal of Cardiology*, *98*(10), 1409-1415. https://doi.org/10.1016/j.amjcard.2006.06.041

Habibović, M., Denollet, J., & Pedersen, S.S. (2017). Posttraumatic stress and anxiety in patients with an implantable cardioverter defibrillator: Trajectories and vulnerability factors. *Pacing and Clinical Electrophysiology*, *40*(7), 817-823. https://doi.org/10.1111/pace.13090

Hammash, M., McEvedy, S.M., Wright, J., Cameron, J., Miller, J., Ski, C.F., Thompson, D.R., Biddle, M.J., Wimsatt, A., Schrader, M., Smith, R.V., Chung, M.L., & Moser, D.K. (2019). Perceived control and quality of life among recipients of implantable cardioverter defibrillator. *Australian Critical Care,* 32(5), 383-390. https://doi.org/10.1016/j.aucc.2018.08.005

Herman, D., Stros, P., Curila, K., Kebza, V., & Osmancik, P. (2013). Deactivation of implantable cardioverter-defibrillators: results of patient surveys. *Europace*, *15*(7), 963-969. https://doi.org/10.1093/europace/eus432

Hill, L.M., McIlfatrick, S., Taylor, B., Dixon, L., & Fitzsimons, D. (2022). Implantable cardioverter defibrillator (ICD) functionality: patient and family information for advanced decision-making. *BMJ Supportive & Palliative Care*, *12*(e2), e219-e225. https://doi.org/10.1136/bmjspcare-2019-001835

Humphreys, N.K., Lowe, R., Rance, J., & Bennett, P.D. (2016a). Living with an implantable cardioverter defibrillator: The patients' experience. *Heart & Lung*, *45*(1), 34-40. https://doi.org/10.1016/j.hrtlng.2015.10.001

Humphreys, N.K., Lowe, R., Rance, J., & Bennett, P.D. (2016b). Living with an implantable cardioverter defibrillator: The patients' experience. *Heart & Lung*, *45*(1), 34-40. https://doi.org/10.12968/bjca.2018.13.6.279

Israelsson, J., Thylén, I., Strömberg, A., Bremer, A., & Årestedt, K. (2018). Factors associated with health-related quality of life among cardiac arrest survivors treated with an implantable cardioverter-defibrillator. *Resuscitation, 132*, 78-84. https://doi.org/10.1016/j.resuscitation.2018.09.002

Januszkiewicz, Ł., Barra, S., Providencia, R., Conte, G., de Asmundis, C., Chun, J.K., Farkowski, M.M., Guerra, J.M.. Marijon, E. & Boveda, S. (2022). Long-term quality of life and acceptance of implantable cardioverter-defibrillator therapy: results of the European Heart Rhythm Association survey. *EP Europace*, *24*(5), 860-867. https://doi.org/10.1093/europace/euac011

Januszkiewicz, Ł., Grabowski, M., Farkowski, M.M., Życiński, P., Jędrychowski, T., Pytkowski, M., Chun, J.K. R., Guerra, J.M., Conte, G., Barra, S., Boveda, S. & Kempa, M. (2023). Implantable Cardioverter-Defibrillators in Poland Compared with other European Countries from the Patient's Perspective: Insights from the EHRA Patient Survey. *International Journal of Environmental Research and Public Health*, *20*(6), 5045. https://doi.org/10.3390/ijerph20065045

Kamphuis, H.C. M., De Leeuw, J.R. J., Derksen, R., Hauer, R.N. W., & Winnubst, J.A. M. (2003). Implantable cardioverter defibrillator recipients: quality of life in recipients with and without ICD shock delivery: a prospective study. *EP Europace*, *5*(4), 381-389. https://doi.org/10.1016/S1099-5129(03)00078-3

Kazimierska, B., Suska-Bak, N., Kowalik, I., Maciag, A., & Smolis-Bak, E. (2014). Wpływ wystąpienia incydentów" burzy elektrycznej" na jakość życia i aktywność fizyczną u pacjentów po implantacji kardiowertera-defibrylatora. *Postępy Rehabilitacji*, *28*(4), 35-41. https://doi.org/10.1515/rehab-2015-0011

Kindermann, I., Wedegärtner, S.M., Bernhard, B., Ukena, J., Lenski, D., Karbach, J., Schwantke, I., Ukena, Ch., & Böhm, M. (2021). Changes in quality of life, depression, general anxiety, and heart-focused anxiety after defibrillator implantation. *ESC Heart Failure*, *8*(4), 2502-2512. https://doi.org/10.1002/ehf2.13416

Kuśmierz, M., Wleklik, M., Uchmanowicz, I. & Jaroch, J. (2016). Wpływ kardiowertera-defibrylatora na jakość życia—przegląd badań. *Folia Cardiologica*, *11*(1), 28-36. https://doi.org/10.5603/FC.2016.0004

Ladwig, K.H., Baumert, J., Marten-Mittag, B., Kolb, C., Zrenner, B. & Schmitt, C. (2008). Posttraumatic stress symptoms and predicted mortality in patients with implantable cardioverter-defibrillators: results from the prospective living with an implanted cardioverter-defibrillator study. *Archives of General Psychiatry*, *65*(11), 1324-1330. https://doi.org/10.1001/archpsyc.65.11.1324

Lee, M.C., Sulmasy, D.P., Gallo, J., Kub, J., Hughes, M.T., Russell, S., Kellogg, A., Owens, S.G., Terry, P., & Nolan, M.T. (2017). Decision-making of patients with implantable cardioverter-defibrillators at end of life: family members' experiences. *American Journal of Hospice and Palliative Medicine®*, *34*(6), 518-523. https://doi.org/10.1177/1049909116641622

Lévesque, V., Laplante, L., Shohoudi, A., Apers, S., Kovacs, A.H., Luyckx, K., ... & Consortium, A.I. (2020). Implantable cardioverter-defibrillators and patient-reported outcomes in adults with congenital heart disease: An international study. *Heart Rhythm*, *17*(5), 768-776. https://doi.org/10.1016/j.hrthm.2019.11.026

Lewis, K.B., Stacey, D., & Matlock, D.D. (2014). Making decisions about implantable cardioverter-defibrillators from implantation to end of life: an integrative review of patients' perspectives. *The Patient-Patient-Centered Outcomes Research*, *7*, 243-260. https://doi.org/10.1007/s40271-014-0055-2

Lindekilde, N., Skov, O., Skovbakke, S.J., Johansen, J.B., Nielsen, J.C., & Pedersen, S.S. (2022). Anxiety and depression as risk factors for ICD-shocks and mortality in patients with an implantable cardioverter defibrillator–A systematic review. *General Hospital Psychiatry*, *78*, 96-107. https://doi.org/10.1016/j.genhosppsych.2022.07.008

Leosdottir, M., Sigurdsson, E., Reimarsdottir, G., Gottskalksson, G., Torfason, B., Vigfusdottir, M., Eggertsson, S., & Arnar, D.O. (2006). Health-related quality of life of patients with implantable cardioverter defibrillators compared with that of pacemaker recipients. *Europace*, *8*(3), 168-174. https://doi.org/10.1093/europace/euj052

Magnusson, P., Mattsson, G., Wallhagen, M., & Karlsson, J. (2021). Health-related quality of life in patients with implantable cardioverter defibrillators in Sweden: a cross-sectional observational trial. *BMJ Open*, *11*(7), e047053. https://doi.org/10.1136/bmjopen-2020-047053

Magyar-Russell, G., Thombs, B.D., Cai, J.X., Baveja, T., Kuhl, E.A., Singh, P.P., Barroso, M.M.B., Arthurs, E., Roseman, M., Amin, N. Marine, J.E. & Ziegelstein, R.C. (2011). The prevalence of anxiety and depression in adults with implantable cardioverter defibrillators: a systematic review. *Journal of Psychosomatic Research*, *71*(4), 223-231. https://doi.org/10.1016/j.jpsychores.2011.02.014

Mańkowska-Załuska, B., Nowek, A., Topolska, E., Oszczygieł, A., Chudzik, M., & Wranicz, J.K. (2015). Problemy psychologiczne pacjentów po implantacji kardiowertera-defibrylatora serca. *Folia Cardiologica*, *10*(5), 342-347. https://doi.org/10.5603/FC.2015.0065

Matchett, M., Sears, S.F., Hazelton, G., Kirian, K., Wilson, E. & Nekkanti, R. (2009). The implantable cardioverter defibrillator: its history, current psychological impact and future. *Expert Review of Medical Devices*, *6*(1), 43-50. https://doi.org/10.1586/17434440.6.1.43

Miller, J.L., Thylén, I., Elayi, S.C., Etaee, F., Fleming, S., Czarapata, M.M., Lennie, T.A., & Moser, D.K. (2019). Multi-morbidity burden, psychological distress, and quality of life in implantable cardioverter defibrillator recipients: results from a nationwide study. *Journal of Psychosomatic Research*, *120*, 39-45. https://doi.org/10.1016/j.jpsychores.2019.03.006

Moradi, Y., Mollazadeh, F., Jafarizadeh, H., Habibzadeh, H., Baghaei, R., Mohammadpour, Y. & Karimi, P. (2022). Challenges of living with an implantable cardioverter-defibrillator: A qualitative content analysis. *Nursing and Midwifery Studies*, *11*(4), 247-252.

Maryniak, A., Szumowski, Ł., Orczykowski, M., Przybylski, A., & Walczak, F. (2009). Anxiety and depression among the patients with frequent implantable cardioverter–defibrillator discharges. *International Journal of Cardiology*, *132*(2), e80-e81. https://doi.org/10.1016/j.ijcard.2007.08.027

Neel, M. (2000). Posttraumatic stress symptomatology in patients with automatic implantable cardioverter defibrillators: nature and intervention. *International Journal of Emergency Mental Health*, *2*(4), 259-263.

Noyes, K., Corona, E., Zwanziger, J., Hall, W.J., Zhao, H., Wang, H., Moss, A.J., & Dick, A.W. (2007). Health-related quality of life consequences of implantable cardioverter defibrillators: results from MADIT II. *Medical Care*, 377-385. https://doi.org/10.1097/01.mlr.0000257142.12600.c1

Ooi, S.L., He, H.G., Dong, Y., & Wang, W. (2016). Perceptions and experiences of patients living with implantable cardioverter defibrillators: a systematic review and meta-synthesis. *Health and Quality of Life Outcomes*, *14*(1), 1-29. https://doi.org/10.1186/s12955-016-0561-0

Oshvandi, K., Khatiban, M., Ghanei Gheshlagh, R., & Razavi, M. (2020). The prevalence of depression in patients living with implantable cardioverter defibrillator: a systematic review and meta-analysis. *Irish Journal of Medical Science (1971-)*, *189*, 1243-1252. https://doi.org/10.1007/s11845-020-02208-4

Pasyar, N., Sharif, F., Rakhshan, M., Hossein Nikoo, M., & Navab, E. (2017). Patients' experiences of living with implantable cardioverter defibrillators. *International Cardiovascular Research Journal*, *11*(3), 108-114.

Pedersen, S.S., van Domburg, R.T., Theuns, D.A., Jordaens, L., & Erdman, R.A. (2005). Concerns about the implantable cardioverter defibrillator: a determinant of anxiety and depressive symptoms independent of experienced shocks. *American Heart Journal*, *149*(4), 664-669. https://doi.org/10.1016/j.ahj.2004.06.031

Pedersen, S.S., Van Den Berg, M., Erdman, R.A., Van Son, J., Jordaens, L., & Theuns, D.A. (2009). Increased anxiety in partners of patients with a cardioverter-defibrillator: The role of indication for ICD therapy, shocks, and personality. *Pacing and Clinical Electrophysiology*, *32*(2), 184-192. https://doi.org/10.1111/j.1540-8159.2008.02201.x

Pedersen, S.S., van den Broek, K.C., Theuns, D.A., Erdman, R.A., Alings, M., Meijer, A., Jordaens, L. & Denollet, J. (2011). Risk of chronic anxiety in implantable defibrillator patients: a multi-center study. *International Journal of Cardiology*, *147*(3), 420-423. https://doi.org/10.1016/j.ijcard.2009.09.549

Pedersen, S.S., Hoogwegt, M.T., Jordaens, L., & Theuns, D.A. (2013). Pre implantation psychological functioning preserved in majority of implantable cardioverter defibrillator patients 12 months post implantation. *International Journal of Cardiology*, *166*(1), 215-220. https://doi.org/10.1016/j.ijcard.2011.10.092

Pedersen, S.S., Nielsen, J.C., Wehberg, S., Jørgensen, O.D., Riahi, S., Haarbo, J., Philbert, B.T., Larsen, M.L., & Johansen, J.B. (2021). New onset anxiety and depression in patients with an implantable cardioverter defibrillator during 24 months of follow-up (data from the national DEFIB-WOMEN study). *General Hospital Psychiatry*, *72*, 59-65. https://doi.org/10.1016/j.genhosppsych.2021.07.003

Picco, G. (2020). Quality of dying and modification of implantable cardioverter-defibrillator activity. *Palliative Medicine in Practice*, *14*(3), 227-228. https://doi.org/10.5603/PMPI.2020.0019

Prudente, L.A. (2005). Psychological disturbances, adjustment, and the development of phantom shocks in patients with an implantable cardioverter defibrillator. *Journal of Cardiovascular Nursing*, *20*(4), 288-293. https://doi.org/10.1097/00005082-200507000-00016

Pyngottu, A., Werner, H., Lehmann, P., & Balmer, C. (2019). Health-related quality of life and psychological adjustment of children and adolescents with pacemakers and implantable cardioverter defibrillators: a systematic review. *Pediatric Cardiology*, *40*, 1-16. https://doi.org/10.1007/s00246-018-2038-x

Rottmann, N., Skov, O., Andersen, C.M., Theuns, D.A., & Pedersen, S.S. (2018). Psychological distress in patients with an implantable cardioverter defibrillator and their partners. *Journal of Psychosomatic Research*, *113*, 16-21. https://doi.org/10.1016/j.jpsychores.2018.07.010

Schneider, L.M., Wong, J.J., Adams, R., Bates, B., Chen, S., Ceresnak, S.R., ... & Hood, K.K. (2022). Posttraumatic stress disorder in pediatric patients with implantable cardioverter-defibrillators and their parents. *Heart Rhythm*, *19*(9), 1524-1529. https://doi.org/10.1016/j.hrthm.2022.06.025

Schulz, S.M., Massa, C., Grzbiela, A., Dengler, W., Wiedemann, G., & Pauli, P. (2013). Implantable cardioverter defibrillator shocks are prospective predictors of anxiety. *Heart & Lung*, *42*(2), 105-111. https://doi.org/10.1016/j.hrtlng.2012.08.006

Sears, S.F., Lewis, T.S., Kuhl, E.A., & Conti, J.B. (2005). Predictors of quality of life in patients with implantable cardioverter defibrillators. *Psychosomatics*, *46*(5), 451-457. https://doi.org/10.1176/appi.psy.46.5.451

Sobański, P.Z., Brzezińska-Rajszys, G., Grodzicki, T., Jakubów, P., Jankowski, P., Kurzyna, M., Nessler, J., Przybylski, A., Ratajska, A., Tomkiewicz-Pająk, L., Uchmanowicz, I. & Pasierski, T. (2020). Stanowisko Grupy Ekspertów Polskiego Towarzystwa Kardiologicznego dotyczące opieki paliatywnej w kardiologii. *Kardiologia Polska (Polish Heart Journal)*, *78*(III), 104-117.

Starrenburg, A., Kraaier, K., Pedersen, S., Scholten, M., & Van Der Palen, J. (2014). Psychological indices as predictors for phantom shocks in implantable cardioverter defibrillator recipients. *Pacing and Clinical Electrophysiology*, *37*(6), 768-773. https://doi.org/10.1111/pace.12343

Tagney, J., James, J.E., & Albarran, J.W. (2003). Exploring the patient's experiences of learning to live with an implantable cardioverter defibrillator (ICD) from one UK centre: a qualitative study. *European Journal of Cardiovascular Nursing*, *2*(3), 195-203.

Thomas, S.A., Friedmann, E., Kao, C.W., Inguito, P., Metcalf, M., Kelley, F.J., & Gottlieb, S.S. (2006). Quality of life and psychological status of patients with implantable cardioverter defibrillators. *American Journal of Critical Care*, *15*(4), 389-398. https://doi.org/10.1007/s10840-006-9053-1

Thylén, I., Moser, D.K., Chung, M.L., Miller, J., Fluur, C., & Strömberg, A. (2013). Are ICD recipients able to foresee if they want to withdraw therapy or deactivate defibrillator shocks? *IJC Heart & Vessels*, *1*, 22-31. https://doi.org/10.1016/j.ijchv.2013.11.001

Thylén, I., Dekker, R.L., Jaarsma, T., Strömberg, A., & Moser, D.K. (2014). Characteristics associated with anxiety, depressive symptoms, and quality-of-life in a large cohort of implantable cardioverter defibrillator recipients. *Journal of Psychosomatic Research*, *77*(2), 122-127. https://doi.org/10.1016/j.jpsychores.2014.05.007

Thylén, I., Moser, D.K., Strömberg, A., Dekker, R.A., & Chung, M.L. (2016). Concerns about implantable cardioverter-defibrillator shocks mediate the relationship between actual shocks psychological distress. *Europace*, *18*(6), 828-835. https://doi.org/10.1093/europace/euv220

Tripp, C., Huber, N.L., Kuhl, E.A., & Sears, S.F. (2019). Measuring ICD shock anxiety: status update on the Florida Shock Anxiety Scale after over a decade of use. *Pacing and Clinical Electrophysiology*, *42*(10), 1294-1301. https://doi.org/10.1111/pace.13793

Van den Broek, K.C., Habibović, M., & Pedersen, S.S. (2010). Emotional distress in partners of patients with an implantable cardioverter defibrillator: a systematic review and recommendations for future research. *Pacing and Clinical Electrophysiology*, *33*(12), 1442-1450. https://doi.org/10.1111/j.1540-8159.2010.02885.x

van den Heuvel, L.M., Sarina, T., Sweeting, J., Yeates, L., Bates, K., Spinks, C., O'Donnell, C., Sears, S.F., McGeechan, K., Semsarian, Ch., & Ingles, J. (2022). A prospective longitudinal study of health-related quality of life and psychological wellbeing after an implantable cardioverter-defibrillator in patients with genetic heart diseases. *Heart Rhythm O2*, *3*(2), 143-151. https://doi.org/10.1016/j.hroo.2022.02.003

van der Lingen, A.L. C., Rijnierse, M.T., Hooghiemstra, A.M., Elshout, S., van Halm, V.P., Batelaan, N.M., van Rossum, A.C., Pedersen, S.S., Leeuwis, A.E. & Allaart, C.P. (2023). The link between cardiac status and depression and anxiety in implantable cardioverter defibrillator patients: Design and first results of the PSYCHE-ICD study. *Journal of Psychosomatic Research*, *167*, 111182. https://doi.org/10.1016/j.jpsychores.2023.111182

Varghese, S., Geller, J.C., & Ohlow, M.A. (2019). Phantom shocks in implantable cardioverter-defibrillator recipients: impact of education level, anxiety, and depression. *Herzschrittmachertherapie & Elektrophysiologie*, *30*(3), 306-312. https://doi.org/10.1007/s00399-019-00645-y

Versteeg, H., Theuns, D.A., Erdman, R.A., Jordaens, L. & Pedersen, S.S. (2011). Posttraumatic stress in implantable cardioverter defibrillator patients: the role of pre-implantation distress and shocks. *International Journal of Cardiology*, *146*(3), 438-439. https://doi.org/10.1016/j.ijcard.2010.10.108

von Känel, R., Baumert, J., Kolb, C., Cho, E.Y. N., & Ladwig, K.H. (2011). Chronic posttraumatic stress and its predictors in patients living with an implantable cardioverter defibrillator. *Journal of Affective Disorders*, *131*(1-3), 344-352. https://doi.org/10.1016/j.jad.2010.12.002

World Health Organization. (1992). *The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines* (Vol. 1). World Health Organization.

Wójcicka, M., Lewandowski, M., Smolis-Bąk, E., & Szwed, H. (2008). Original article Psychological and clinical problems in young adults with implantable cardioverter-defibrillators. *Kardiologia Polska (Polish Heart Journal)*, *66*(10), 1050-1058.

Zormpas, C., Kahl, K.G., Hohmann, S., Oswald, H., Stiel, C., Veltmann, C., Bauersachs, J. & Duncker, D. (2022). Depressive symptoms and quality of life in patients with heart failure and an implantable cardioverter-defibrillator. *Frontiers in Psychiatry*, *13*, 827967. https://doi.org/10.3389/fpsyt.2022.827967

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Non-pharmacological therapies and cognitive function in dementia[1]

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Abstract: The article deals with the issue of showing the relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in people with dementia. The purpose of the study was to determine whether there is a relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in people with dementia, and if there is such a relationship, whether the cognitive processes of those participating in the therapy are at a higher level, and whether the level of functioning of cognitive processes has an impact on the independence of the subjects of the study. There were 60 people diagnosed with dementia included in the study, and a half of them participated in regular non-pharmacological therapy and the other half of the subjects did not participate. The level of cognitive functioning processes was examined with the MMSE (Mini-Mental State Examination) and the Clock Drawing Test, and the level of independence was measured by the Barthel Index of a patient`s assessment.
Keywords: dementia, cognitive processes, non-pharmacological therapy

Introduction

Jean Améry (2018) in one of his books entitled *On Aging: Revolt and Resignation* wrote 'society must do everything to relieve the plight of the aging and old people. I still continue arguing that all heart-flowing and respectable efforts in this regard may indeed alleviate–so to speak, they are harmless painkillers–but they cannot bring fundamental change or improvement to the tragedy of aging' (p. 11-12). However, what to do if there come diseases that rob a person of his/her fondest memories and memory with the old age as in case for people with dementia. Allopsychic disorientation worsens, there is impairment of permanent and deferred memory (of past events) with the progression of the disease, The memory gap widens and covers an increasingly large area of the patient's past. And 'people to whom this diagnosis applies usually complain about a sense of meaninglessness of life or inner emptiness' (Karbowski, 2021, p. 39), failing to recognize people, objects, unable to dress themselves and perform simple daily activities, as a result being increasingly dependent on the environment (Bogusławski, Drat-Gzubicka, 2011).

Is there any way to prevent this, so that suffering and aging people can get the most out of the time they have left. The research problem was formulated in the form of the question: "Is there a relationship between non-pharmacological methods of therapies and the level of functioning of cognitive processes in people with dementia?" in connection with the aim thus established.

This article is an important contribution to the development of the issue at hand, attempting to find an answer to whether there is a way to slow down the process of neurodegeneration, and thus sustain better functioning of cognitive processes and independence of older people with dementia.

1 Article in polish language: Artykuł w języku polskim: Niefarmakologiczne metody terapii a funkcje poznawcze w otępieniu https://www.stowarzyszeniefidesetratio.pl/fer/2023-3Karb.pdf

1. Theoretical basis of the problematic

1.1. Dementia syndromes–ambiguity of definition

Thomas Sobów, defining the term dementia wrote that 'the World Health Organization's (ICD-10) formulation and the very similar DSM-IV term depict dementia as a syndrome of symptoms caused by a brain disease, usually chronic or progressive, clinically characterized by multiple impairments of higher cortical functions such as memory, thinking, orientation, comprehension, counting, learning ability, language and judgment' (p. 575). Numbness albo dullness, also known as dementia, is not a single symptom, nor is it a disease in the sense of a nosological entity with a well-defined clinical picture and a homogeneous etiopathogenesis. The disease poses a serious social, medical and psychological problem, hence the attempt to define it is made by various specialists, with their own and specific terminology. In the DSM-5 and ICD-11, the broad diagnostic category previously called dementia was given a new name, so the term "neurocognitive disorder" is now used.

David Evans and Emmanuel Lee (2013) define dementia as a chronic and progressive brain disease characterized by language, memory, perception, cognitive abilities and personality impairments. The impairment of these functions will affect all aspects of a person's life and close relationships.

1.2. Dementia syndromes

Dementia has many different forms as the diagnostic category. In both the ICD-10 and DSM-5, it is differentiated into many subcategories, which differ from each other. However, they also have much in common, being characterized by a global decline in cognitive functioning, primarily deficits in the area of memory and other higher intellectual functions (Kędziora-Kornatowska, Polak-Szabela, 2019). Correct diagnosis is crucial to select appropriate medications and attempt to prolong the patient's dignified life. Christine Whatmough (2021, p. 4) writes that 'among cases of dementia that began after the age of 65, by far the most common form is Alzheimer's disease, which, as the only type of dementia or as an element in mixed dementia syndrome, accounts for up to 75% of all dementias. The next most common type of dementia may be vascular dementia or dementia with Lewy bodies (publications vary on this issue)–in clinics, these forms can account for 15-20% of dementia syndromes. Frontotemporal dementia is diagnosed in 5-6% of patients with dementia. Dementia in Parkinson's disease is often mixed.' Therefore, because of extremely broad subject of dementia, in this article the most common forms of this disease have been introduced.

1.2.1. Alzheimer Disease (AD)

Alzheimer's disease is the most common cause of dementia as possible. During this disease, brain tissue breaks down, and thus brain volume decreases, the cerebral cortex atrophies. According to Maria Barcikowska (2017, p. 45), 'it is a degenerative brain disease that most often causes dementia in people over the age of 65. It is caused by the deposition of proteins in the brain with a pathological beta-fold structure.' Characteristic features of Alzheimer's patients are impaired episodic memory, the presence of deficits in at least one cognitive function (impaired executive actions, aphasia, apraxia, agnosia), lack of persistence of the memory trace, and difficulties in learning new material (Kędziora-Kornatowska, Polak-Szabela, 2019). As the disease progresses, the disorders intensify. Specialists speculate that the disease takes longer to develop than it was previously thought and the asymptomatic period lasts from few to several years. In the beginning, the person with the disease will need little supervision and periodic care, but in the final stage, when the person with Alzheimer's is no longer able to get out of bed, nursing remains (Nestorowicz, 2021).

1.2.2. Dementia with Lewy Bodies (DLB)

Characteristic of dementia with Lewy Bodies is impaired vision, fainting, delusional thinking, falls, body rigidity, swallowing problems, and reactions to drugs, which can be extreme and bizarre (Snow, 2019). Deficits in executive functions, psychomotor retardation, fluctuations in cognitive status, visual-spatial dysfunction (significantly aggravated in the early stage) and attention deficit disorder (mainly in terms of sustaining

attention) arise. An additional characteristic of Dementia with Lewy Bodies is the presence of distinct, detailed, repetitive visual hallucinations. There is often vacillation and irritability (Kędziora-Kornatowska, Polak-Szabela, 2019). Whatmough (2021) pointed out that Dementia with Lewy Bodies differs from Alzheimer's disease in several aspects namely: it occurs much more often in men than in women, symptoms in men are more severe and aggressive than in women and the duration of the disease (from onset to death) is 1-5 years, much less than with Alzheimer's disease, onset of the disease before the age of 70 is more common and is associated with faster progression of the disease and gait and balance disturbances must occur either simultaneously or within a year before or after the onset of cognitive impairment or psychiatric symptoms.

1.2.3. Vascular Dementia

The literature does not clearly define a single, classic picture of cognitive impairment in vascular dementia. The cognitive deficits and behavioural symptoms most characteristic of the profile of vascular dementia are: slow pace of processing, disturbances in the dynamics of behaviour and the emotional-motivational sphere, disturbances in the process of storing information, and impaired processes of free attention (Kędziora-Kornatowska, Polak-Szabela, 2019). According to Rachel J. Schindler (2005), vascular dementia differs from Alzheimer's disease in several respects: vascular dementia usually has an abrupt onset, following a stroke, and can have a variable, non-linear course; deficits in executive functions, which are an interrelated system involving planning, organization, conceptual thinking and flexibility of thought, come to the fore in vascular dementia; and people with vascular dementia may not experience cognitive deterioration for up to 6 months.

1.2.4. Frontal Dementia (FTD)

Frontotemporal dementia, known as Pick's disease, as the name suggests, is a progressive degenerative disease of the central nervous system, mainly of the prefrontal cortex and anterior temporal cortex (Wysokinski, Gruszczynski, 2008). Features of the profile of cognitive impairment in frontotemporal dementia include the dominance of executive function disorders with usually good spatial orientation and praxis preserved, as well as speech disorders, echolalia and perseveration. In the course of this dementia, personality and behavioural disorders appear earlier in the form of inappropriate actions, as well as reactions perseverations, utilitarian behaviour, stereotypical behaviour, without a plan, emotional lability, hyper-errorism (Kędziora-Kornatowska, Polak-Szabela, 2019).

1.2.5. Parkinson's Disease with Dementia (PDD)

Parkinson's disease is a hypokinetic movement disorder, the characteristic symptoms of which are tremor, bradykinesia (slowing of movement), muscle rigidity and, in a later phase, postural instability (Tröster, Woods, 2021). Today, it is widely believed that 20-40% of patients with Parkinson's disease develop dementia, although some estimates put the rate of dementia in Parkinson's disease as high as 70% (Whatmough, 2021). According to Kornelia Kędziora-Kornatowska and Anna Polak-Szabela (2019, p. 39), "in dementia occurring in Parkinson's disease, among the cognitive dysfunctions, disorders of involuntary and free attention (focusing attention) predominate, there may be fluctuations during the day and from day to day, bradyphrenia occurs, executive functions are significantly impaired (...) as well as visuospatial functions."

Patients in the early stages of Parkinson's disease perform poorly in tasks that require efficient manipulation of information in working memory, while correctly performing tasks that measure memory span. Deficits can also be observed in the performance of tasks requiring divisibility and selectivity of attention. The reasons for the low level of task performance are attributed to limitations in both attentional resources and the ability to change the focus or direction of attention (Tröster, Woods, 2021).

1.3. Cognitive processes in dementia

In literature, one can find a elementary and complex division of cognitive processes. The elementary ones include: attention, cognitive control, perception and memory. In complex cognitive processes, we distin-

guish: thinking, problem solving, decision making and language use (Nęcka et al., 2020). Topics related to cognitive processes are extensive and complex therefore for the purposes of this research three elements of these processes are described: memory, attention, and orientation to time and place otherwise known as allopsychic orientation. Maria Pąchalska (2014) defines memory as a process during which a person records, stores and reproduces information about plans, intentions and tasks that he or she must perform in the future (prospective memory), as well as his or her own past and the world (retrospective memory), a kind of memory storehouse, i.e. a collection of information that a person has recorded over the course of his or her life. Therefore, as Schacter and Tulving (1982, after: Nęcka et al., 2020, p. 299) write, 'human memory is not a monolithic system. Under this term there are many separate but internally integrated systems. Their common feature is the function that memory as a whole performs. Namely, it creates the possibility of using the information stored in it. The more effectively this function can be carried out all, the more effective is the phylogenetic ability of our mind to remember, store and repress information.' It is worth mentioning that the structure that is the hippocampus forms the most important groupings of nerve fibers that are involved in memory formation, it is the one that decides which information is to be remembered and which is to be forgotten (Anastasiadou, Meyer zu Reckendorf, Beck, 2022).

A. Falkowski, T. Maruszewski, and E.Nęcka (2008, p. 445) write that attention 'is responsible for reducing information overload. Since the cognitive system can process only a fraction of what is potentially available to it, it must control the processes of receiving and processing information to avoid dangerous effects of overload.' Due to the complexity of the problem of attention, attempts are made to isolate its basic features. Peter French (2000) distinguished such features as focus (concentration, focus, intensity, energy) of attention, selectivity (selectivity) of attention, metastability (dynamics, flexibility) of attention, range (capacity) of attention, divisibility of attention, arousal of attention. Andrewes (2001, after: Pąchalska et al., 2019), on the other hand, distinguished four systems that make up attention, pointing to: the activation system, the orientation system, the executive attention system, and the perceptual attention system–that is, the ability to select.

Allopsychic orientation is otherwise known as time and place orientation, meaning that a person with a disorder of this cognitive sphere will have difficulty in determining where, when and what situation they are in (Sobierajewicz, Czaińska, 2019). Disorders of topographical orientation (orientation as to place) are typical of dementia occurring in the elderly age, that is why, many sufferers cannot leave the house on their own, as they tend to get lost, and they are also forever looking for various objects that they have hidden somewhere in the house, but cannot find where they put the object. It happens that people with topographical orientation disorder remember that they hid something, but have difficulty in finding the place where they hid it (Pąchalska, 2014).

Time orientation disorders, as can be inferred, refer to problems with determining the current date, time, etc., as well as embedding particular events in time. People suffering from dementia often have problems determining the current date. Logical thinking related to time also poses a problem for them, e.g. they know they have grandchildren, but claim their children have not grown up yet, they are still young.

1.4. Non-pharmacological therapies in dementia

Pharmacotherapy is often an integral component needed for people with dementia diseases to live better. However, non-pharmacological therapy is also needed to keep the patient functioning well for as long as possible, as many specialists emphasize. These two therapies must work together so that patients with dementia can enjoy their lives for as long as possible and retain as much awareness of their existence as possible. In dementia patients, non-pharmacological methods serve two important functions: they support the pharmacological process and can improve or remove many of the psychiatric symptoms observed in dementia, and it can stimulate function and slow down the progression of the disease (Wojcik-Topór, 2018). According to A. Borzym: 'The introduction of various types of

activities not only activates people with dementia, but also stimulates the cognitive abilities that are still preserved, helps maintain practical skills, improves well-being and alleviates the behavioural disorders that occur' (2021, p. 50).

Three non-pharmacological therapeutic methods used in therapy with people with dementia were used in this study, and these are psychological therapy, reminiscence therapy and occupational therapy.

1.4.1. Psychological therapy

Psychological therapy is a type of therapy, during which training of memory, attention, concentration, hand praxis, executive functions, therapy of spatio-temporal orientation, psychotherapy take place. As P. Wojcik-Topór (2018, p. 461) writes, 'psychological therapy will activate psychomotor processes in the area of small motor skills: through hand praxia exercises, tasks involving the reproduction of figures, construction exercises, catching up missing elements. (...) The therapist attempts to shift attention, for example, during conversation or solving cognitive tasks, while stimulating visual and auditory perception.'

1.4.2. Reminiscence therapy

Reminiscence therapy has been introduced into the care of people with dementia and has taken various forms. At its most basic, it involves talking about past events and experiences, usually with the help of tangible cues, such as photos, music, household items, etc. (Woods, O'Philibin, Farrell, Spector, Orrell, 2018). It mainly involves talking about specific topics using so-called memory anchors. These include videos, scrapbooks, old photographs, personal objects, CDs of music familiar to the patient. A form of therapy can also include redecorating a room so that it resembles an interior from years past (Wojcik-Topór, 2018).

1.4.3. Occupational therapy

In contrast, the aim of occupational therapy is to maintain the ability to perform activities that are meaningful to the person with dementia. During the therapy, these activities are simplified and implemented in such a way as to optimize patient`s engagement (Bennet et al., 2019). Occupational therapy aims to consolidate skills still possessed by the patient. It allows to recreate those that have recently been lost, and thus motivates activity and meets the social and psychological needs of the patient, prevents the appearance of psychopathological symptoms and behavioural disorders, and sustains retained skills.

2. Description of the methods used and how data was collected

The survey was conducted from June 2022 to December 2022 and was individual in nature. Subjects were recruited through a verbal invitation to participate in the study. Each participant declared, and his or her caregiver confirmed, that he or she had been diagnosed with dementia and determined whether he or she was participating in non-pharmacological therapeutic interventions (whether participants and their caregivers were informed of the voluntariness of participation in the study and the possibility of opting out. The person was invited to a pre-prepared office, the investigator conducted tests starting with the Mini-Mental State Examination (MMSE), which is used to test mental status and allows quantitative measurement of cognitive functioning. This was followed by the Clock Drawing Test, which tests the level of visuospatial orientation and how it contributes to the construction deficit, and whether there is a problem with time comprehension. Patient assessment, according to the Barthel Index, was done through an interview with the subject's caregiver, which measures independence and mobility in people with neurodegenerative diseases.

The study included 64 people (49 women and 15 men), but 4 people dropped out during the study so the target full study was 60 people (48 women and 12 men), adults diagnosed with dementia disease. 30 of the subjects were those not participating in any non-pharmacological therapeutic activities, and the remainder were participants in Day Care Homes for people with dementia disease who are in regular therapy. The age distribution of the subjects was as follows: 10 subjects under 60 years of age, which accounted for 17% of the study group, between 61

and 75 years of age there were 16 subjects (27%), between 76 and 90 years of age there were 32 subjects (53%) and 2 subjects over 90 years of age accounted for 3% of the study group. The youngest participant in the study was 49 years old, while the oldest was 91.

3. Test results

The following are the results obtained from the tests conducted with the Mini-Mental State Examination (MMSE), the Clock Drawing Test and the Barhel Scale.

3.1. Scores obtained by the subjects in the Mini-Mental State Examination (MMSE)

The distribution of subjects by their scores on the Short Mental State Evaluation Scale (MMSE) is as prezented in Table 1.

In the study group that did not participate in non-pharmacological therapeutic activities, 1 person (3%) received a normal result, 8 people (27%) each received a result indicating cognitive impairment without dementia and mild dementia, 37% received a result indicating moderate dementia, and 2 people (7%) received a result indicating profound dementia (Table 2.).

In the study group taking part in non-pharmacological therapeutic measures, 3 people (10%) each received a normal result and a result indicating cognitive impairment without dementia, those who received a result indicating mild and moderate dementia were 10 (33%) each, while a result indicating profound dementia was received by 4 people (14%) (Chart 1.).

3.2. Results obtained by the subjects in the Clock Drawing Test (CDT)

Table 3. presents the distribution of the number of subjects by the results obtained in the Clock Drawing Test.

In the group not participating in non-pharmacological therapeutic methods, 12 subjects (40%) obtained a score indicating that the drawing of the entire clock is generally correct, while 18 subjects (60%) obtained

Table 1. Distribution of the number of subjects (N = 30) due to the assessment of the depth of dementia on the basis of the results of the MINIMENTAL test – the Mini-Mental State Evaluation Scale (MMSE) in subjects not participating in non-pharmacological therapeutic methods

Assessing the depth of dementia	N	%
30 – 27 – result correct	1	3
26 – 24 – cognitive impairment without dementia	8	27
23 – 19 – mild dementia	8	27
18 – 11 – intermediate dementia	11	37
10 – 0 – profound dementia	2	7
Total	30	100

Table 2. Distribution of the number of subjects (N=30) due to the assessment of the depth of dementia on the basis of the results of the MINIMENTAL test – the Mini-Mental State Evaluation Scale (MMSE) in subjects participating in non-pharmacological therapeutic methods

Assessing the depth of dementia	N	%
30 – 27 – result correct	3	10
26 – 24 – cognitive impairment without dementia	3	10
23 – 19 – mild dementia	10	33
18 – 11 – intermediate dementia	10	33
10 – 0 – profound dementia	4	14
Total	30	100

Table 3. Distribution of respondents (N=30) by scores on the Clock Drawing Test by those not participating in non-pharmacological therapies

Test result	N	%
10 – 6 – drawing the entire clock is generally correct	12	40
5 – 1 – drawing of the clock face–circles and numbers is disturbed	18	60
Total	30	100

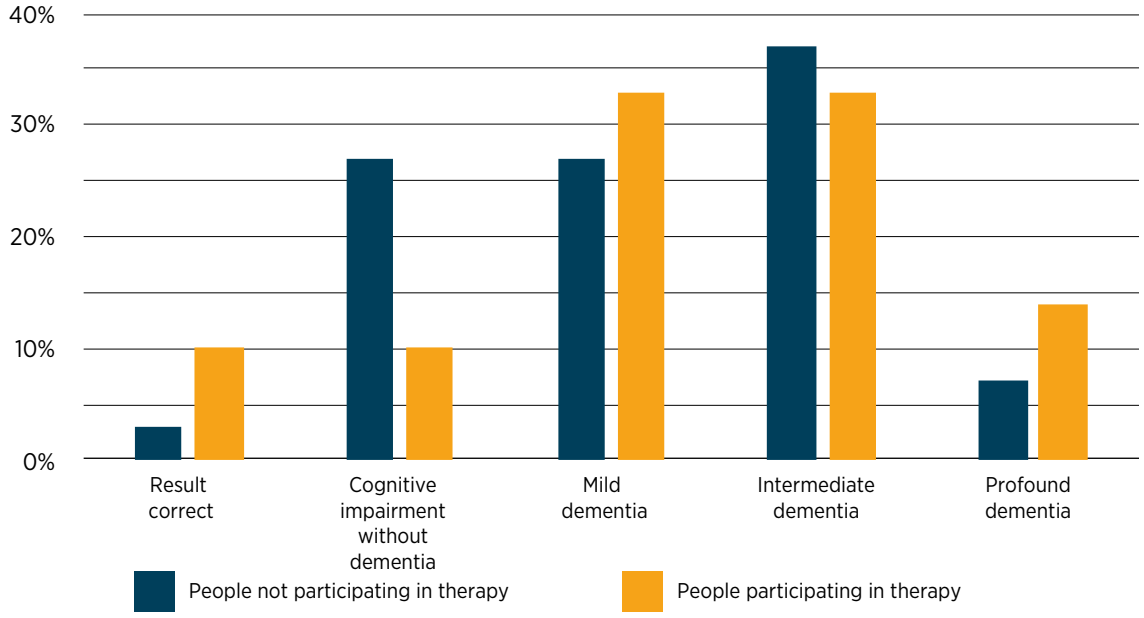

Chart 1. Results obtained by subjects in the MINIMENTAL test.

a score indicating that the drawing of the clock face–circle and digits–is impaired. To illustrate the distribution of the number of subjects not participating in non-pharmacological therapeutic methods, the results of the Clock Drawing Test are shown in the Chart 2.

A score indicating that the drawing of the clock is generally correct was obtained by 15 subjects, representing half of the group participating in non-pharmacological therapeutic methods, while the other half obtained a score indicating that the drawing of the clock face–the circle and digits–is disturbed. In order to illustrate the distribution of the number of subjects participating in non-pharmacological therapeutic methods, the results obtained from the Clock Drawing Test are shown in the Chart 2.

3.3. Scores obtained by the subjects on the Barthel Index

The following is the distribution of the number of subjects by the scores they obtained in the patient assessment according to the Barthel Index (Table 5).

Twenty-six respondents (87%) not participating in non-pharmacological therapies received a score describing the patient's condition as 'light', while the remaining four respondents (13%) received a score describing the patient's condition as 'moderately severe.'

The distribution of the number of study subjects participating in non-pharmacological therapeutic interactions, due to the score obtained in the patient's assessment according to the Barthel Index, is presented in Table 6.

Twenty-five people (83%) received a score that describes their condition as 'light', while the remaining 17% of the study group received a score that describes the patient's condition as 'moderately severe' (Chart 3).

3.4. Non pharmacological therapeutic methods and cognitive processes in dementia

Students` t-tests for independent data were performed to compare the level of the studied variables between those not participating in non-pharmacological therapeutic methods and those participating in non-pharmacological therapeutic methods. The results of the test showed that cognitive functioning (as measured by the MINIMENTAL test) of those not

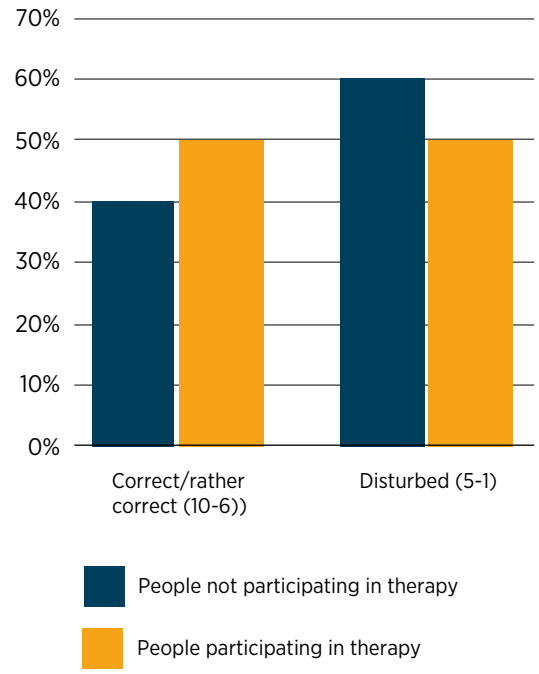

Chart 2. The chart shows the results obtained by the subjects in the Drawing Test.

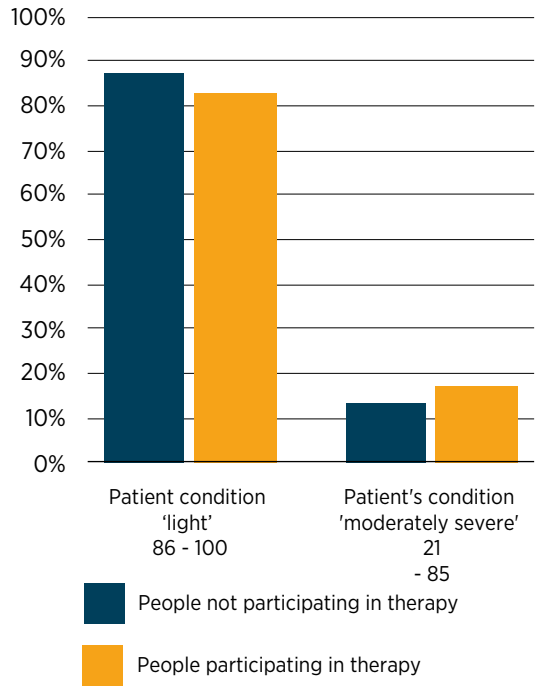

Chart 3. The graph shows the results obtained by the subjects in the patient assessment according to the Barthel Index.

Table 4. Distribution of respondents (N=30) by scores on the Clock Drawing Test by those participating in non-pharmacological therapies

Test result	N	%
10 – 6 – drawing the entire clock is generally correct	15	50
5 – 1 – drawing of the clock face–circles and numbers is disturbed	15	50
Total	30	100

Table 5. Distribution of subjects (N=30) by patient scores according to the Barthel Index in those not participating in non-pharmacological therapies

Test result	N	%
86 – 100 pkt. – patient condition „light"	26	87
21 – 85 pkt. – patient's condition 'moderately severe'	4	13
0 – 20 pkt. – patient's condition 'very severe'	0	0
Total	30	100

Table 6. Distribution of subjects (N=30) by patient scores according to the Barthel Index in those participating in non-pharmacological therapies

Test result	N	%
86 – 100 pkt. – patient condition 'light'	25	83
21 – 85 pkt. – patient's condition 'moderately severe'	5	17
0 – 20 pkt. – patient's condition 'very severe'	0	0
Total	30	100

in non-pharmacological therapy was non-significantly higher than that of those in non-pharmacological therapy–t = 0.662; p = 0.511.

On the other hand, the results of the Clock Drawing Test showed that the visual-spatial orientation and time comprehension of those in non-pharmacological therapy is slightly higher than that of those not in therapy t =–0.37; p = 0.713 (Table 7).

Table 7. Differences in the level of functioning of cognitive processes in people with dementia not participating and participating in non-pharmacological therapeutic methods

	People who are not in therapy N = 30		People who are in therapy N = 30		Differences (T-test)		
	M	SD	M	SD	t	df	p
MMSE	18.9	5.87	17.87	6.22	0.662	58	0.511
CDT	5.4	3.09	5.7	3.19	-0.37	58	0.713

N–abundance; M–mean; SD–standard deviation; t–test statistic; p–statistical significance.

Table 8. Differences in independence and motor skills of people with dementia not participating and participating in non-pharmacological therapies

	People who are not in therapy N = 30		People who are in therapy N = 30		Differences (T-test)		
	M	SD	M	SD	t	df	p
Barthel Index	94.5	11.5	93.7	11.2	0.285	58	0.777

N–abundance; M–mean; SD–standard deviation; t–test statistic; p–statistical significance.

3.5. Non-pharmacological therapeutic methods vs. independence and motor skills in dementia

In order to compare the level of independence and motor skills between those not participating in non-pharmacological therapeutic methods and those participating in non-pharmacological therapeutic methods, Students` t-tests were performed for independent data. The results of the test showed that the independence and mobility (as measured by the Barthel Index patient assessment) of non-therapy participants was non-significantly higher than that of non-pharmacological therapy participants–t = 0.285; p = 0.777 (Table 8).

3.6. Level of cognitive functioning and independence in people with dementia

In order to test whether there is a relationship between the level of cognitive functioning and independence in people with dementia, a Persona correlation analysis was conducted between the level of cognitive functioning, as assessed by the Mini-Mental State Examination (MMSE), and the level of independence as measured by the Barthel Index. The correlation indicator turned out to be weak, but still significant, at 0.214. This means that the level of cognitive functioning correlates positively with the level of independence in the subjects. The higher the level of functioning of cognitive processes, the higher the level of independence of these people will be.

4. Discussion of results

The purpose of the study was to see if there is a relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in people with dementia, and what the relationship is. Therefore, taking into account all the above theoretical premises and expert opinions, the following research hypotheses were set:

H1: The cognitive processes of people with dementia who participate in regular nonpharmacological therapy are at a higher level.

H2: People who are not on non-pharmacological therapy are less independent.

H3: People whose cognitive processes are at a higher level are more independent.

The first hypothesis, which assumed that the cognitive processes of people with dementia who participate in regular non-pharmacological therapy are at a higher level, was not confirmed. The average score obtained on the MINIMENTAL test by those who do not participate in non-pharmacological therapies is 1 point higher than the average score of those who participate in non-pharmacological therapies. In the Clock Drawing Test, those not participating in non-pharmacological therapeutic interventions scored 0.3 points worse on average than those participating in the therapy. In both tests conducted, the difference in scores for the two groups is not significant. The above studies showed that there is no relationship between non-pharmacological therapeutic interventions and the level of cognitive functioning in dementia.

Another hypothesis assumed that those on non-pharmacological therapy were less independent. This hypothesis was also not confirmed. The mean score obtained in the Barthel Index patient assessment by those not participating in non-pharmacological therapy is 0.8 points higher than in those participating in non-pharmacological therapy. This is a non-significant difference and indicates that participation in non-pharmacological therapeutic interactions has no effect on the independence of people with dementia.

The third hypothesis, which assumed that people whose cognitive processes are at a higher level are more independent, was confirmed. A weak but still significant positive correlation was shown between the level of cognitive functioning measured by the MINIMENTAL test and independence measured by the patient's assessment according to the Barthel Index. The study showed that the higher the level of cognitive functioning, the higher will be the level of independence of people with dementia.

Although the first two hypotheses in the present study have not been confirmed, specialists recommend non-pharmacological therapeutic interactions and believe that this is an important step in the management of the patient in daily care. An important advantage of introducing non-pharmacological therapeutic methods into the life of a person with dementia is the fact that these interventions make it possible to reduce the severity of behavioural disorders (Dlugosz-Mazur, Bojar, Gustaw, 2013). The patient benefits more from non-pharmacological therapeutic methods when they are introduced quickly after early diagnosis. Unfortunately, as the disease progresses, the role of non-pharmacological interventions diminishes (Domagała, Sitek, 2018).

In describing the various non-pharmacological therapies used in patients with dementia, Wojcik-Topór (2018) also writes that some scientific communities put non-pharmacological therapy on a par with pharmacotherapy for patients with dementia.

A. Domagała and E. Sitek (2018, p. 255) state that 'Non-pharmacological management is considered an important part of treatment, it is the subject of positive opinions formulated in the medical field, addressed both to specialists involved in pharmacological and non-pharmacological treatment, as well as to caregivers of sick people.'

Non-pharmacological therapeutic interactions are also important for the families of sick people, as they help relieve the burden of constant care. Any type of activities such as intellectual activation, education, etc. will certainly make life easier not only for the sick person, but also for their loved ones, prolonging the progression of the disease (Wojcik-Topór, 2018).

A. Borzym (2021, p. 52) wrote about reminiscence therapy and reality orientation training that 'they can reduce feelings of confusion and isolation, improve the patient's well-being and communication with the environment; in addition, reminiscence therapy aims to strengthen the patient's sense of identity.'

Referring to the above-mentioned authors, it can be concluded that the research conducted for this study has the potential to continue in the future and explore the topic of non-pharmacological therapeutic methods and their impact on cognitive function in dementia.

Summary

The aim of the present study was to find a relationship between non-pharmacological therapies and cognitive processes in dementia. In the presented study, no significant relationship was found between the level of functioning of cognitive processes and participation

in non-pharmacological therapeutic interactions among 60 people, 30 of them were participants in non-pharmacological therapies, and the rest of the group was not. To verify the hypotheses, the MINIMENTAL test – Mini-Mental State Examination (MMSE), the Clock Drawing Test and the Barthel Index patient assessment were used.

The results obtained were subjected to statistical analysis. Summarizing the results obtained in the study, the following conclusions can be reached:

- participation in non-pharmacological therapeutic interventions does not substantially affect the level of cognitive functioning in dementia;
- participation in non-pharmacological therapeutic interventions does not affect the level of independence of people with dementia;
- the independence of people with dementia is higher when their cognitive processes are at a higher level.

The conclusions of a theoretical nature that were put forward imply the need for further research of a practical nature. This is the realization of the practical purpose of the work. Thus, it can be said that despite the failure to confirm the hypothesis that there is a positive relationship between non-pharmacological therapeutic methods and the level of functioning of cognitive processes in dementia, it is worthwhile to activate people with dementia in order to increase emotional and social competence. It would be beneficial for people with dementia to organize daily life trainings in order to maintain as much independence as possible for patients, and thus maintain the functioning of cognitive processes at a higher level. It is necessary to educate the public and, above all, the families of dementia patients on how to work and care for a person with dementia.

The results obtained are only a small part of the studied reality. Although the main hypothesis has not been confirmed, the subject of the effect of non-pharmacological therapeutic methods on the level of functioning of cognitive processes deserves more attention. It would be worth conducting a broader study, on a larger number of people, taking into account more variables.

Bibliography

Améry, J. (2018). *O starzeniu się. Bunt i rezygnacja*. Warszawa: Wydawnictwo Aletheia.

Anastasiadou, S., Meyer zu Reckendorf, C., Beck, H. (2022). *Fascynujący mózg*. Warszawa: Wydawnictwo Naukowe PWN.

Barcikowska, M. (2017). Choroba Alzheimera jako najczęstsza postać choroby. (W:) M. Cybulski, N. Waszkiewicz, E. Krajewska-Kułak, K. Kędziora-Kornatowska (red.), *Psychogeriatria*, 45-62. Warszawa: Wydawnictwo Lekarskie PZWL.

Bennet, S., Laver, K., Voigt-Radloff, S., Letts, L., Clemson, L., Graff, M., Wiseman, J., Gitlin, L. (2019). Occupational therapy for people with dementia and their family carers provided at home: a systematic review and meta-analysis. *BMJ Open*, 1-11. https://doi.org/10.1136/bmjopen-2018-026308

Bogusławski, W., Drat-Gzubicka, J. (2011). *Przewlekle choroby w domu*. Gdańsk: Fundacja Lubię Pomagać.

Borzym, A. (2021). Oddziaływania niefarmakologiczne w otępieniu. (W:) T. Parnowski (red.), *Choroba Alzheimera,* 50-61. Warszawa: Wydawnictwo Lekarskie PZWL.

Brzózka, P. (2021). *Skala Barthel – od niej zależy, czy dostaniesz pieniądze na opiekę długoterminową*. (From:) https://www.medme.pl/artykuly/skala-barthel-co-to-jest,88273.html (access: 06.06.2023).

Długosz-Mazur, E., Bojar, I., Gustaw, K. (2013). Niefarmakologiczne metody postępowania u chorych z otępieniem. *Medycyna Ogólna i Nauki o Zdrowiu, 4*, 458-462.

Domagała, A., Sitek, E. (2018). Niefarmakologiczne metody terapii w chorobie Alzheimera. (W:) A. Domagała, E. Sitek (red.), *Choroba Alzheimera. Zaburzenia komunikacji językowej*, 228-257. Gdańsk: Wydawnictwo Harmonia.

Evans, D., Lee, E. (2013). Impact of dementia on marriage: A qualitative systematic review. *Sage Journals, 13*(3), 330-349. https://doi.org/10.1177/1471301212473882

Falkowski, A., Maruszewski, T., Nęcka, E. (2008). Psychologia. Podręcznik akademicki tom 1. (W:) J. Strelau, D. Doliński (red.), *Procesy poznawcze*, 339-510. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Folstein, M., F., Folstein, S., E., Fanjiang, G. (2009). *MMSE. Krótka Skala Oceny Stanu Umysłowego. Przewodnik kliniczny.* Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego.

Francuz, P. (2000). Mechanizm uwagi. Przegląd zagadnień w perspektywie psychologicznej i neurofizjologicznej. (W:) J. Brzeziński, S. Kowalik (red.), *O różnych sposobach uprawiania psychologii,* 44-70. Poznań: Wydawnictwo Zysk i S-ka.

Karbowski, M.G. (2021). *W poszukiwaniu korelatów osobowości u adeptów teologii. Perspektywa noetyczna*. Warszawa: Dom Wydawniczy ELIPSA.

Kędziora-Kornatowska, K., Polak-Szabela, A. (2019). Zaburzenia otępienne wśród osób powyżej 60 roku życia. (W:) M. Cybulski, N. Waszkiewicz, E. Krajewska-Kułak, K. Kędziora-Kornatowska (red.), *Psychogeriatria*, 31-44. Warszawa: Wydawnictwo Lekarskie PZWL.

Nestorowicz, J. (2021). Przebieg choroby Alzheimera. (W:) T. Parnowski (red.), *Choroba Alzheimera* 23-32. Warszawa: Wydawnictwo Lekarskie PZWL.

Nęcka, E., Orzechowski, J., Szymura, B., Wichary, S. (2020). *Psychologia poznawcza*. Wydanie nowe. Warszawa: Wydawnictwo Naukowe PWN.

Pąchalska, M. (2014). *Neuropsychologia kliniczna. Urazy mózgu*. Tom 1. Warszawa: Wydawnictwo Naukowe PWN.

Pąchalska, M., Kaczmarek, B., L., J., Kropotov, J., D. (2019). *Neuropsychologia kliniczna. Od teorii do praktyki*. Warszawa: Wydawnictwo Naukowe PWN.

Schindler, R.J. (2005). *Otępienie naczyniopochodne i mieszane: znaczenie wczesnego leczenia farmakologicznego.* Nowy Jork: Pfizer Inc.

Snow, T. (2019). *Positive Approach to Care*. (From:) https://teepasnow.com/blog/gems-screening-tool-all-certs-teepa-snow/ (access: 03.06.2023).

Sobierajewicz, J., Czaińska, M. (2019). Zaburzenie orientacji w czasie – charakterystyka i możliwości rehabilitacji u osób starszych. *Gerontologia Polska, 27*, 221-226.

Sobów, T. (2023). Farmakoterapia zespołów otępiennych. (W:) J. Rybakowski (red.), *Psychofarmakologia kliniczna*, 575-598. Warszawa: Wydawnictwo Lekarskie PZWL.

Tröster, A., I., Woods, S., P. (2021). Neuropsychologiczne aspekty zaburzeń ruchowych i choroby neuronu ruchowego. (W:) C.L. Armstrong i L. Morrow (red.), *Neuropsychologia medyczna,* tom 2, 63-91. Warszawa: Wydawnictwo Lekarskie PZWL.

Whatmough, C. (2021). Otępienie. (W:) C.L. Armstrong i L. Morrow (red.), *Neuropsychologia medyczna,* tom 2, 3-33. Warszawa: Wydawnictwo Lekarskie PZWL.

WHO (2008). *Międzynarodowa Statystyczna Klasyfikacja Chorób i Problemów Zdrowotnych, ICD-10*, Tom 1. Światowa Organizacja Zdrowia.

Woods, B., O'Philibin, L., Farrell, E., M., Spector, A., E., Orrell, M. (2018). Reminiscence therapy for dementia. *Cochrane Database of Systematic Reviews, 3*, 1–107. 10.1002/14651858.CD001120.pub3

Wójcik-Topór, P. (2018). Gerontologopedia. (W:) W. Tłokiński, S. Milewski, K. Kaczorowska-Bray (red.), *Niefarmakologiczne metody oddziaływania na funkcje poznawcze w otępieniach*, 451-468. Gdańsk: Grupa Wydawnicza Harmonia.

Wysokiński, A., Gruszczyński, W. (2008). *Współczesne koncepcje diagnostyczne, kliniczne i terapeutyczne otępienia czołowo-skroniowego*. Łódź: Klinika Psychiatrii Dorosłych II Katedry Chorób Układu Nerwowego UM w Łodzi.