

Selected health behaviours related to women's reproductive health among women aged 18–49 years: A cross-sectional study¹

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Katarzyna Piasecka^{a, 1, 7}✉, Monika Pytka^{b, 2, 7}, Iwona Matusiewicz^{c, 3},
Katarzyna Warchoń^{d, 4, 7}, Agnieszka Kowalska-Olczyk^{e, 5}, Katarzyna Kanadys^{f, 6, 7}

a. Katarzyna Piasecka, <https://orcid.org/0000-0002-3717-5926>; *b.* Monika Pytka, <https://orcid.org/0000-0001-5998-5156>; *c.* Iwona Matusiewicz, <https://orcid.org/0009-0009-7214-2749>; *d.* Katarzyna Warchoń, <https://orcid.org/0009-0008-5931-4473>; *e.* Agnieszka Kowalska-Olczyk, <https://orcid.org/0000-0002-3823-3489>; *f.* Katarzyna Kanadys, <https://orcid.org/0000-0001-8447-3937>; *1.* Department of Family and Geriatric Nursing, Chair of Integrated Nursing Care, Medical University of Lublin, Poland; *2.* Department of Biotechnology, Microbiology and Human Nutrition, University of Life Sciences in Lublin, Poland; *3.* Faculty of Health Sciences, Medical University of Lublin, Poland; *4.* Department of Genomics and Laboratory Genetics, Institute of Medical Biology, Faculty of Medicine, John Paul II Catholic University of Lublin, Poland; *5.* Laboratory of Medical and Pharmaceutical Law, Faculty of Medical Sciences, Medical University of Lublin, Poland; *6.* Department of Obstetric and Gynaecological Nursing, Chair of Obstetrics and Gynaecology, Faculty of Health Sciences, Medical University of Lublin, Poland; *7.* Polish Association of Natural Family Planning Teachers;

✉ Corresponding author: Katarzyna Piasecka, katarzyna.piasecka@umlub.edu.pl

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Abstract: *Background:* Health behaviours comprise actions and habits associated with health status and the risk of its deterioration. They include, among other things, physical activity, sleep-related behaviours, avoidance of stimulants and the use of preventive health services. Health behaviours constitute an important component of lifestyle and are influenced by social, economic and environmental factors. Reproductive health is an important area of research concerning women's health. From a demographic perspective, women's reproductive age is most commonly defined as the period from 15 to 49 years. It is therefore appropriate to monitor health behaviours among women of reproductive age, particularly behaviours related to preventive care and reproductive health. *Aim:* To assess selected health behaviours related to reproductive health among women aged 18–49 years. *Material and Methods:* The study was conducted from April to May 2023. The participants were women aged 18–49 years. The study group comprised 315 women. Purposive convenience sampling was used. Some participants were recruited in secondary schools and a healthcare facility in Lublin, while the remaining respondents were recruited through thematic groups on Facebook. Data were collected using an original questionnaire. The analysis was conducted using IBM SPSS Statistics 27. *Results:* An annual gynaecological examination was reported by 71.1% (224) of respondents. Among women aged 20–49 years, 28.8% (75) had undergone cervical cytology six months previously, while 26.5% (69) had undergone the examination one year previously. Breast self-examination was reported by 217 respondents. Depending on age, 46.4% (13) to 72.7% (32) performed it once a month. Menstrual-cycle length was monitored by 82.5% (260) of participants. In addition, 58.7% (185) of women monitored the main fertility indicators. *Conclusions:* The findings indicate variation in selected preventive and health behaviours in the study group. They also indicate a need for further development of educational and preventive activities concerning reproductive health, delivered by healthcare professionals. This may enable women to make informed decisions and care for their health at every stage of life.

Keywords: fertility, health behaviours, lifestyle, prevention, women.

1. Introduction

Health behaviours constitute an important component of lifestyle. According to the WHO, lifestyle is a “way of living based on the interplay between broad living conditions and individual patterns of behaviour determined by sociocultural factors

and individual characteristics” (Misiuna, 1994). Accordingly, lifestyle encompasses nutrition, physical activity, leisure activities, rest, smoking and alcohol consumption, as well as regular preventive examinations aimed at the early detection of disease

¹ Article in Polish language: https://stowarzyszeniefidesetratio.pl/fer/67p_Pias.pdf

(Kandel et al., 2021; Nowicki et al., 2018; Perski et al., 2022; Torkel et al., 2026).

Reproductive health is an important dimension of human health. According to the National Health Programme, reproductive health encompasses: “Reproductive health is an important component of the definition of health as a state of complete physical, mental and social well-being, and not merely the absence of disease or disorders, in all matters relating to the reproductive system and reproduction in both sexes at all stages of life. It encompasses puberty and the menopause, fertility and infertility, family planning, health during pregnancy, childbirth and the puerperium, and cancers of the reproductive organs and breast” (Piasecka et al., 2024; Rozporządzenie Rady Ministrów, 2016).

Age is one of the principal biological factors associated with female fertility. Women's reproductive age is generally considered to comprise the age from 15 to 49 years (Drabik et al., 2021; Ford et al., 2020; Ślizień-Kuczapska et al., 2017).

As part of preventive healthcare, including preventive care relating to reproductive health, great importance is attached to regular gynaecological check-ups. This enables the early detection and effective treatment of diseases. One of the tests used in the prevention of cervical cancer is conventional cytology (Gośliński, 2025). Cervical cancer prevention involves screening based on cytology and HR HPV tests. The introduction of HR HPV tests enables the detection of a greater number of CIN2+ lesions compared with conventional cytology (Nowakowski et al., 2026). The cervical cancer prevention programme covers women aged 25–64 (Łucyszyn et al., 2024).

An important element of reproductive health prevention among women is breast self-examination. An important element of breast health prevention is knowing what normal breasts look like and how they are structured, and paying attention to any changes that occur (Banihashemi & Brennan, 2023).

Another important aspect of women's health is dental care. Diseases affecting the tissues surrounding the teeth, in addition to local infection and tooth loss, may contribute to systemic inflammation. This may, in turn, exacerbate systemic conditions such as atherosclerosis, increased blood pressure and glycaemia,

kidney damage, increased left-ventricular mass, increased risk of stroke, preterm birth and a higher incidence of cardiovascular events (Wojtkowska & Wysokiński, 2015). Regular dental check-ups are an important component of oral-disease prevention (Mohd Khairuddin et al., 2024).

Furthermore, women who smoke are particularly vulnerable to disturbances in the functioning of the pituitary gland, hypothalamus, thyroid and adrenal glands. Tobacco smoking may be associated with hormonal disturbances, menstrual-cycle abnormalities, anovulatory cycles and an earlier onset of menopause. Smoking may also adversely affect ovarian function and sex-hormone metabolism. Female smokers have been observed to have an increased risk of fertility problems and a longer time to conception compared with non-smokers (Practice Committee of the American Society for Reproductive Medicine, 2024; Torkel et al., 2026).

According to European Union guidelines, physical activity is “any bodily movement produced by skeletal muscles that results in an increase in energy expenditure above resting levels”. The concept of physical activity therefore encompasses not only sporting activity but also other forms of movement associated with everyday functioning (Komisja Europejska, 2008). The recommended level of physical activity for adults is at least 30 minutes per day at moderate intensity (e.g. swimming or cycling) (Brinson et al., 2023; Warchoń & Skoczylas, 2024).

Sleep also plays an important role in maintaining good health and well-being (Dąbrowska-Galas et al., 2021; Li et al., 2024). It has many functions, including supporting growth, learning and cognitive development (Kopasz et al., 2010). Adult women aged 18–54 years require 7–9 hours of sleep (Hirshkowitz et al., 2015).

A range of menstrual hygiene products is currently available, including sanitary pads, tampons, menstrual cups and menstrual underwear (Hennegan et al., 2021; Krause et al., 2025). Under certain conditions, the use of intravaginal menstrual hygiene products may be associated with a risk of toxic shock syndrome. One factor associated with this risk is inappropriate use of menstrual products, which may promote the proliferation of *Staphylococcus aureus*. Conditions

conducive to this include particular temperatures, the presence of oxygen and the acidic vaginal pH. Release of TSST-1 toxin by *Staphylococcus aureus* can trigger a rapid and uncontrolled immune response leading to toxic shock, which may present with fever, hypotension, a skin rash followed by desquamation and multiple-organ dysfunction (Nonfoux et al., 2018).

A woman's menstrual cycle involves numerous changes resulting from the functioning of the neuroendocrine system. Changes occurring in the ovaries allow three phases of the menstrual cycle to be distinguished: the early follicular phase, the late follicular phase and the luteal phase. These phases can be identified using fertility indicators, including changes in cervical mucus, basal body temperature and cervical position. Observation of cervical position applies to women who have initiated sexual activity (Szymaniak, 2013). Observation of these indicators enables changes occurring throughout the menstrual cycle to be monitored. Knowledge of fertility indicators can be used in fertility-awareness-based methods for planning or postponing conception. Systematic cycle observation may increase awareness of the physiological course of the cycle and facilitate recognition of certain abnormalities requiring medical consultation. Fertility-awareness-based methods can be used both by women who have not yet initiated sexual activity, mainly for preventive purposes, and by women who have already initiated sexual activity. It is important that observations are made accurately and regularly (Bassas et al., 2025; Delbaere et al., 2021; Duane et al., 2022; Knap-Wielgus et al., 2023; Practice Committee of the American Society for Reproductive Medicine & Practice Committee of the Society for Reproductive Endocrinology and Infertility, 2022).

Various contraceptive methods are currently available, including barrier, hormonal and chemical methods. Barrier methods include diaphragms, cervical caps, vault caps and vaginal sponges. Chemical methods include creams, tablets, pessaries, gels and foams containing spermicidal substances such as nonoxynol-9. The use of hormonal contraceptive methods may be associated with certain adverse effects and contraindications, the profile of which depends, among other factors, on the type of preparation

and individual risk factors. *Lactobacillus* bacteria constitute a natural protective barrier against pathogens because they produce substances that limit their abundance. These include lactic acid (which lowers vaginal pH), hydrogen peroxide (H_2O_2) and bacteriocins (antibacterial peptides) (Elkafas et al., 2022; Pytko et al., 2019). The absence or deficiency of *Lactobacillus* may lead to bacterial vaginal infections (bacterial vaginosis), which, if untreated, may alter vaginal pH and subsequently contribute to infertility. In the case of vaginal yeast infections (candidiasis), excessive proliferation of microorganisms and the toxins they produce may result in difficulty conceiving (Przybysz-Zaremba, 2017).

Combined hormonal contraception, including oral contraceptive pills, patches and vaginal rings, may be associated with an increased risk of thromboembolic complications and elevated blood pressure. The use of hormonal contraceptive methods may also cause histological changes in the endometrium, the nature of which depends, among other factors, on the type and duration of use of the preparation (Dinh et al., 2015; Dmochowski et al., 2013; Waluszewska et al., 2026). The effect of hormonal contraceptive methods on the vaginal microbiota may vary according to the method used, and the available evidence does not clearly indicate that their use reduces the abundance of *Lactobacillus* species and leads to dysbiosis (Balle et al., 2023; Bastianelli et al., 2021; Elkafas et al., 2022).

Early sexual initiation and a greater number of sexual partners may be associated with increased exposure to certain risk factors affecting sexual and reproductive health (Dora, 2013).

Untreated inflammation and infections may lead to changes in vaginal pH, which may contribute to infertility. Many intimate infections, such as vaginal candidiasis, do not directly cause infertility but may temporarily cause difficulty conceiving. Infection with *Chlamydia trachomatis*, however, may lead to infertility by increasing the risk of adhesions in the fallopian tubes (Passos et al., 2022). Prevention of sexually transmitted infections includes health education and reducing exposure to risk factors through mutual fidelity within a relationship (Kozakiewicz et al., 2019; Przybysz-Zaremba, 2017).

Social changes and the development of digital information sources may influence how knowledge is acquired and how behaviours related to reproductive health are adopted. Health-promotion and preventive activities delivered by healthcare professionals may play an important role in this respect. Systematic monitoring of health behaviours among women of reproductive age is therefore warranted. Current knowledge concerning the co-occurrence of different reproductive-health-related behaviours across age groups remains incomplete, which supports the need for further research in this area.

2. Aim of the Study

The aim of the study was to assess selected health behaviours related to reproductive health among women aged 18–49 years and to determine whether the frequency of selected behaviours differs between age groups.

Research Questions

1. How frequently do the women studied engage in selected preventive behaviours concerning reproductive health?
2. What is the frequency of selected lifestyle-related behaviours, including smoking, physical activity and sleep duration?
3. Which menstrual hygiene products do the women studied use?
4. What proportion of participants monitor menstrual-cycle length and fertility indicators?
5. Which contraceptive methods do women who use contraception report using?
6. Does the frequency of selected health behaviours vary according to the age of the women studied?

Research Hypotheses

1. The time elapsed since the most recent cervical cytology examination differs significantly between women's age groups.

2. The frequency of breast self-examination differs significantly between women's age groups.
3. The frequency of dental check-ups within the previous six months differs significantly between women's age groups.
4. The frequency of cigarette smoking differs significantly between women's age groups.

3. Method

A diagnostic survey method using an original questionnaire was employed. The instrument was used to collect sociodemographic data and information on behaviours related to reproductive health. The study comprised four age groups: 18–19, 20–29, 30–39 and 40–49 years. The original questionnaire was developed on the basis of a review of the literature on health behaviours and reproductive health. The questionnaire content was subjected to expert consultation involving academic staff representing nursing and midwifery at the Medical University of Lublin and John Paul II Catholic University of Lublin. Twenty women participated in the pilot study. Eligibility for the pilot study required student status in nursing and voluntary consent to participate. Selected questionnaire items were revised on the basis of participants' comments. The changes concerned questions 12 and 16 relating to health behaviours, as these were unclear to respondents. The study was conducted from April to May 2023 among women aged 18–49 years. Non-probability purposive convenience sampling was used. Women meeting the inclusion criteria and available at the recruitment sites or through the specified online channels were invited to participate. Participants were recruited from pupils at the Władysław Stanisław Reymont School Complex of Clothing and Textile Industries in Lublin (19 questionnaires), the Stefania Sempołowska 4th General Secondary School in Lublin (21 questionnaires), and patients of the non-public healthcare facility "Farmed" in Lublin (105 paper questionnaires). The remaining questionnaires (210) were collected online through

Facebook groups (Pielęgniarstwo XXI wieku, Pielęgniarki i Pielęgniarze, Grupa Lubelskie Pielęgniarki i Położne, Medyczni na dyżurze–lekarze, pielęgniarki i reszta zespołu). Forty questionnaires were excluded because of incorrect or incomplete responses. A total of 105 correctly completed paper questionnaires and 210 online questionnaires were obtained. The final sample included in the statistical analysis comprised 315 women. The analysis was performed using IBM SPSS Statistics 27. Three levels of statistical significance were adopted, denoted by * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$.

The selected statistical analysis, based on the χ^2 (chi-square) test, was used to assess the association between membership in one of the four age groups and health behaviours concerning the time since the most recent cervical cytology examination, breast self-examination, a dental visit within the previous six months and cigarette smoking. Percentage distributions were also analysed for the frequency of gynaecological examinations, frequency of sporting activity, sleep duration, use of menstrual hygiene products, monitoring of menstrual-cycle length and fertility indicators, contraceptive methods and the number of lifetime sexual partners.

4. Results

The mean age of the 315 women in the study group was 29.92 years (SD = 9.56). Participants were divided into four age groups: 18–19 years, 17.5% (55); 20–29 years, 40.6% (128); 30–39 years, 23.8% (75); and 40–49 years, 18.1% (57). Of the study group, 37.5% (118) lived in rural areas, 36.8% (116) in a large city (more than 100,000 inhabitants), and 25.7% (81) in a small or medium-sized town (fewer than 100,000 inhabitants). The largest group had higher education, 67.3% (212); 20.6% (65) had secondary education and 11.4% (36) had primary education. The smallest group had vocational education, 0.6% (2). Most participants were unmarried, 51.7% (163); a slightly smaller proportion, 44.1% (139), were married; divorced women accounted for 3.5% (11), and widows for 0.6% (2).

An annual gynaecological examination was reported by 71.1% (224) of women, every six months by 21.6% (68), once every two years by 3.8% (12), and every three months by 3.2% (10). A further 0.3% (1) reported not undergoing such examinations (Table 1).

The analysis demonstrated a significant association between women's age and the time elapsed since their most recent cervical cytology examination ($\chi^2 = 123.17$; $p < 0.001$). The association was moderate ($V = 0.356$). Among women aged 18–19 years, 63.6% (35) reported that they had never undergone cervical cytology, whereas among those aged 20–29 years, 24.2% (31) had undergone their most recent examination six months previously. In the 30–39-year group, 33.3% (25) had undergone the examination one year previously, while in the 40–49-year group, 38.6% (22) had undergone it six months previously (Table 2).

Due to the wording of the question “Do you perform breast self-examination?”, women who reported that they did not perform breast self-examination ($n = 98$) were excluded from this analysis; consequently, 217 women were analysed. No significant association was found between women's age and the frequency of breast self-examination ($p > 0.05$) (Table 3).

A significant association was found between age and a dental visit within the previous six months ($\chi^2 = 8.16$; $p = 0.043$). The association was weak ($V = 0.161$). Within the previous six months, a dental visit had been attended by 82.5% (47) of women aged 40–49 years, 76.4% (42) of women aged 18–19 years, 72.0% (54) of women aged 30–39 years and 63.3% (81) of women aged 20–29 years (Table 4).

Table 1. Frequency of gynaecological examinations

	N	%
Never	1	0.3
Every 3 months	10	3.2
Every 6 months	68	21.6
Once a year	224	71.1
Once every 2 years	12	3.8
Total	315	100.0

Note: n – number of observations
Source: authors' own analysis.

A significant association was found between age and cigarette smoking ($\chi^2 = 11.73$; $p = 0.008$). The association was weak ($V = 0.193$). Cigarettes were smoked by 34.5% (19) of women aged 18–19 years, 26.6% (34) of women aged 20–29 years, 13.3% (10) of participants aged 30–39 years and 14.0% (8) of women aged 40–49 years (Table 5).

The largest proportion, 44.1% (139), of women reported engaging in sport less than once a week; 39.4% (124) exercised 1–2 times a week, 14.0% (44) exercised 3–5 times a week, and 2.5% (8) exercised more than five times a week (Table 6).

Among the women studied, 45.4% (143) reported that they usually slept for 7–9 hours. A total of 51.4% (162) slept for 5–6 hours, 1.9% (6) slept for 3–4 hours, and 1.3% (4) slept for more than nine hours (Table 7).

The question regarding the most commonly used personal hygiene products during menstruation was a multiple-choice question; a total of 405 responses were received. During their periods, 56.0% (227) of respondents used sanitary pads, 37.5% (152) used tampons, 4.9% (20) used menstrual cups, and 1.5% (6) used period underwear (Table 8).

The majority of surveyed women, 82.5% (260), monitored the length of their menstrual cycles, while more than half, 58.7% (185), also monitored the main fertility indicators, such as cervical mucus and body temperature (Table 9).

In the question concerning contraceptive use, 195 women who did not use contraception were excluded; the analysis therefore included 120 participants. Of these women, the largest proportion, 56.8% (68), used hormonal contraception, while

Table 2. Time elapsed since the most recent cervical cytology examination by age group

	18–19 years		20–29 years		30–39 years		40–49 years	
	N	%	N	%	N	%	N	%
One month ago	1	1.8	19	14.8	15	20.0	3	5.3
Six months ago	9	16.4	31	24.2	22	29.3	22	38.6
One year ago	1	1.8	28	21.9	25	33.3	16	28.1
Two years ago	2	3.6	12	9.4	11	14.7	10	17.5
I do not remember	7	12.7	12	9.4	1	1.3	6	10.5
Never	35	63.6	26	20.3	1	1.3	0	0.0
Total	55	100.0	128	100.0	75	100.0	57	100.0

$\chi^2 = 123.17$; $df = 15$; $p < 0.001^{***}$; $V = 0.356$

Note: n – number of observations; χ^2 – test statistic; p – significance level; df – degrees of freedom; V – Cramér's V coefficient.

Source: authors' own analysis.

Table 3. Frequency of breast self-examination

	18–19 years		20–29 years		30–39 years		40–49 years	
	N	%	N	%	N	%	N	%
Once a month	13	46,4	64	70,3	32	59,3	32	72,7
Every few months	11	39,3	25	27,5	13	24,1	10	22,7
Once every six months	3	10,7	1	1,1	7	13,0	2	4,5
Once a year	1	3,6	1	1,1	2	3,7	0	0,0
Total	28	100,0	91	100,0	54	100,0	44	100,0

$\chi^2 = 16,35$; $df = 9$; $p = 0,060$; $V = 0,158$

Source: authors' own analysis.

Table 4. Dental visit within the previous six months

	18–19 years		20–29 years		30–39 years		40–49 years	
	N	%	N	%	N	%	N	%
Yes	42	76.4	81	63.3	54	72.0	47	82.5
No	13	23.6	47	36.7	21	28.0	10	17.5
Total	55	100.0	128	100.0	75	100.0	57	100.0

$\chi^2 = 8.16$; $df = 3$; $p = 0.043^*$; $V = 0.161$
Source: authors' own analysis

Table 5. Cigarette smoking

	18–19 years		20–29 years		30–39 years		40–49 years	
	N	%	N	%	N	%	N	%
Yes	19	34.5	34	26.6	10	13.3	8	14.0
No	36	65.5	94	73.4	65	86.7	49	86.0
Total	55	100.0	128	100.0	75	100.0	57	100.0

$\chi^2 = 11.74$; $df = 3$; $p = 0.008^{**}$; $V = 0.193$
Source: authors' own analysis

39.1% (47) used barrier contraception; withdrawal was used by 3.3% (4), and 0.8% (1) used chemical contraception (Table 10).

In the question concerning the number of lifetime sexual partners, 46 women who had not initiated sexual activity were excluded. The results were therefore presented for 269 respondents. A single lifetime sexual partner was reported by 43.9% (118) of participants, two partners by 16.7% (45), and more than two partners by 39.4% (106) (Table 11).

5. Discussion

The aim of the study was to assess selected behaviours related to reproductive health in a group of 315 women aged 18–49 years.

Our findings showed that 71.1% (224) of women underwent gynaecological examinations once a year, 21.6% (68) every six months, 3.8% (12) once every two years, 3.2% (10) every three months, while 0.3% (1) did not undergo gynaecological examinations. In a 2012 study of 100 women, Kowalewska et al. found that among women aged 18–39 years, those undergoing gynaecological examinations every six months predominated, accounting for 34.5% of

Table 6. Frequency of sporting activity

	N	%
Less than once a week	139	44.1
1–2 times a week	124	39.4
3–5 times a week	44	14.0
More than five times a week	8	2.5
Total	315	100.0

Source: authors' own analysis

Table 7. Sleep duration

	N	%
3–4 hours	6	1.9
5–6 hours	162	51.4
7–9 hours	143	45.4
More than 9 hours	4	1.3
Total	315	100.0

Source: authors' own analysis

the group. Annual examinations were reported by 24.0%, while the least frequent interval, once every two years, was reported by 17.0% (Kowalewska et al., 2012). In the study by Kowalewska et al. (2012),

Table 8. Menstrual hygiene products

	N	%
Sanitary pads	227	56.0
Menstrual underwear	6	1.5
Tampons	152	37.5
Menstrual cup	20	4.9
Total	405	100.0

Source: authors' own analysis

Table 9. Monitoring menstrual-cycle length and the main fertility indicators

Monitoring menstrual-cycle length		
	N	%
Yes	260	82.5
No	55	17.5
Total	315	100.0
Monitoring the main fertility indicators		
	N	%
Yes	185	58.7
No	130	41.3
Total	315	100.0

Source: authors' own analysis

the proportion of women reporting annual gynaecological examinations was lower than in our study. More recent research conducted in Poland confirms these tendencies: nearly half of respondents reported visiting a gynaecologist at least once a year, while one in five underwent an examination every six months (Wdowiak et al., 2024). This comparison should nevertheless be interpreted cautiously because of differences in sample size, structure and sampling method. In the cited study, the sample was three times smaller than that of the present study ($n = 315$) and comprised 100 women from Łomża and the surrounding area. The present study involved a larger sample; however, because non-probability sampling was used, this cannot be taken as evidence of greater representativeness. The two groups had a similar proportion of rural and urban residents.

Table 10. Contraceptive methods

	N	%
Withdrawal	4	3.3
Barrier methods (male condoms, female condoms, cervical cap)	47	39.1
Chemical methods (contraceptive pessaries, vaginal sponge)	1	0.8
Calendar-based method	0	0.0
Hormonal methods (contraceptive pills, patches, rings, injections, intrauterine device, contraceptive implant)	68	56.8
Emergency contraception ("morning-after" pill)	0	0.0
Tubal ligation	0	0.0
Total	120	100.0

Source: authors' own analysis

Table 11. Number of lifetime sexual partners

	N	%
One	118	43.9
Two	45	16.7
More than two	106	39.4
Total	269	100.0

Source: authors' own analysis

Our findings indicate differences between age groups in the time elapsed since the most recent cervical cytology examination. In the 18–19-year group, 63.6% (35) of women reported never having undergone cytology, whereas in the 20–29-year group, 24.2% (31) had undergone their most recent examination six months previously. In the youngest group, the majority had not undergone the examination, whereas in the older group a proportion had done so recently. In addition, 33.3% (25) of participants aged 30–39 years had undergone the examination one year previously, and 38.6% (22) six months previously. In a 2012 study of 100 women aged 18–39 years, 38.0% underwent cytology annually. The present study assessed the time elapsed since the most recent cytology examination rather than the frequency of screening; therefore, direct comparison

of these values is limited. The relatively large sample is a strength of the study, but it does not eliminate limitations arising from non-probability sampling. Because the outcomes were measured differently, these findings should not be interpreted as evidence of a change in population-level screening frequency (Kowalewska et al., 2012). The association between patient age and engagement in screening was also confirmed by a nationwide analysis by Michałek et al., in which the highest proportion of women reporting cervical cytology within the previous three years was observed in the 25–34 and 35–44 age groups (Michałek et al., 2024). In our 2023 study, the age range was specified as 18–19 years for the youngest group, in which 63.6% (35) reported never having undergone cytology. The high proportion of women who had not previously undergone cytology in the youngest group may partly be related to age criteria applicable to the cervical-cancer prevention programme. The present study cannot, however, determine the reasons for the observed difference. Findings for the youngest group should therefore be interpreted in the context of age criteria applicable to cervical-cancer screening programmes. The healthcare system should consequently support health education and encourage women to participate in screening once they reach the age covered by the programme (Irzmańska-Hudziak et al., 2025; Wdowiak et al., 2024). The proportion of women aged 20–39 years who reported not undergoing cytology indicates the presence of a group not using this preventive service. Similarities between some findings and those of Kowalewska et al. suggest that the issue requires further research using more representative samples. The time elapsed since the most recent cytology examination differed between age groups: in the 20–29-year group, 24.2% (31) had undergone the examination six months previously and 21.9% (28) one year previously; in the 30–39-year group, the corresponding figures were 29.3% (22) and 33.3% (25), and in the 40–49-year group, 38.6% (22) and 28.1% (16).

Regular monthly breast self-examination was reported by between 46.4% (13) and 72.7% (32) of women, depending on age group. The lowest proportion was observed among the youngest women (18–19 years), and the highest among women aged

40–49 and 20–29 years. In a 2011 study by Paździor, Stachowska and Zielińska, 36.0% of women reported performing breast self-examination (Paździor et al., 2011). In our study, the proportion reporting regular breast self-examination was higher than that reported by Paździor et al. (2011); however, because of methodological differences between the studies, this difference cannot be interpreted as evidence of an increase in the frequency of breast self-examination in the population. Contemporary guidance places greater emphasis on breast awareness, namely familiarity with the normal appearance and structure of the breasts and attention to newly occurring changes. Nevertheless, a systematic review by Banihashemi and Brennan indicates that evidence for the effect of such self-observation on earlier breast-cancer detection in young women remains limited (Banihashemi & Brennan, 2023).

Oral health may be relevant both to maternal gut microbiota and to pregnancy outcomes. Among women in the first trimester of pregnancy with periodontitis, differences in gut microbiota composition and faecal metabolite profiles have been observed compared with women without periodontitis, suggesting possible links within the oral–gut axis (Cheng et al., 2024). More recent evidence also indicates an association between periodontitis and a higher risk of preterm birth and low birth weight (Machado et al., 2023). The statistical data show a considerable difference in the frequency of dental visits according to age. In our study, the highest attendance was observed among women aged 40–49 years, at 82.5% (47), and the lowest among women aged 20–29 years, at 63.3% (81). These findings may be compared with the study by Nowicki et al. (2017), in which the corresponding proportion was 82.9% (n = 243). In the present study, the lowest attendance was among women aged 20–29 years, at 63.3% (81), while higher figures were recorded among those aged 30–39 years, at 72.0% (54), and 18–19 years, at 76.4% (42).

Most women participating in the study reported that they did not smoke. Across the study groups, between 65.5% (36) and 86.7% (65) reported not smoking. Among 93 students aged 17–19 years, 61.3% did not smoke, while 38.7% smoked (Mizgier

et al., 2016). Given the known negative consequences of smoking for reproductive health, the relatively high proportion of non-smokers may be interpreted as a favourable feature of the health-behaviour profile of the study group. Current evidence indicates that smoking in women is associated with reduced fertility and a higher risk of spontaneous miscarriage and ectopic pregnancy (Practice Committee of the American Society for Reproductive Medicine, 2024). However, socioeconomic status, stress levels, diet and exposure to second-hand smoke may also be relevant, as these factors frequently co-occur with smoking and affect fertility independently of tobacco itself (Li et al., 2023; Peng et al., 2024; Yang et al., 2023).

The largest group of women, 44.1% (139), reported engaging in sporting activity less than once a week. In research by Sochocka and Wojtylko (2013), more than half—57.0% (n = 315)—of students did not engage in regular physical activity. One in four respondents exercised twice a week, while 12.4% (n = 68) did so every day (Sochocka & Wojtylko, 2013). In a 2016 study by Mizgier et al. of 93 students, 50.5% of girls aged 17–19 years did not participate in sport (Mizgier et al., 2016). In our study, the largest group of respondents engaged in physical activity less than once a week, 44.1% (139), while 39.4% (124) reported activity 1–2 times a week. The low level of physical activity observed in our study is consistent with earlier observations by Sochocka and Mizgier, in which more than half of participants did not engage in regular exercise. The importance of physical activity for reproductive health is supported by the systematic review and meta-analysis by Xie et al., in which a moderate level of physical activity was associated with a lower risk of infertility compared with low activity (Xie et al., 2022).

Sleep duration in the cited studies was most commonly 5–6 hours, 51.4% (162), followed by 7–9 hours, 45.4% (143), 3–4 hours, 1.9% (6), and more than 9 hours, 1.3% (4). In the present study, 51.4% (162) of respondents reported usually sleeping 5–6 hours per night. Becker et al. (2018) found that among college students aged 18–29 years (n = 7626), 36.0% slept fewer than seven hours per night. The importance of sleep for women's reproductive health is indicated by a systematic review by Li et al., in which

sleep disturbances were associated with infertility, although findings concerning sleep duration itself remained inconclusive (Li et al., 2024). A limitation of the comparative data is that our findings concern women aged 18–49 years, whereas Becker et al.'s study included both women and men. The study groups also differed substantially in demographic structure, particularly in sex composition and age range.

In the multiple-response question concerning menstrual hygiene products, sanitary pads were selected most frequently, accounting for 56.0% (227) of all responses, followed by tampons at 37.5% (152). Menstrual cups accounted for 4.9% (20) of responses and menstrual underwear for 1.5% (6). A 2022 study by Parent et al. conducted among a large group of women aged 18–50 years (n = 1150) demonstrated the predominant use of traditional menstrual hygiene products during the day (pads 81.0% or tampons 45.6%) over reusable products (cups 9.4% or underwear 1.7%). At night, women used pads almost as frequently as during the day—79.3%—whereas tampons were used less frequently—19.8% (Parent et al., 2022). The widespread use of pads is also confirmed by Choi et al. among 8658 women: 89.0% used disposable pads, compared with 4.2% using tampons and only 1.6% using menstrual cups (Choi et al., 2021). The lower use of tampons at night may have resulted partly from medical recommendations. Wearing a tampon for too long at night (more than eight hours) may promote bacterial growth, thereby increasing the risk of toxic shock syndrome (TSS). The present study showed a similar tendency: more than half of respondents selected pads, followed by tampons. Thus, pads were the most commonly selected hygiene product in both studies, irrespective of sample size. The present study did not analyse factors determining the choice of particular menstrual hygiene products.

The study also examined whether women monitored menstrual-cycle length and the main fertility indicators. These indicators are relevant to monitoring current reproductive-health status. Cycle monitoring may increase awareness of the course of the cycle and the physiological changes observed. Systematic monitoring of menstrual-cycle length was reported by 82.5% (260) of women, including 58.7% (185) who

additionally monitored the main fertility indicators. However, there was no verification of whether these observations were made using mobile applications or paper-based cycle-observation charts. In a 2024 study by Hong et al. involving 700 women aged 20–39 years, as many as 62.3% (431) reported using the “Ovey” mobile application. The principal reason for using the tool was to predict the date of the forthcoming menstruation (Hong et al., 2024). The women did not, however, monitor the principal fertility signs, such as cervical mucus and body temperature. A systematic review by Kalampalikis et al. indicates that menstrual-cycle tracking applications may support the observation of menstruation and fertility, although only some have been evaluated by medical experts (Kalampalikis et al., 2022). The findings show that 82.5% (260) of respondents monitored menstrual-cycle length and 58.7% (185) reported observing the main fertility indicators. The available data do not, however, permit assessment of participants’ level of knowledge or the quality of their observations. The questionnaire did not record how cycle observations were documented, so it was not possible to compare the use of digital applications with traditional recording methods. In-depth knowledge of fertility physiology can be acquired by learning a cycle-observation method under the guidance of a qualified method instructor. Fertility-awareness-based methods enable the observation and interpretation of physiological indicators such as cervical mucus and basal body temperature, and their use may be more effective following appropriate instruction (Duane et al., 2022).

In the present study, 61.9% (195) of women did not use contraception, while 38.1% (120) reported using contraceptive methods. Among these women, hormonal contraception was the most common, at 56.8% (68), while 39.1% (47) used condoms as a barrier method. Research by Bień and Stadnicka showed that lower- and upper-secondary school students most commonly use condoms (83.8%) as a method of preventing pregnancy (Bień & Stadnicka, 2015). In a 2017 study by Dębska et al. among 380 students, the largest proportion of respondents (64.0%) used or intended to use condoms as a contraceptive method, while more than half (51.3%) used contraceptive

pills (Dębska et al., 2017). In a study by Izdebski et al. involving 642 women aged 18–49 years, the most frequently used method was the condom (63.2%), while hormonal methods were used by 34.2% of respondents (Izdebski et al., 2022). In the present study, hormonal contraception was the most frequently used method—56.8% (68)—whereas Bień and Stadnicka and Dębska et al. reported condoms as the most frequently selected method.

Among the 269 respondents who had initiated sexual activity, 43.9% (118) reported one lifetime sexual partner, 16.7% (45) two, and 39.4% (106) more than two. The smallest group comprised women reporting exactly two sexual partners, at 16.7% (45). In Kremska’s 2022 survey of 300 women divided into two age groups—20–30 years ($n = 100$), comprising female medical students, and 45–55 years ($n = 200$), comprising hospital employees—the largest proportion in both age groups reported having only one sexual partner, 61.0% among younger respondents and 67.0% among older respondents. More than three sexual partners were reported by 8.0% of women in the first group and 4.0% in the second (Kremska, 2022). In both studies, the women came from medical environments, which limits the possibility of generalising the findings to the wider female population. In the present study, one sexual partner predominated at 43.9% (118), alongside a high proportion of women reporting more than two sexual partners—39.4% (106). In Kremska’s study, the predominance of one partner was substantially higher (61.0% and 67.0%), with only a small proportion reporting more than three partners. Differences between the studies may be associated with differences in sample structure, study period and methodology. The number of lifetime sexual partners is also epidemiologically relevant in the context of exposure to HPV infection. In a study by Yamaguchi et al. involving 3968 sexually active women, the number of lifetime partners was significantly associated with HPV infection (Yamaguchi et al., 2021).

Care for women’s reproductive health requires regular check-ups and observation of one’s own body (Stępkowska & Przygodzka, 2020; Ślizień-Kuczapska et al., 2017). The findings show that not all women use preventive health services. Incomplete

participation in preventive activities among some respondents indicates a need for further development of health education and improved access to reliable information concerning reproductive-health prevention. The effectiveness of such activities is supported by a systematic review by Suto et al., whose authors demonstrated that information campaigns and education—individual, group-based and online—can increase patients' knowledge and positively influence health-promoting behaviours related to preconception planning (Suto et al., 2025). The findings support the continuation of health-promotion and preventive activities delivered by public-health institutions and healthcare professionals.

6. Study Limitations

The study has several important methodological limitations that should be considered when interpreting the findings. The sample was not representative of the population of women of reproductive age in Poland. This resulted from the inclusion of pupils from only two secondary schools and patients from a single healthcare facility in the same city. The sample was additionally supplemented online through recruitment via thematic Facebook groups.

Second, purposive convenience sampling was used. Selection of participants on the basis of availability and proximity prevents full generalisation of the findings to the entire population, as respondents may have differed substantially from women in the wider age group.

A further limitation concerns the design of the research instrument and the nature of the analysis. An original questionnaire was used. Although the questionnaire underwent expert consultation and pilot testing, a full validation procedure was not conducted. The self-report nature of the study entails a risk of recall and social-desirability bias.

An additional limitation was the use of two data-collection modes—paper and online questionnaires—which may have introduced a mode effect and contributed to differences in how respondents understood or answered the questions.

Despite these limitations, the findings provide valuable insights and constitute a strong rationale for further, more in-depth research in this area.

Conclusions

1. The frequency of individual preventive behaviours varied. An annual gynaecological examination was reported by 71.1% (224) of respondents, while the time elapsed since the most recent cervical cytology examination varied substantially between age groups.
2. Most respondents did not smoke; however, 44.1% (139) reported engaging in sporting activity less than once a week, and 53.3% (168) slept fewer than seven hours per day.
3. Disposable menstrual hygiene products predominated, particularly sanitary pads and tampons.
4. Most respondents, 82.5% (260), reported monitoring menstrual-cycle length, while 58.7% (185) also observed the main fertility indicators.
5. Contraception was used by 38.1% (120) of all respondents. Among women using contraception, hormonal methods were most frequently reported, at 56.8% (68), followed by barrier methods.

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