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A smartphone that cannot be abandoned, or the phenomenon of nomophobia among students[1]

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"...Do not set your heart on that which will not satiate your heart".

(Apophthegms of the Desert Fathers 2007, p. 392)

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Abstract: Digital technologies are widespread and common in modern life and are a fundamental form of human communication. The smartphone, a small device that can easily fit in a pocket, makes it possible to meet many of our daily needs. Although a smartphone makes people's lives easier, it also often becomes a source of anxiety, which in the long term can negatively affect psychological well-being. There can also be other consequences of nomophobia, for example, excessive attachment to the smartphone can become the cause of a systematic reduction of the real presence of other people in our lives. In this way, communication and dialogue with another person are disrupted and may even cease to exist at all. The purpose of the research was to identify the phenomenon of nomophobia among students. Differences were sought in the severity of nomophobia by gender, type of sport practised (individual versus team), taking up or not taking up professional activity, and correlations between the individual dimensions of nomophobia. A total of 102 students at the Józef Pilsudski University of Physical Education in Warsaw studying Sport participated in the study, including 23 women and 79 men. The average age of the students was 19.3 years. There were 85 people in the study group who practise sports. The average training experience was 8.5 years. *The Nomophobia Questionnaire* (NMP-Q) (Yildirim, Correia, 2015) was used to collect empirical data. Gender differences were observed in terms of the overall nomophobia rate and one of its dimensions which is *the inability to communicate*. Significantly higher scores were obtained by the female students surveyed. Factors that do not differentiate the severity of nomophobia among the students surveyed are the type of sport played (individual versus team) and taking up or not taking up a job. There are positive correlations between the individual dimensions of nomophobia.
Keywords: anxiety, nomophobia, smartphone, sports, students.

Introduction

Human functioning in reality is reflected, among other things, in emotional processes. An emotion is defined as a subjective mental state of a person that sets in motion a specific program of actions. This is accompanied by somatic changes, facial expressions, pantomimic expressions and various behaviors (Maruszewski, Dolinski, Lukaszewski, Marszał-Wiśniewska, 2015). Anxiety is also a natural part of the wide range of diverse emotions.

S. Siek says that "Modern psychologists and physiologists dealing with anxiety distinguish more than eight hundred different reactions considered to be

1 Article in polish language: https://www.stowarzyszeniefidesetratio.pl/fer/58P_Kuk.pdf

anxiety or anxiety-supportive" (Siek, 1999, p. 127). One example of modern anxiety is nomophobia. This very issue is the subject of the present study.

Nomophobia is a specific smartphone-related anxiety. It is a type of separation anxiety that concerns the tension associated with the possible lack of access to a smartphone. It manifests itself as a phobia of not being able to communicate with others, loss of connection, lack of access to information, and fear of having to give up convenience (Yildirim, Correia, 2015). The plague of modern times, which has to do with excessive attachment to the smartphone, was written about already in 2008 (Daily Mail Online, 2008). A survey of Britons showed that more than 13 million people feared losing their phone. The main reason cited by the respondents was the need to keep in touch with friends and family. More than one in two people said they never turned off their phones.

Nomophobia is a problem that not everyone seems to be aware of. Numerous scientific studies point to its consequences observed in adolescents. An interesting systematic review of studies on the topic was made by W. Notara, E. Vagka, Ch. Gnardellis, A. Lagiou (2021). The authors concluded that the use of a smartphone leads in a simple way to health disorders, and this is true both in the physical, mental and social spheres (Notara et al., 2021).

The smartphone, a device that gives a person unlimited access to the Internet at almost any time, is becoming for many people, including the young or even the very young, a device they cannot function or be without. For this reason, among others, it is used almost everywhere–in a school or college corridor, in a lecture hall, in a park, at a family celebration, at the table where a meal is eaten, literally everywhere we see people staring at the phone screen, focused on following some content or performing various activities with it. Even the youngest "one- or two-year-old children – can sit for hours politely staring at the screen as if it were an electronic babysitter" (Białecka, Gil, 2022, p. 3).

As E. Zmuda (2021) notes, the smartphone replaces many other devices that we may no longer need. These include, for example, an alarm clock, a camera, a camcorder, a calendar, an encyclopedia, a textbook, a traditional dictionary, a map, a bank, a store, a landline, or an mp3 player.

As W.M. Czerski (2022) writes, new technologies are the hallmark of our times. Smartphones accompany people, especially the young ones, practically always and everywhere. The intensity of the use of modern digital devices has been reinforced by the pandemic. This switch to increased remote work and learning has not been without consequences for physical and mental health.

In a world that has been dominated and captured by digital technologies, we are compelled and obliged to protect ourselves and our children from the potential dangers that come from using them in an unlimited and uncontrolled way. What seems to be a problem now is the low level of digital hygiene of teenagers and young adults.

Today's young adults are people who were born at the beginning of the 21st century. At the same time, they are those who grew up in a reality mastered by the access to and use of digital technologies, and thus the constant expansion of their influence on the lives of modern people. They are unfamiliar with the world before the era of computers, laptops, smartphones, the Internet, etc., and were given access to these devices and, with their help, to various digital content at an early and sometimes very early age. However, this phenomenon, so characteristic of our times and so widespread, can be evaluated differently. On the one hand, as a necessary and indispensable practice, bringing many cognitive and educational benefits but, on the other hand, as a threat to the widely understood health and even life of the young, often inexperienced and trusting, without the ability to rationally assess the danger. Today, "the virtual world has so far taken over our daily lives that we have stopped imagining life without texting, shopping online, cooking from a recipe on a smartphone screen, or checking the fastest route to get to a destination" (Białecka, Gil, 2022, p. 2). This virtual world certainly opens up a lot of possibilities for people, opens up to new perspectives, but it is also a real and very serious threat on many levels. The world quickly and imperceptibly draws in and fills the real space of life, which slowly and gradually ceases to be just real and becomes virtual.

The results of a review study on the consequences of nomophobia in adolescents compiled by R.G. Pérez Cabrejos, D.B. Rodríguez Galán, N.T. Colquepisco Paúcar, R.L. Enríquez Ludeña (2021) showed that excessive mobile phone use negatively affects academic performance and causes behavioral problems. In addition, depression and anxiety, as well as poor nutrition, were found to be linked to nomophobia. The researchers signal the need for immediate intervention in homes, schools and wider society.

Similarly, a study by Lebanese researchers found that nomophobia is linked to psychological conditions. Higher levels of anxiety and insomnia correlated with the likelihood of more severe nomophobia (Farchakh, Hallit, Akel, Chalhoub, Hachem, Hallit, Obeid, 2021).

Xurong Lu, Tour Liu, Xiaorui Liu, Haibo Yang, Jon D Elhai (2022) proved that loneliness, social avoidance and eccentricity are predictors of nomophobia.

P. Pajor (2021) referring to the analysis of a number of scientific papers concludes that excessive smartphone use can be similar to addiction in terms of trouble with impulse control or consequences, but it is not the same as addiction. According to the Moroccan researchers, nomophobia is a type of phobia that develops into an addiction. Today's widespread use of social networks and easy access to them, which requires the use of a smartphone, is a factor that significantly promotes nomophobia (Louragli, Ahami, Khadmaoui, Mammad, Lamrani, 2018). M.W. Czerski (2018) believes that the inclusion of nomophobia on the list of addictions is only a matter of time.

Nowadays, in literature we find terms that seem to be closely related to the phenomenon of nomophobia. This is, for example, phonoholism (FOMO), a smartphone addiction which manifests itself as a compulsive use of the phone. It is a situation when it becomes impossible to function normally without a phone or imagine a situation when you could leave your phone somewhere and not feel it constantly at hand. The phone is switched on 24 hours a day and lies very close to the owner, even while sleeping. On the other hand, not being able to answer a call, or leaving the phone in a place one does not have access to it, causes irritation, annoyance and tension that cannot be controlled (Witkowska, 2019).

The family, as the community in which the process of raising a child from the beginning of their life takes place, is the environment that is forced to face the challenge of using digital technologies by children and adolescents in a skillful and therefore non-health threatening way. Real relationships within the family, rather than virtual ones, provide an opportunity to learn to care for each other, build closeness and bonding, learn empathy, develop dialogue and listen to each other's needs (Derbich, 2011; Derbich, 2017). Such close relationships are a chance to "save the child" from what may threaten them if they go too deeply and uncontrollably into the world of digital technologies and their use. Closeness and reciprocity, the real presence of family members–parents and children–in the community, is a guarantee for the development of the need to be with each other, not side by side with a smartphone in hand. Sometimes it can also be the case that parents have some anxiety about how to raise a child to use modern technological advances. "Parents, seeing their children overuse digital technologies, on the one hand try to impose some restrictions, but on the other hand have concerns that they are limiting their freedom and are ultimately not convinced themselves what they should do" (Dziewit, Jaworowska–Duchlinska, 2023, p. 104). This may be a difficult, but important resolution, which becomes a challenge for modern parents responsible for the valuable and safe upbringing of their own children.

Sports and any other forms of physical activity can be a significant factor in preventing addictions, including various types of phobia like, for example, nomophobia. Exercises trigger the release of endorphins in the body, the so-called "happy hormones," and thus naturally improve mood and induce a sense of well-being. Engaging young adults in sports can, therefore, greatly support and protect them from the dangers of modern civilization. Nomophobia, as the results of many studies show, is such a real danger.

1. Research Methodology

The purpose of the study was to explore the phenomenon of nomophobia among first year university students studying Sport at the Józef Pilsudski Academy of Physical Education in Warsaw.

The following research questions were formulated:

1. Is there observed the phenomenon of nomophobia among the surveyed students, and, if so, what is its severity?
2. Are there any differences in the various dimensions of nomophobia in terms of the respondents' gender?
3. Are there any differences in nomophobia in terms of the discipline practiced (individual/team)?
4. Are there any differences in nomophobia among the students surveyed in terms of taking up or not taking up the coaching job?
5. What correlations are observed within each dimension of nomophobia?

The study was conducted in December 2022 and January 2023. A total of 102 people, including 23 women and 79 men, first-year, first-degree students of Sport at the Józef Pilsudski University of Physical Education in Warsaw, were surveyed.

Only those who gave their consent took part in the study. The participants were assured anonymity, security of data collection and storage. The study was diagnostic in nature. At that time, the number of students in the surveyed year (2022/2023) was 135, which proves that the vast majority of them agreed to participate in the study (75.5%).

Table 1 shows the characteristics of those who participated in the study.

The average age of the female subjects was 19.1 ± 1.1, and the average age of the male subjects was 19.5 ± 1.2. The average training seniority of the female subjects amounted to 8.1 ± 2.5, and that of the male subjects equaled 8.9 ± 3.8. The average age of the student subjects was 19.4 ± 1.2 years, and the average training seniority was 8.7 ± 3.5 years.

Of the students surveyed, 85 (83%) declared active engagement in sports, including 32 students practicing individual sports and 53 team sports.

Table 1. Characteristics of study subjects by age and training experience

	n	mean ±SD	95% PU medium	range (min ÷ min)
Women				
age	23	19.1±1.1	18.7÷19.6	18÷23
training seniority	20	8.1±2.5	6.9÷9.2	4÷14
Men				
age	79	19.5±1.2	19.3÷19.8	17÷23
training seniority	65	8.9±3.8	7.9÷9.9	1.5÷15

Statistica 13 program was used to perform statistical analysis. Analysis of the results was presented by gender, type of sport practiced and performance of the coach's work. The Shapiro-Wilk test was used to check the normality of the distribution of the variables studied. A two-factor analysis of variance ANOVA (group x factor) was used to analyze the results. The frequencies of AWF students in terms of nomophobia were compared using the χ^2 test. The relationship between nomophobia factors was determined using the r-Pearson correlation coefficient. A level of $p<0.05$ was considered statistically significant.

The Nomophobia Questionnaire (NMP-Q), a tool to measure nomophobia (Yildirim, Correia, 2015), was used in the study. The test consists of 20 items and measures the level of phobia severity regarding the smartphone use. The respondents rated each statement by relating it to a 7-point Likert scale, where 1 means "strongly disagree" and 7 means "strongly agree". The Polish adaptation and validation of the questionnaire was conducted by M.W. Czerski (2021). The Polish version has good psychometric properties, reliability indices are high, which confirms the correct construction of the tool. Confirmatory factor analysis (CFA) was used to determine the theoretical relevance of the questionnaire, which showed a good fit to the data and confirmed the four-factor structure of the questionnaire. The dimensions of nomophobia studied using the NMP-Q questionnaire consisted of: (1) Inability to communicate–the feeling of losing the ability to communicate instantly with others; (2) Loss of connection- refers

to the feeling of losing the ubiquitous connection enabled by smartphones; (3) Lack of access to information – refers to the feeling of discomfort that is associated with the loss of access to information via smartphones; (4) Giving up convenience–refers to the feeling of giving up the convenience provided by smartphones (Czerski, 2021, 2022). NMP-Q results were used to classify the respondents. Those with the score of 20 were considered not to show nomophobia. Mild nomophobia was defined by a score of 21-59, moderate nomophobia by a score of 60-99 and high nomophobia by a score of ≥100 (relative to the maximum score, which is 140) (Cain, Malcom, 2019).

2. Study Findings

2.1. Nomophobia among female and male students surveyed

Based on a two-factor ANOVA (gender x factor) analysis of variance, differences in nomophobia between female and male AWF students were examined (Table 2.). The analysis found differences between men and women in factors indicative of nomophobia ($F_{1,100} = 3.93$; $p = 0.046$; $\eta^2 = 0.062$), noting that women had significantly higher values for the factor related to the *inability to communicate* compared to men ($p = 0.002$), while female and male students obtained similar values in the other three factors: *loss of connection* ($p = 0.87$); *lack of access to information* ($p = 0.10$); *giving up convenience* ($p = 0.17$). There was also observed a significant large effect of difference between the dimensions of nomophobia ($F_{3,300} = 84.72$; $p<0.001$; $\eta^2 = 0.46$). On the basis of post hoc analysis, significant differences were found between factors I and II ($p<0.001$) and IV. ($p<0.001$); factor I was significantly higher than factors II and IV. The lowest values in both male and female groups were obtained by factor II (*loss of connection*), which differed significantly from the other factors ($p<0.001$). In addition, significant differences were observed between factors III and IV ($p<0.001$), where higher values were recorded for factor III. Also, a significant gender x factor interaction effect was noted ($F_{3,300} = 4.00$; $p = 0.008$; $\eta^2 = 0.04$). In the group of female students, a greater difference was noted between factors I and II than in the male group.

Table 2. Differences in the dimensions of nomophobia among respondents by gender

Nomophobia	sex	mean ±SD	95% PU medium	range (min ÷ min)	t	p	ES
I. Inability to communicate	F (n = 23)	30.6±6.7	27.7÷33.5	14÷40	3.15	0.002	0.75
	M (n = 79)	24.8±8.0	23.0÷26.6	8÷42			
II. Loss of connection	F (n = 23)	12.7±5.9	10.1÷15.2	5÷26	0.16	0.87	0.04
	M (n = 79)	12.9±6.0	11.5÷14.2	5÷29			
III. Lack of access to information	F (n = 23)	18.2±5.7	15.7÷20.6	8÷28	1.66	0.10	0.39
	M (n = 79)	16.1±5.3	14.9÷17.3	4÷28			
IV. Giving up convenience	F (n = 23)	16.5±4.9	14.4÷18.6	9÷28	1.37	0.17	0.33
	M (n = 79)	14.9±5.0	13.8÷16.0	5÷28			

Table 3. Differences in overall nomophobia score among respondents by gender

	sex	mean ±SD	95% PU medium	range (min ÷ min)	t	p	ES
Nomophobia	F (n = 23)	77.9±19.1	69.7÷86.2	43÷120	2.08	0.04	0.49
	M (n = 79)	68.7±18.6	64.5÷72.8	24÷109			

Table 2 presents the results on gender differences in the dimensions of nomophobia in the surveyed students.

Table 3. illustrates the differences in the overall nomophobia score of the male and female respondents.

Analyzing the sum of scores on the NMP-Q, it was found that the female students had a significantly higher nomophobia score compared to the male students ($p<0.05$).

Figure 1. shows the percentage of cases in terms of nomophobia levels (low, moderate, high).

In contrast, analysis of the results showed no significant differences between the female and male students in the levels of nomophobia ($G = 3.72$; $p = 0.16$; $R = 0.19$). 33 subjects (32.4%) had low levels of nomophobia, 61 subjects (59.8%) moderate, and 8 subjects (7.8%) high levels of nomophobia. None of the people surveyed got a result in the test which would indicate the absence of nomophobia.

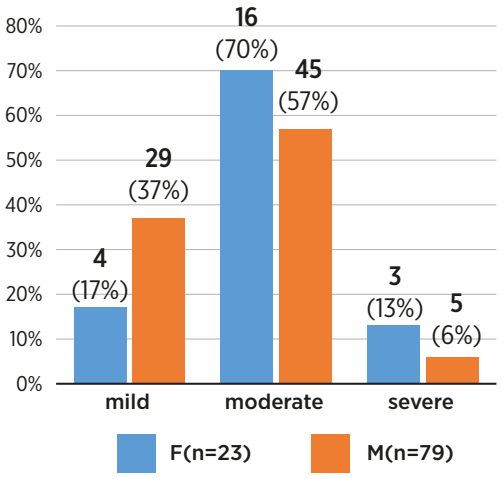

Figure 1. Level of nomophobia in female students (n = 23) and male students (n = 79).

2.2. Nomophobia among the respondents involved in individual versus team sports

In the course of study results analysis, there were no differences found in the dimensions of nomophobia between the students training individual and team sports ($F_{1,83} = 0.91$; $p = 0.34$; $\eta^2 = 0.011$). However, there was noted a significant large effect of the difference between the dimensions indicative of nomophobia ($F_{3,249} = 75.61$; $p<0.001$; $\eta^2 = 0.48$). On the basis of the post hoc analysis, significant differences were found between factors I and II ($p<0.001$) and IV ($p<0.001$); factor I. was significantly higher than factors II and IV. The lowest values in the study group were obtained by factor II (*loss of connection*), which differed significantly from the other factors ($p<0.001$). In addition, significant differences were observed between factors III and IV ($p<0.001$), where higher values were recorded for factor III. The sport x factor interaction effect was not significant ($F_{3,249} = 1.31$; $p = 0.27$; $\eta^2 = 0.02$).

Table 4. presents the results of differences in the dimensions of nomophobia in the respondents by the type of sport played.

Differences in nomophobia (total score) in the subjects by the type of sport practiced are presented in Table 5.

Table 4. Differences in dimensions of nomophobia among respondents by type of sport played (I–individual; T–team)

Nomophobia	Type of sport	M ±SD	95% PU medium	range (min ÷ min)	t	p	ES
I. Inability to communicate	I (n = 32)	27.2±8.0	24.3÷30.0	8÷41	1.37	0.17	0.31
	T (n = 53)	24.7±7.8	22.6÷26.9	9÷39			
II. Loss of connection	I (n = 32)	12.8±6.0	10.6÷15.0	5÷25	0.37	0.71	0.08
	T (n = 53)	12.3±5.6	10.8÷13.8	5÷24			
III. Lack of access to information	I (n = 32)	17.2±6.8	14.8÷19.7	4÷28	1.34	0.18	0.30
	T(n = 53)	15.6±4.4	14.4÷16.8	6÷24			
IV. Giving up convenience	I (n = 32)	14.8±4.4	13.2÷16.4	6÷27	0.23	0.82	0.05
	T (n = 53)	15.0±5.3	13.6÷16.5	5÷28			

Table 5. Differences in nomophobia (total score) in subjects by type of sport played (I–individual; T–team)

	SPORT	M ±SD	95% PU medium	range (min ÷ min)	t	p	ES
Nomophobia	I (n = 32)	71.9±20.6	64.5÷79.3	24÷108	1.02	0.31	0.23
	T (n = 53)	67.7±17.3	62.9÷72.4	32÷105			

The level of nomophobia in the group of the surveyed students participating in individual and team sports is illustrated in Figure 2.

There were no significant differences in nomophobia found between the students training individual and team sports (G = 0.83; p = 0.66 R = 0.10).

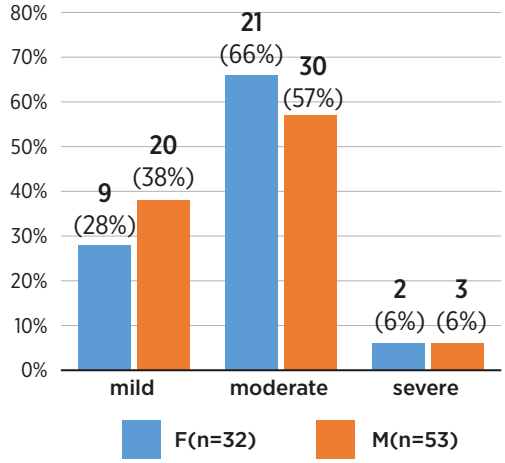

Figure 2: Level of nomophobia in a group of students engaged in individual sports (I; n = 32) and team sports (T; n = 53).

2.3. Nomophobia in the students working as coaches versus the non-working

The analysis found no differences in factors indicative of nomophobia between students working as coaches and those not working ($F_{1,100} = 0.008$; p = 0.93; η^2 <0.001). In contrast, there was observed a significant large effect of difference between dimensions of nomophobia ($F_{3,300} = 72.27$; p<0.001; $\eta^2 = 0.42$). On the basis of post hoc analysis, similarly to the gender breakdown, significant differences between factors I and II (p<0.001) and IV (p<0,001) were found. Factor I was significantly higher than factors II and IV. The lowest values in the group of AWF students were obtained by factor II. (*loss of connection*), while it differed significantly from the other factors (p<0.001). In addition, significant differences were observed between factors III and IV (p<0.001), where higher values were recorded for factor III. The interaction effect of factors work x factor was not significant ($F_{3,300} = 0.73$; p = 0.54; $\eta^2 = 0.007$).

Table 6. Differences in dimensions of nomophobia among respondents due to taking up or not taking up coaching (NW-not working, W-working)

Nomophobia	Undertaking/ not taking up work	M±SD	95% PU medium	range (min ÷ min)	t	p	ES
I. Inability to communicate	NW (n = 77)	25.7±7.9	23.9÷27.5	8÷42	0.90	0.37	0.21
	W (n = 25)	27.4±8.3	23.9÷30.8	12÷41			
II. Loss of connection	NW (n = 77)	12.9±5.8	11.6÷14.2	5÷26	0.22	0.82	0.05
	W (n = 25)	12.6±6.7	9.8÷15.4	5÷29			
III. Lack of access to information	NW (n = 77)	16.6±5.6	15.4÷17.9	4÷28	0.33	0.74	0.08
	W (n = 25)	16.2±4.6	14.3÷18.1	7÷25			
IV. Giving up convenience	NW (n = 77)	15.3±5.1	14.1÷16.4	5÷28	0.02	0.99	0.00
	W (n = 25)	15.3±5.0	13.2÷17.3	7÷28			

Table 7. Differences in nomophobia among respondents by whether or not they took up coaching (NW-not working, W-working)

	Undertaking/ not taking up work	mean ±SD	95% PU medium	range (min ÷ min)	t	p	ES
Nomophobia	NW (n = 77)	70,5±19,0	66,2÷74,8	24÷120	0,22	0,83	0,05
	W(n = 25)	71,5±19,5	63,4÷79,5	32÷105			

There were no significant differences in nomophobia as measured by scores on the NMP-Q between the students working as coaches and the non-working ones (Tables 6, 7).

Figure 3. shows the percentage of cases in terms of nomophobia levels (low, moderate, high) for those working as coaches and the non-working ones.

There were no significant differences in the dimensions of nomophobia between the respondents working as coaches and those not working (G = 0.86; p = 0.65 R = 0.09).

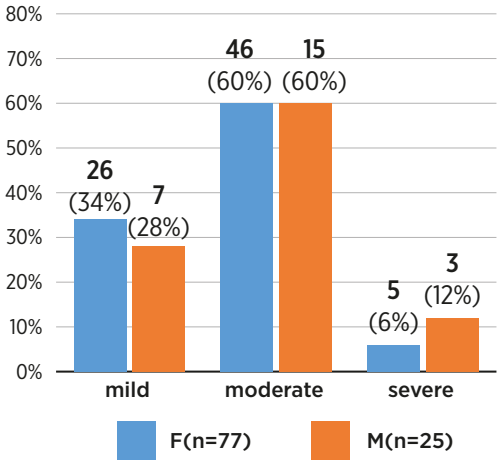

Figure 3. Level of nomophobia in non-working (NW; n = 77) and working (W; n = 25) students.

2.4. Correlations between the studied dimensions of nomophobia

Tables 8 and 9 show the results of correlations between the various dimensions of nomophobia in the groups of male and female respondents.

On the basis of the correlation coefficient analysis, it was found that only in the women's group factor I did not correlate significantly with factor II. (r = 0.410; p = 0.052). The other factors significantly positively correlated with each other in both female and male groups. The strongest correlations in the group of female students were observed for factor II, *loss of connection,* with factor III, *lack of internet access,* and IV, *giving up convenience,* (Table 8.). Similar observations apply to the group of male respondents (Table 9.).

Table 8. Correlations between dimensions of nomophobia in female respondents (n=23)

	I. Inability to communicate	II. Loss of connection	III. Lack of access to information
II. Loss of connection	0.410 p = 0.052		
III. Lack of access to information	0.444 p = 0.034	0.761 p = 0.000	
IV. Giving up convenience	0.631 p = 0.001	0.708 p = 0.000	0.574 p = 0.004

Table 9. Correlations between dimensions of nomophobia in male respondents (n=79)

	I. Inability to communicate	II. Loss of connection	III. Lack of access to information
II. Loss of connection	0.431 p = 0.000		
III. Lack of access to information	0.367 p = 0.001	0.521 p = 0.000	
IV. Giving up convenience	0.417 p = 0.000	0.582 p = 0.000	0.392 p = 0.000

3. Discussion and Conclusions

The problem of nomophobia is widespread in modern reality and finds wide interest among many researchers (Notara, et al., 2021). In the study group of Sport students, varied results were obtained in terms of the severity of nomophobia. It turned out that all the subjects were exposed to nomophobia, although the severity varied.

Similar insights are shared by A. Jupowicz-Ginalska, M. Kisilowska, K. Iwanicka, T. Baran, A. Wysocki, M. Witkowska and R. Lange, who present the results of a survey report on FOMO and nomophobia during the Pandemic (2021). In 2021, high nomophobia was declared by 13%, medium nomophobia by 67%, and low nomophobia by 20% of all the respondents. No significant changes were observed compared to the 2019 survey (the rates then were 15%, 65% and 20%, respectively). There were no gender differences found either. According to the authors, nomophobia promotes the occurrence of FOMO. The most strongly felt effects of not being able to use the phone were mainly anxiety caused by the lack of contact: of other people with the respondent (54% of the respondents) and of the respondent with others (50%), or in general the inability to establish immediate communication with family and/or friends (48%). The authors conclude: "It can be concluded that nomophobia is a phenomenon related to the communicative and promotional aspect of social media and the Internet use, rather than its informational dimension. It has stronger impact on people with high FOMO, who use the smartphone to be up-to-date, exchange information with the loved ones and stay in constant communication. For them, the smartphone is "the management center of their private universe" (Jupowicz-Ginalska et al., 2021, p. 34).

As for the younger population, it is noticeable that the surveyed students notice this problem in themselves. The study results of elementary, junior high, high school and technical school students show that 56% of them believe they should use the smartphone less often and, furthermore, the declarations of nearly a third of them indicate the risk of becoming addicted to new technologies. Also, the majority of the surveyed teenagers report that there are no set rules in their homes regarding their use of the Internet (Bochenek, Lange, 2019).

The results of our own research show that a higher overall rate of nomophobia is observed among women than among men. It was also women who scored higher on the first dimension, that is the *inability to communicate*.

The above observations regarding the overall nomophobia score are also confirmed in a study of undergraduate students from Saudi Arabia (Kateb 2017) and in a study conducted on a group of young adults from Greece (Vagka, Gnardellis, Lagiou, Notara, 2023). Similarly, the results of a study by Turkish authors clearly confirm that a significantly higher level of nomophobia was observed in a group of female undergraduate students than in men (Arpaci, Baloğlu, Özteke Kozan, Kesici, 2017).

It is puzzling that the type of sport practiced does not differentiate the respondents in terms of nomophobia. One might expect that those who participate in individual sports are more likely to be fearful of losing access to a smartphone due to reduced social contact, which is naturally limited because of the nature of their sport. In contrast, no studies treating physical activity and sports participation in conjunction with the risk of developing nomophobia were found.

With the expanding contemporary interest in so-called e-sports, there is observed a trend of doing research in this area. It turns out that engaging in e-sports clearly promotes the development of nomophobia, the escalation of anxiety and the occurrence of insomnia (AlMarzooqi, Alhaj, Alrasheed, Helmy, Trabelsi, Ebrahim, Hattab, Jahrami, Ben Saad, 2022).

In our study, no significant differences in nomophobia were observed between the groups of students surveyed who work as coaches and those who do not. This result, however, was not confirmed in a study by Greek researchers, who found that higher levels of nomophobia were found in a group of young adults (18-25 years old) who do not take up work (Vagka et al. 2023). This issue seems to be of interest in the perspective of future studies that could help establish a possible link between work performance and smartphone addiction.

The results of the study indicate that there are correlations between the various dimensions of nomophobia. All relationships are positive in nature. In the group of male respondents, it was observed that the greater the tension over the inability to communicate, the stronger the anxiety associated with thoughts of losing connection with the world, with lack of access to information and giving up convenience. Very similar relationships were observed in the group of female respondents.

The analysis of the collected empirical material authorizes to draw the following conclusions with regard to the studied group of students:

1. The severity of nomophobia in the study group shows variation. The largest percentage of the respondents is in the moderate nomophobia range.
2. The gender of the subjects is a variable that significantly differentiates the severity of nomophobia. Women manifest significantly higher levels of nomophobia.
3. The type of sport played (individual/team) does not differentiate the levels of nomophobia.
4. Working as a coach (or not) is not a differentiating factor in the severity of nomophobia.
5. Positive correlations were observed – both in the group of female and male students – for the various dimensions of nomophobia, i.e., inability to communicate, loss of connection, lack of access to information, giving up convenience.

Today's world enforces the need to use modern information technologies, so we should learn to use them sensibly and safely. This task poses a serious challenge for the education of children and adolescents, which should focus on the formation of proper habits in relation to the protection and increase of their physical and mental health (Wasylewicz, 2019).

Literature emphasizes that some of the factors which determine uncontrolled smartphone use and the fear of losing the ability to use it are disturbed and not close relationships within the family (Mosiolek, Jedrzejko, Jakima, Rowinski, 2022).

More and more often various health effects of excessive media use are mentioned. According to high school students from the Subcarpathian region, there are rather few of them. The young pointed to deteriorating eyesight, headaches and back pain (Wasylewicz, 2019).

Studies of the literature on the subject lead to the conclusion that there is a need for further in-depth research on the problem , which could help to recognize and classify nomophobia as a clinical disorder and identify its possible connections with other disorders (Lee, Kim Mendoza, McDonough, 2018).

It seems that it would be an interesting research problem to look for associations between practicing sports or other forms of physical activity and the occurrence of nomophobia due to the fact that engaging in sports has many benefits, both physical (fitness), as well as psychological and social.

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