


Factors Associated with Nomophobia among First-Year Students at Navamindradhiraj University

Kanala Chanvirat MSc¹ 

Program in Occupational Health and Hospital Safety, Faculty of Science and Health Technology, Navamindradhiraj University, Bangkok 10300, Thailand

Corresponding author

Kanala Chanvirat

kanala@nmu.ac.th

Received 23 June 2025

Revised 14 November 2025

Accepted 16 January 2026

J Med Urban Health

2026;70(2):e7424

<https://doi.org/10.62691/jmuh.2026.7424>

ABSTRACT

Objective: This study aimed to examine the factors associated with nomophobia, the fear or anxiety of being without a mobile phone, including prevalence, sociodemographic, behavioral, psychosocial factors among first-year students at Navamindradhiraj University.

Materials and Methods: A descriptive cross-sectional study was conducted among 605 first-year undergraduate students from 13 academic programs at Navamindradhiraj University between January and May 2025. Data were collected via a structured online questionnaire, which included items on demographics, mobile phone usage behaviors, family relationship quality, and the Nomophobia Questionnaire. Descriptive statistics were used to assess prevalence. Chi-squared tests and binary logistic regression were employed to examine associations and to identify significant factor of moderate to severe nomophobia.

Results: The majority of participants experienced moderate (56.20%) or severe (21.70%) levels of nomophobia. The severity of nomophobia was significantly associated with daily phone usage ($p = 0.021$) and frequency of phone checking ($p = 0.006$). Logistic regression analysis further indicated that students who spent more time using their phones ($p < 0.001$), frequent phone checking ($p < 0.001$), and lower family relationship scores ($p = 0.005$) were significant factors associated with of moderate-to-severe nomophobia. Demographic variables such as gender, income, and gaming were not significant.

Conclusion: Nomophobia is alarmingly prevalent among first-year university students, with behavioral and psychosocial factors, especially patterns of phone use and perceived family support, playing a more critical role than demographic characteristics. Targeted interventions that promote digital well-being, strengthen emotional resilience, and enhance family support are essential to reduce its psychological impact and encourage healthier digital habits.

Keywords: digital age, first-year students, Navamindradhiraj University, nomophobia

INTRODUCTION

In the 21st century, technology has evolved beyond its original role as a tool for communication to become an indispensable part of daily life. Technology has become more than just a way to communicate; it is now a part of everyday life. Smartphones, in particular, help people stay connected through messages, social media, online learning, and searching for information. While these tools offer many benefits, using them too much, especially among young people, can lead to mental and emotional problems. One growing issue is nomophobia, short for “no mobile phone phobia.” This is the fear or anxiety people feel when they don’t have access to their phones or can’t connect to the internet.¹⁻² Although nomophobia is not officially listed in medical books, it is now seen as a modern type of phobia. People with this condition may feel nervous, irritated, or even panicked when they are away from their phones. Some may also have physical reactions like a fast heartbeat, eye strain, neck and shoulder pain, trouble focusing, mood swings, and feeling easily frustrated.³⁻⁶

Nomophobia, or the fear of being without a mobile phone, has become a growing concern, especially among university students, the most frequent smartphone users. They often depend on their devices for studying, communication, and entertainment, using them continuously to stay connected. Globally, nomophobia is common among university students. Around 20% experience mild, 50% moderate, and 20% severe symptoms.⁷ In Saudi Arabia, over 27.20% stated that they spent more than 8 hours per day using their smartphones,⁸ while in Thailand, approximately 99.50% of undergraduates’ students had nomophobia.⁹ First-year university students may be especially at risk, as this transitional stage involves adjusting to new academic demands, forming new social connections, and often living away from their families conditions that may increase reliance on smartphones to maintain communication and social connectedness.¹⁰⁻¹¹ These changes can lead to a heavier dependence on smartphones, which may increase the risk of nomophobia. Research from different countries has shown that nomophobia can be linked to several personal and behavioral factors.¹² These factors include age, gender, self-esteem, anxiety levels, frequency of phone use, time spent on social media, feelings of loneliness, and perceived social support.¹³⁻¹⁴

Navamindradhiraj University, located in central Bangkok, attracts students from diverse backgrounds. First-year students often rely on smartphones for

connection and support during their transition to university life. While helpful, excessive use can harm mental health, academics, and relationships. Nomophobia is linked to increase anxiety, stress, poor concentration, low academic performance and sleep issues.

However, research on this issue among Thai students remains limited, highlighting the need for further study within this cultural context. Therefore, this study aimed to examine the factors associated with nomophobia, including prevalence, sociodemographic, behavioral, psychosocial factors among first-year students at Navamindradhiraj University. The goal of the study is expanding the body of knowledge on digital health and student well-being in the digital age.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted to examine the prevalence of nomophobia among first-year undergraduate students in 13 programs, including Medicine, Radiologic Technology, Emergency Medical Technology, Nursing Science, Occupational Health and Safety in Hospital, Medical Instrumentation and Operating Room Technology, Disaster Management, Aviation Business Services, Urban Administration and Management, Early Childhood Education, Facility Management, Bachelor of Technology, and Early Childhood Development at Navamindradhiraj University during the second semester of the 2024 academic year (January-May 2025). The sample size was calculated using a standard formula ($n = Z\alpha^2 (P) (1-P)/d^2$) and adjusted for a finite population of 743 students,¹⁵ resulting in a required sample of 568 (corrected sample size = $N*n / N+n-1$). All first-year students were invited, and 605 complete responses were received, exceeding the required number and ensuring sufficient statistical power.

Data collection commenced after obtaining approval from the Institutional Ethics Committee (COA No. 229/2567). A structured questionnaire comprising 4 sections was used. The questionnaire was administered electronically via Google Forms, and informed consent was obtained online prior to participation.

The questionnaire consisted of four sections. The first section assessed demographic characteristics, including gender, age, program of study, average monthly allowance, and residence. The second section examined mobile phone usage behavior over the past month, covering daily duration of smartphone use, frequency of phone checking, commonly used applications, primary purposes of use, and the most frequent locations

and times of smartphone use. The third section evaluated family-related factors, focusing on perceived interactions, communication, and support between students and their parents or guardians; this section comprised 15 items rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The fourth section measured nomophobia using the Nomophobia Questionnaire (NMP-Q) developed by Yildirim and Correia (2015). For this study, the NMP-Q was translated into Thai and reviewed by bilingual experts to ensure linguistic clarity and conceptual equivalence; however, the Thai version has not yet been formally validated. The instrument includes 20 items rated on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree) and demonstrated excellent internal consistency (Cronbach's $\alpha = 0.945$). Total scores range from 20 to 140 and were classified as mild (21-60), moderate (61-100), and severe (101-140) nomophobia.

Statistical data analysis was conducted using Statistical Package for the Social Sciences version 28. We calculated the descriptive statistics, such as frequency, percentage, mean, and standard deviation, which were used to describe the general characteristics of the respondents and to determine the prevalence of nomophobia across varying severity levels. Inferential statistics including the Chi-squared test, analysis of variance (ANOVA), and binary logistic regression were employed to examine the associations and differences between variables hypothesized to be risk factors for high-severity nomophobia. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The demographic characteristics of the 605 students, 23.63% were male and 76.36% were female. The largest proportion of respondents were from Nursing 28.76%, followed by Medicine 15.87%. Regarding residence, a notable proportion of students, 242 (40%), reported living alone, whereas 221 (36.53%) lived with their parents. Smaller groups lived with friends, 103 (17.02%), relatives, 28 (4.60%), or a partner, 11 (1.82%). Patterns of mobile phone use also varied across the sample. In terms of daily phone usage, 79 (13.05%) students used their phones for about 6 hours/day, while 99 (16.36%) used them for 8 hours/day, and 81 (13.39%) reported using their phones for 10 hours or more per day.

The frequency of checking the phone was another important indicator: 126 (20.83%) students checked their phones every 5 minutes, 110 every

10 minutes (18.18%), and 102 every 30 minutes (16.86%). Regarding playing games: 224 (37.02%) participants did not play games at all, while 150 (24.79%) played for an hour per day, and 99 (16.36%) played for 2 or more hours daily. Students also identified their favorite mobile applications, with Instagram at 271 (44.79%) being the most preferred, followed by TikTok at 155 (25.62%), and YouTube at 70 (11.57%). In terms of contextual use, most students, 375 (61.98%), reported using their phones freely, without linking use to specific activities. Some used phones alone, 108 (17.85%), and others during meals, 75 (12.40%). Finally, when looking at the location and time, most students used their phones in their rooms, 497 (82.14%), and the most common time of use was between 16:01 and 19:00, 366 (60.50%). Chi-squared analysis revealed that daily phone usage time ($p = 0.021$) and frequency of phone checking ($p = 0.006$) were significantly associated with nomophobia severity. Students who used their phones for extended hours or checked them frequently were more likely to experience moderate to severe levels of nomophobia. Other variables, including gender, residence, favorite applications, and phone use location, showed no statistically significant relationship with nomophobia levels (Table 1).

The highest nomophobia was reported among students living with relatives ($M = 85.46$), while the lowest was among those living with romantic partners ($M = 73.64$). Similarly, the nomophobia mean score was highest in the relative group ($M = 4.27$) and lowest in the partner group ($M = 3.68$). However, the differences in nomophobia scores among the groups were not statistically significant (one-way ANOVA, $p = 0.377$). (Table 2)

The results of the binary logistic regression analysis for factors associated with moderate-to-severe nomophobia. Gender and monthly allowance were not significantly associated with nomophobia severity. In contrast, daily phone usage was found to be a significant factor; each additional hour of daily phone use increased the odds of experiencing moderate-to-severe nomophobia by approximately 9% (odds ratio (OR) = 1.09, 95% confidence interval (CI): 1.02-1.17, $p = 0.015$). Similarly, frequency of phone checking was significantly associated with higher nomophobia severity, as shorter checking intervals increased the likelihood of moderate-to-severe symptoms (OR = 0.98, 95% CI: 0.96-0.99, $p = 0.007$). Playing games on mobile phones was not significantly related to nomophobia severity. Importantly, family relationship score emerged as a significant factor; students

Table 1 Distribution of Nomophobia Severity Across Demographic and Behavioral Characteristics

	Nomophobia n (%)				P-value**
	n (%)	Mild n = 134 (22.14)	Moderate n = 340 (56.19)	Severe n = 131(21.65)	
Gender					
Male	143(23.63)	36 (25.17)	83 (58.04)	24 (16.78)	0.230
Female	462 (76.36)	98 (21.21)	257 (55.63)	107 (23.16)	
Program					
MD	96 (15.87)	17 (17.71)	56 (58.33)	23 (23.96)	0.386
RT	33 (5.45)	11 (33.33)	16 (48.48)	6 (18.18)	
VIP	34 (5.62)	8 (23.53)	18 (52.94)	8 (23.53)	
NR	174 (28.76)	38 (21.84)	97 (55.75)	39 (22.41)	
OHHS	48 (7.93)	6 (12.50)	30 (62.50)	12 (25.0)	
MIORT	38 (6.28)	6 (15.79)	21 (55.26)	11 (28.95)	
DNT	16 (2.64)	7 (43.75)	8 (50.00)	1 (6.25)	
SI	43 (7.11)	11 (25.58)	22 (51.16)	10 (23.26)	
PAUAM	32 (5.29)	6 (18.75)	18 (56.25)	8 (25.00)	
ECE	20 (3.31)	8 (40.00)	11 (55.00)	1 (5.00)	
FM	9 (1.49)	1 (11.11)	4 (44.44)	4 (44.44)	
B. TECH	23 (3.80)	7 (30.43)	14 (60.87)	2 (8.70)	
ECD	39 (6.45)	8 (20.51)	24 (61.54)	7 (17.95)	
Residence					
Parents	221(36.53)	44 (19.91)	130 (58.82)	47 (21.27)	0.338
Relative	28 (4.63)	5 (17.86)	15 (53.57)	8 (28.57)	
Alone	242 (40.00)	64 (26.45)	127 (52.48)	51 (21.07)	
Friends	103 (17.02)	19 (18.45)	59 (57.28)	25 (24.27)	
Partner	11 (1.82)	2 (18.18)	9 (81.82)	0	
Daily Phone Usage*					
6 hrs/day	79 (13.05)	20 (25.32)	45 (56.96)	14 (17.72)	0.021**
8 hrs/day	99 (16.36)	23 (23.23)	55 (55.56)	21 (21.21)	
10 hrs/day	81 (13.39)	24 (29.63)	40 (49.38)	17 (20.99)	
Frequency of Checking the Phone*					
5 min	126 (20.83)	14 (11.11)	73 (57.94)	39 (30.95)	0.006**
10 min	110 (18.18)	24 (21.82)	60 (54.55)	26 (23.64)	
30 min	102 (16.86)	28 (27.45)	61 (59.80)	13 (12.75)	
Play Games (hrs/day)*					
None	224 (37.02)	58 (25.89)	113 (50.45)	53 (23.66)	0.257
1	150 (24.79)	33 (22.00)	90 (60.00)	27 (18.00)	
2	99 (16.36)	14 (14.14)	63 (63.64)	22 (22.22)	

Table 1 Distribution of Nomophobia Severity Across Demographic and Behavioral Characteristics (cont.)

	n (%)	Nomophobia n (%)			P-value**
		Mild n = 134 (22.14)	Moderate n = 340 (56.19)	Severe n = 131(21.65)	
Favorite Applications*					
Instagram	271 (44.79)	47 (17.34)	158 (58.30)	66 (24.35)	0.100
TikTok	155 (25.62)	38 (24.52)	87 (56.13)	30 (19.35)	
YouTube	70 (11.57)	18 (25.71)	43 (61.43)	9 (12.86)	
Most Phone Activity*					
Free	375 (61.98)	87 (23.20)	203 (54.13)	85 (22.67)	0.636
Alone	108 (17.85)	27 (25.00)	57 (52.78)	24 (22.22)	
Meal	75 (12.40)	12 (16.00)	50 (66.67)	13 (17.33)	
Place of Phone Use					
Room	497 (82.14)	112 (22.54)	278 (55.94)	107 (21.53)	0.688
Public	55 (9.09)	11 (20.00)	32 (58.18)	12 (21.82)	
Time*					
16.01-19.00	366 (60.50)	12 (18.46)	39 (60.00)	14 (21.54)	0.877
19.01-22.00	82 (13.55)	84 (22.95)	205 (56.01)	77 (21.04)	
22.00 up	65 (10.74)	16 (19.51)	45 (54.88)	21 (25.61)	

Abbreviations: B. TECH, bachelor of technology; cont, continue; DNT, disaster management; ECD, early childhood development; ECE, early childhood education; FM, facility management; hrs, hours; MD, medicine; MIORT, medical instrumentation and operating room technology; n, number; NR, nursing science; OHHS, occupational health and safety in hospital; PAUAM, urban administration and management; RT, radiologic technology; SI, aviation business service; VIP, emergency medical technology

The data were analyzed using the Chi-squared test.

*Top 3 of this topic

**Significance level at p-value = $p < 0.05$

Note: "Daily Phone Usage" refers to hours spent on phone per day. "Frequency of Checking the Phone" refers to how often the phone is picked up. "Play Games" refers to hours spent gaming per day. "Favorite Applications" refers to most frequently used applications. "Most Phone Activity" refers to situations when phone is used most. "Place of Phone Use" refers to location where phone is mostly used. "Time" refer to typical time of phone usage.

reporting lower family support had nearly twice the odds of experiencing moderate-to-severe nomophobia compared to those with stronger family relationships (OR = 1.83, 95% CI: 1.09-3.08, $p = 0.022$). (Table 3)

DISCUSSION

The findings of this study confirm that nomophobia is a prevalent condition among first-year university students at Navamindradhiraj University, with 56.20% of participants experiencing moderate levels and 21.70% experiencing severe levels of nomophobia. These study comparable to those reported by Al-Mamun, who found prevalence rates

of 56.10% for moderate nomophobia and 34.50% for severe nomophobia, highlighting the first-year students had higher levels of nomophobia than other years.¹⁶ This aligns with evidence from a systematic review and meta-analysis showing that approximately 70.76% of individuals experience moderate to severe nomophobia, with about 20.81% suffering severe nomophobia, indicating a consistently high prevalence across diverse populations.¹⁷ The association between excessive smartphone use and higher nomophobia levels may be explained by behavioral reinforcement mechanisms. Frequent phone checking activates reward pathways through dopamine

Table 2 Descriptive Statistics of Nomophobia by Living Arrangement

Living Arrangement	n	Nomophobia Total Score (mean \pm SD)	95% CI For Mean	Min	Max	Nomophobia Item Mean (mean \pm SD)
Parents	221	78.70 \pm 25.25	75.35-82.04	22.00	140.00	3.93 \pm 1.26
Relative	28	85.00 \pm 27.49	74.81-96.12	23.00	136.00	4.27 \pm 1.37
Alone	242	78.09 \pm 25.79	74.82-81.35	20.00	140.00	3.90 \pm 1.29
With Friends	103	82.23 \pm 25.25	77.30-87.17	22.00	133.00	4.11 \pm 1.26
Partner	11	73.64 \pm 16.24	62.72-84.55	54.00	98.00	3.68 \pm 0.81
Total	605	79.28 \pm 25.46	77.24-81.31	20.00	140.00	3.96 \pm 1.27

P-value 0.377*

Abbreviations: CI, confidence interval; n, number; SD, standard deviation

The data were analyzed using the one-way ANOVA.

*Significance level at p-value = $p < 0.05$

Table 3 Factors Associated with Moderate-to-Severe Nomophobia

Independent Variable	OR (Exp(B))	95% CI for OR	P-value
Gender (male vs. female)	1.35	0.70-2.59	0.366
Monthly Allowance (salary)	1.00	1.00-1.00	0.260
Daily Phone Use (hrs/day)	1.09	1.02-1.17	0.015*
Checking Frequency (min)	0.98	0.96-0.99	0.007*
Playing Games (hrs/day)	0.96	0.88-1.06	0.404
Family Relationship Score	1.83	1.09-3.08	0.022*

Abbreviations: CI, confidence interval; Exp(B), exponentiated beta coefficient; hrs, hours; OR, odd ratios

The data were analyzed using the binary logistic regression.

*Significance level at p-value = $p < 0.05$

release, reinforcing habitual smartphone use and leading to dependency-like behavior.¹⁸⁻²⁰

Among the key behavioral factors identified, both daily phone usage time and frequency of checking phones were significantly associated with higher levels of nomophobia. Students who reported using their phones for more than 8-10 hours per day or checking their phones every 5-10 minutes were significantly more likely to experience moderate to severe nomophobia. These findings align with Shkodra, Albania, 48.10% of students reported using their smartphones for 4-6 hours daily, while students who used their phones for more than 8-10 hours per day were at an even higher risk of experiencing moderate to severe nomophobia.²¹

Importantly, the family relationship scores also emerged as a significant factor associated with nomophobia, suggesting that the perceived quality of communication and emotional support within the family plays a role in mobile phone dependency. Students who experience weaker familial bonds may rely more on their smartphones to fulfill unmet emotional or social needs, consistent with the compensatory internet use theory.²² This supports the theory that students lacking strong in-person social or familial support may turn to their smartphones for connection, validation, and stress relief.²³ In this context, smartphones may function as a substitute for real-life connection, validation, and stress relief, explaining the link between lower family support and higher nomophobia

scores. In contrast, demographic variables, such as gender, monthly income, and playing mobile games, were not significantly associated with nomophobia levels.²⁴ This suggests that nomophobia is less related to socioeconomic factors or specific content use, and more associated with usage habits and psychological needs. Contextual factors like residence or application preference showed no significant impact.

This study adds new insights to the understanding of nomophobia within the Thai cultural context. While international research shows similar behavioral patterns, factors such as Thailand's collectivist values, close family bonds, and rapid digitalization in education may influence how students experience and cope with smartphone dependency.²⁵⁻²⁶

The study adopted a comprehensive approach by assessing both behavioral factors (e.g., daily phone usage, frequency of checking) and psychosocial factors (family relationships), providing a holistic view of nomophobia determinants. However, the NMP-Q has not been formally validated in Thai, which may affect item interpretation, and the cut-off scores applied were derived from other cultural contexts, potentially limiting their appropriateness for Thai students.

CONCLUSION

Overall, these results show that it is important to have specific strategies to help students develop healthier digital habits, especially when it comes to managing their time and being more mindful about phone use. For example, universities could offer workshops and resources that support digital well-being and help students build stronger offline relationships. In addition, getting families more involved in student support may also help reduce emotional reliance on mobile phones. Looking ahead, future research should explore long-term trends to better understand how nomophobia changes over time and how factors like school pressure or emotional challenges affect phone use. Moreover, since Thai student culture is unique, more studies in different schools and age groups would help confirm and expand on these findings.

Conflict of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

This research was supported by a grant from the Faculty of Science and Health Technology. Additionally, it was funded by the Navamindradhiraj University Research Fund.

Author Contributions

Conceptualization: K.C.

Data curation: K.C.

Formal analysis: K.C.

Funding acquisition: K.C.

Investigation: -

Methodology: K.C.

Project administration: K.C.

Resources: -

Software: K.C.

Supervision: K.C.

Validation: -

Visualization: -

Writing – original draft preparation: K.C.

Writing – review & editing: K.C.

Data Availability Statement

The data sets generated and analyzed during the current study are not publicly available. However, they will be made available by the corresponding author upon any reasonable request.

REFERENCES

1. Yildirim C, Correia AP. Exploring the dimensions of nomophobia: development and validation of a self-reported questionnaire. *Comput Human Behav* 2015;49:130-7. doi: [10.1016/j.chb.2015.02.059](https://doi.org/10.1016/j.chb.2015.02.059).
2. Bhattacharya S, Bashar MA, Srivastava A, Singh A. Nomophobia: no mobile phone phobia. *J Family Med Prim Care* 2019;8(4): 1297-300. doi: [10.4103/jfmpc.jfmpc_71_19](https://doi.org/10.4103/jfmpc.jfmpc_71_19).
3. Gezgin DM. Exploring the influence of the patterns of mobile internet use on university students' nomophobia Levels. *Eur J Educ Stud* 2017;3(6):29-53. doi: [10.5281/zenodo.572344](https://doi.org/10.5281/zenodo.572344).
4. Bragazzi NL, Del Puente G. A proposal for including nomophobia in the new DSM-V. *Psychol Res Behav Manag* 2014;7:155-60. doi: [10.2147/PRBM.S41386](https://doi.org/10.2147/PRBM.S41386).
5. Macharla NK, Palanichamy C, Thirunarayanan M, Suresh M, Ramachandran AS. Impact of smartphone usage on sleep in adolescents: a clinically oriented review. *Cureus* 2025;17(1):e76973. doi: [10.7759/cureus.76973](https://doi.org/10.7759/cureus.76973).
6. King AL, Valença AM, Silva AC, Sancassiani F, Machado S, Nardi AE. "Nomophobia": impact of cell phone use interfering with symptoms and emotions of individuals with panic disorder compared with a control group. *Clin Pract Epidemiol Ment Health* 2014;10:28-35. doi: [10.2174/1745017901410010028](https://doi.org/10.2174/1745017901410010028).
7. Jahrami H, Trabelsi K, Boukhris O, Hussain JH, Alenezi AF, Humood A, et al. The prevalence of mild, moderate, and severe nomophobia symptoms: a systematic review, meta-analysis, and meta-regression. *Behav Sci (Basel)* 2022;13(1):35. doi: [10.3390/bs13010035](https://doi.org/10.3390/bs13010035).
8. Alosaimi FD, Alyahya H, Alshahwan H, Al Mahyijari N, Shaik SA. Smartphone addiction among university students in Riyadh, Saudi Arabia. *Saudi Med J* 2016;37(6):675-83. doi: [10.15537/Smj.2016.6.14430](https://doi.org/10.15537/Smj.2016.6.14430).

9. Shewarat P, Sarunya H, Sarunya H, Napakkawat B, Thanapoom R. Prevalence of nomophobia among Thai undergraduate students using smartphones in public university. *Chula Med J* 2017;61(2):249-59.
10. Harish BR, Bharath J. Prevalence of nomophobia among the undergraduate medical students of Mandya Institute of Medical Sciences, Mandya. *Int J Community Med Public Health* 2018;5(12):5455-9. doi: [10.18203/2394-6040.ijcmph20184833](https://doi.org/10.18203/2394-6040.ijcmph20184833).
11. Prasad M, Patthi B, Singla A, Gupta R, Saha S, Kumar JK, et al. Nomophobia: a cross-sectional study to assess mobile phone usage among dental students. *J Clin Diagn Res* 2017;11(2):ZC34-9. doi: [10.7860/JCDR/2017/20858.9341](https://doi.org/10.7860/JCDR/2017/20858.9341).
12. Dasgupta P, Bhattacharjee S, Dasgupta S, Roy JK, Mukherjee A, Biswas R. Nomophobic behaviors among smartphone using medical and engineering students in two colleges of West Bengal. *Indian J Public Health* 2017;61(3):199-204. doi: [10.4103/ijph.IJPH_81_16](https://doi.org/10.4103/ijph.IJPH_81_16).
13. Tárrega-Piquer I, Valero-Chillerón MJ, González-Chordá VM, Llagostera-Reverter I, Cervera-Gasch Á, Andreu-Pejo L, et al. Nomophobia and its relationship with social anxiety and procrastination in nursing students: an observational study. *Nurs Rep* 2023;13(4):1695-705. doi: [10.3390/nursrep13040140](https://doi.org/10.3390/nursrep13040140).
14. Gezgin DM, Hamutoglu NB, Sezen-Gultekin G, Ayas T. The relationship between nomophobia and loneliness among Turkish adolescents. *Int J Res Educ Sci* 2018;4(2):358-74. doi: [10.21890/ijres.409265](https://doi.org/10.21890/ijres.409265).
15. Lwanga SK, Lemeshow S. Sample size determination in health studies: a practical manual. Geneva: World Health Organization; 1991.
16. Al-Mamun F, Mamun MA, Prodhon MS, Muktarul M, Griffiths MD, Muhit M, et al. Nomophobia among university students: prevalence, correlates, and the mediating role of smartphone use between Facebook addiction and nomophobia. *Heliyon* 2023;9(3):e14284. doi: [10.1016/j.heliyon.2023.e14284](https://doi.org/10.1016/j.heliyon.2023.e14284).
17. Humood A, Altooq N, Altamimi A, Almoosawi H, Alzafiri M, Bragazzi NL, et al. The prevalence of nomophobia by population and by research tool: a systematic review, meta-analysis, and meta-regression. *Psych* 2021;3(2):249-58. doi: [10.3390/psych3020019](https://doi.org/10.3390/psych3020019).
18. Gezgin DM. Exploring the influence of the patterns of mobile internet use on university students' nomophobia levels. *Eur J Educ Stud* 2017;3(6):29-52. doi: [10.5281/zenodo.572344](https://doi.org/10.5281/zenodo.572344).
19. Montag C, Diefenbach S. Towards homo digitalis: important research issues for psychology and the neurosciences at the dawn of the internet of things and the digital society. *Sustainability* 2018;10(2):415. doi: [10.3390/su10020415](https://doi.org/10.3390/su10020415).
20. Kardefelt-Winther D. A conceptual and methodological critique of internet addiction research: towards a model of compensatory internet use. *Comput Human Behav* 2014;31:351-4. doi: [10.1016/j.chb.2013.10.059](https://doi.org/10.1016/j.chb.2013.10.059).
21. Shabani Z, Haxhija E, Pjetri E, Guli A. Smartphone addiction among university students. *Open Public Health J* 2025;18:e18749445414366. doi: [10.2174/0118749445414366250828054906](https://doi.org/10.2174/0118749445414366250828054906).
22. Elhai JD, Dvorak RD, Levine JC, Hall BJ. Problematic smartphone use: a conceptual overview and systematic review of relations with anxiety and depression psychopathology. *J Affect Disord* 2017;207:251-9. doi: [10.1016/j.jad.2016.08.030](https://doi.org/10.1016/j.jad.2016.08.030).
23. Gezgin DM, Ümmet D, Kaya NB. Smartphone addiction in university students: the predictive role of multidimensional loneliness. *Turk J Educ* 2020;10(2):317-29. doi: [10.24315/tred.553035](https://doi.org/10.24315/tred.553035).
24. Arumuganathan S, Kaliamoorthy C, Syed U, Sinnathambi SD, Thangaraju SI. An online survey of prevalence and risk factors of nomophobia in Indian adults. *Ann Indian Psychiatry* 2023;7(1):4-10. doi: [10.4103/aip.aip_49_22](https://doi.org/10.4103/aip.aip_49_22).
25. Lopez-Fernandez O, Honrubia-Serrano L, Freixa-Blanxart M, Gibson W. Prevalence of problematic mobile phone use in British adolescents. *Cyberpsychol Behav Soc Netw* 2014;17(2):91-8. doi: [10.1089/cyber.2012.0260](https://doi.org/10.1089/cyber.2012.0260).
26. Denprechavong V, Ngamchaliew P, Buathong N. Prevalence of nomophobia and relationship with anxiety and depression among university students in Southern Thailand. *J Med Assoc Thai* 2022;105(4):359-67. doi: [10.35755/jmedassocthai.2022.04.13289](https://doi.org/10.35755/jmedassocthai.2022.04.13289).