Journal of Multidisciplinary Healthcare

Dovepress
Taylor & Francis Group

Open Access Full Text Article

ORIGINAL RESEARCH

Acute Nomophobia and Its Psychological Correlates in Adolescents: An Explanatory Sequential Mixed-Methods Approach

Dua'a Fayiz AL Maghaireh[1], Najah Sami Shawish[2], Andaleeb M Abu Kamel[2], Mariam Kawafha[3]

[1]Nursing Faculty, Sulaiman Al Rajhi University, Al Bukayriah, Saudi Arabia; [2]Nursing Faculty, Al-Zaytoonah University of Jordan, Amman, Hashemite Kingdom of Jordan; [3]Nursing Faculty, Yarmouk University, Irbid, Hashemite Kingdom of Jordan

Correspondence: Dua'a Fayiz AL Maghaireh, Nursing Faculty, Sulaiman Al Rajhi University, Al Bukayriah, Saudi Arabia, Email dfm_2013@yahoo.com

Background: Nomophobia is a recent medical term; it is a combination of "no-mobile" and "phobia". Nomophobia encompasses feelings of fear, anxiety, and discomfort stemming from the absence of a mobile device or the inability to access one, when necessary, as well as the apprehension of disconnection from the digital realm. It's correlated with many psychological problems.

Aim: This study aimed to explore the impact of nomophobia and its psychological correlates, particularly stress, loneliness, and depression, among adolescents.

Methods: Explanatory sequential mixed-methods design was used. A sample of 180 students were participated. They completed the Nomophobia Questionnaire, Perceived Stress Scale, Beck Depression Inventory, and UCLA Loneliness Scale, followed by semi-structured interviews with 30 students exhibiting high levels of nomophobia.

Results: The study found that the majority of students (76.7%) exhibited high levels of nomophobia, with a higher prevalence among females (78.72%) compared to males (69.76%). Students reported high levels of stress (mean = 32.96, SD = 1.35) and social loneliness (mean = 67.9, SD = 4.17), while depression levels were low (mean = 7.03, SD = 4.1). Female students experienced higher levels of stress and loneliness than their male counterparts. Stress and social loneliness were identified as significant predictors of nomophobia, with positive associations (coefficients: 1.64 and 1.20, respectively) and strong correlations (R^2 = 0.93 and 0.98, p = 0.01). Depression showed a negative but non-significant association with nomophobia (−0.43, p = 0.06). The qualitative results reveal four major themes: compulsive phone behaviors, emotional issues, health concerns, and behavioral problems.

Conclusion: Nomophobia significantly affects the emotional, physical, and social health of students, highlighting the necessity for specific strategies aimed at addressing smartphone addiction and fostering more positive digital behaviors within this age group.

Keywords: depression, nomophobia, social loneliness, stress, students

Introduction

Smartphones have become an integral part of daily life, offering entertainment, convenience, and flexibility in communication, information access, and task completion.[1] These devices are now indispensable, with users often perceiving them as extensions of their own bodies, influencing personal identity and behavior, and leading to significant modifications in daily habits and actions.[2,3] However, the pervasive use of smartphones has been associated with a growing number of health concerns, including addictive, antisocial, and risky behaviors.[4] Smartphone addiction, comparable in severity to substance addiction, has become a global public health issue. This phenomenon has contributed to the emergence of a psychological disorder termed "nomophobia", a term originating in England that combines 'no-mobile' and 'phobia.' Nomophobia refers to the fear, anxiety, and discomfort experienced when individuals are without a mobile device or unable to access it, highlighting their fear of being disconnected from the digital world[4,5]. Nomophobia described as encompassing four key dimensions: fear and anxiety of being unable to communicate with others, fear of losing connectivity, fear of not having immediate access to information, and fear of losing the comfort provided by mobile devices.[6] Numerous studies have demonstrated that nomophobia is linked to mental health and personality

Received: 9 November 2024
Accepted: 18 February 2025
Published: 11 March 2025

disorders, including issues with self-esteem, feelings of loneliness, and diminished overall well-being[2,5,7].This condition is particularly prevalent among youth aged 12 to 18 years, a group characterized by emotional dependency[8]. Nomophobia adversely affects health and various aspects of young people's lives, including their social interactions, leading to detachment and isolation from the real world.[9] Additionally, nomophobia negatively impacts academic performance due to constant distractions and contributes to a range of psychological issues such as increased anxiety, depression, rage, violence, stress, emotional instability, and sleep disturbances.[10,11] Addressing this growing issue requires focused attention and intervention to mitigate its effects on the well-being of individuals, particularly youth. In modern society adolescence is the riskiest age group for Nomophobia, as well as internet, video and online game addiction, for several reasons such as the need for social interaction, the influence of peer pressure, the demands of academic performance, the allure of entertainment and distraction, concerns regarding security and safety, as well as an increasing reliance on technology.[10,12] Adolescents tend to suffer psychological and emotional consequences[13]. They prefer communication, interaction, playing, and having fun with others via digital platform over physical contact.[14] This persistent and harmful behavior may lead to alterations in cognitive, behavioral, and physiological domains.[15] Additionally, it can result in a range of issues, including a sedentary lifestyle, eating disorders, sleep disturbances, irritability, aggression, and diminished self-esteem.[12]

Techno-dependence, a widely reported emergent social problem, describes a condition where people become profoundly and pathologically dependent on technology for numerous every aspect of their daily lives.[16] The negative effect of smartphones on students includes physical, mental, and emotional aspects. Approximately 44.4% of school students reported experiencing headaches, impaired focus, memory loss and declines memorization skills, hearing loss, and exhaustion due to their use of smartphones. Reading or viewing small screens can cause eyestrain and potentially lead to long-term vision issues 1.[5] Additionally, the over use of smartphones can lead to obesity and various health issues, musculoskeletal problems such as a lack of physical activity, poor posture, neck and upper back pain.[15]

One research study indicated that 48% of people in the United States acknowledge their dependence on smartphones, with 54% of Americans expressing panic when their phone's battery drops below 20%.[17] Also, Anderson and Jiang stated that 95% of American youths own smartphones and maintain an almost constant internet connection.[18] During the COVID-19 pandemic, smartphone usage increased significantly due to online learning. In the United Kingdom, 39% of youth experience Nomophobia, indicating a belief that they cannot function without their smartphones. This results showed an increase from 33% within the span of just one year.[19,20]

Various scholarly studies have found that the phenomenon of Nomophobia is connected to multiple psychological issues, including depression, stress, social isolation, and sadness[21,22]. An evident association was detected between Nomophobia and stress, anxiety, and depression among Saudi adolescents.[23] Adolescent social isolation in South Korea was associated with excessive smartphone use[24]. Smartphones aggravate compulsive checking behaviors because they provide simple and instant access to numerous data and communication tools. The continuous connectivity may increase the anxiety of missing out, making people feel compelled to check their phones frequently.[25] Previous researchers highlighted worsening of antisocial and extremely harmful psychological problem.[12,25] Add to above, Smartphone addiction is a widespread issue that influences individuals around the world, manifesting in diverse ways depending on cultural contexts. This variation can be attributed to differences in social norms, levels of technological accessibility, and perceptions of mental health across different societies. In some cultures, excessive smartphone use is linked to increased social connectivity and productivity, while in others, it exacerbates issues like social isolation and mental health challenges. Understanding these cultural differences is crucial for developing effective interventions that address both the benefits and risks of smartphone use.[26]

Although Nomophobia has become a recognized condition, literature is still insufficient studies on smartphone overuse.[27] The existing research tend to be correlational studies between smartphones and other traits.[28] Therefore, the purpose of this research is to examine the impact of nomophobia among adolescents and to explore its psychological correlates problems, particularly stress, loneliness, and depression.

Material and Methods

Design

The An explanatory sequential mixed method was utilized in this study. Researchers started by collecting and analyzing quantitative data, followed by qualitative data collection to help explain and further explore the quantitative results. The quantitative phase was executed through a descriptive, cross-sectional survey design, while the qualitative phase was conducted using a phenomenological research design. The researchers selected a phenomenological design as it aligns well with the study's objective of enhancing the comprehension of students' individual experiences related to nomophobia, stress, loneliness, and depression, achieved through in-depth interviews.[29]

Participants and Sampling Technique

In quantitative phase, the researcher employed a convenience sampling technique. A convenience sampling technique introduce some bias, but the researchers chose this sampling technique because it is given the constraints of time, resources, and access to the target population of adolescents. Convenience sampling was used because it allowed us to collect data efficiently from students who were readily available and willing to participate. The required sample size was determined using Raosoft's sample size calculator, which suggested a sample of 180 students based on a 95% confidence level and a 5% margin of error.[30] However, considering the diversity within the population, we adjusted the sample size to ensure it was sufficiently representative of different subgroups (eg, age, gender, socioeconomic status). Specifically, we factored in the variability of these demographic characteristics, using stratified sampling techniques where necessary, to capture the full range of diversity. This adjustment helped ensure that the sample size was robust enough to provide reliable results that reflect the heterogeneity of the population and that meaningful differences across subgroups could be detected. By doing so, we aimed to improve the precision of our findings and enhance the generalizability of the study results. The target population consisted of 377 students from one school. To ensure relevant and representative participation, the inclusion criteria were as follows: (a) students must be enrolled as regular students at the school, (b) they should be 15 years of age or older, and (c) they must own a smartphone with internet access. This ensured that participants were able to complete the questionnaire online and that the data collected would be relevant to the study's aims. For the qualitative phase, the researcher conducted in-depth interviews with students who were identified as experiencing significant psychological issues related to nomophobia, based on preliminary screening or self-reports. These interviews provided deeper insights into the psychological impact of smartphone dependency. Data collection continued until saturation was reached, meaning no new themes were emerging from the interviews. This occurred after 30 interviews, which were sufficient to ensure a comprehensive understanding of the experiences of students struggling with nomophobia. The combination of quantitative and qualitative approaches allowed for a well-rounded analysis of the issue from both statistical and personal perspectives.

Instruments

In the quantitative phase of the study, the researchers utilized five instruments for data collection: the Student Demographic Data Questionnaire, the Nomophobia Questionnaire (NMP-Q), the Perceived Stress Scale (PSS), the Portuguese Version of the Beck Depression Inventory (BDI-II), and the UCLA Loneliness Scale.

Student Demographic Data Questionnaire

The Student Demographic Data Questionnaire, developed by the researchers, and based on the existing literature. The information collected includes gender, grade level, behavioral trends in smartphone use, and the daily time spent using smartphones.

Instrument for Quantitative

Nomophobia Questionnaire (NMP-Q)

The NMP-Q, developed by Yildirim and Correia[31], measures fear of being without a smartphone. The NMP-Q consists of 20 items are measured on a 7-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). The total score ranges from 20 to 140, with scores of 20 indicating no nomophobia, 21–59 indicating mild nomophobia, 60–99

indicating moderate nomophobia, and 100–140 indicating severe nomophobia. The Arabic version of the NMP-Q has been shown to be a reliable and valid instrument with Confirmatory Factor Analysis (CFA) of the Arabic version of the NMP-Q demonstrated a good model fit ($\chi 2/df = 1.47$; Fit Index = 0.997; Adjusted Goodness-of-Fit Index = 0.996; Tucker-Lewis Index = 1.003; Comparative Fit Index = 1; RMSEA = 0.000; Standardized Mean Residual = 0.030), and McDonald's ω internal consistency values for the four factors—giving up convenience, not being able to access information, not being able to communicate, and losing connectedness—were 0.821, 0.841, 0.851, and 0.897, respectively.[32]

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS), developed by Chan and La Greca[33] measures the extent to which individuals perceive situations in their lives as stressful. PSS consists of 10 items rated on a 5-point Likert scale, with response options ranging from 0 ("Never"), 1 ("Almost Never"), 2 ("Sometimes"), 3 ("Fairly Often"), to 4 ("Very Often"). Four of the items (items 4, 5, 7, and 8) are reverse scored, meaning the response scale is inverted for these items: 0 ("Very Often"), 1 ("Fairly Often"), 2 ("Sometimes"), 3 ("Almost Never"), and 4 ("Never"). Total scores range from 0 to 40, with higher scores indicating greater perceived stress. Scores between 0 and 13 indicate low stress, 14–26 indicate moderate stress, and 27–40 indicate high stress. Cronbach's alpha coefficients for the Arabic version of the Perceived Stress Scale were 0.74 for Factor 1, 0.77 for Factor 2, and 0.80 for the overall scale, demonstrating good internal consistency, while the test-retest reliability yielded an intra-class correlation coefficient of 0.90, indicating strong stability and reliability of the scale in the Arabic context.[34]

Beck Depression Inventory (BDI)

The BDI developed by Campos and Gonçalves.[35] It consists of 21 multiple-choice items, each assessing a specific symptom of depression such as mood, pessimism, sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, suicidal thoughts, and more. Each item is scored on a scale from 0 to 3, where: (0) indicates the absence of the symptom (eg, "I do not feel sad"), (1) indicates a mild level of the symptom (eg, "I feel sad much of the time" (2) indicates a moderate level of the symptom (eg, "I am sad all the time"), (3)indicates a severe level of the symptom (eg, "I am so sad or unhappy that I cannot stand it").The total score is derived from the sum of all items, with scores of 0–13 considered in the minimal range, 14–19 indicating mild depression, 20–28 indicating moderate depression, and 29–63 indicating severe depression. The Arabic BDI demonstrated strong **validity**, with significant correlations of r = 0.72 to 0.83 with other depression scales and clinical diagnoses, and excellent reliability, showing a high Cronbach's alpha of 0.91 and strong test-retest reliability (r = 0.89).[36]

UCLA Loneliness Scale

The UCLA Loneliness Scale, developed by Russell, Peplau and Cutrona,[37] measures individuals' feelings of social loneliness. It contains 20 items, with responses rated on a scale from 1 ("never") to 4 ("often"). Total scores range from 20 to 80, with scores of 20–34 indicating low levels of loneliness, 35–49 indicating moderate levels, 50–64 indicating moderately high levels, and 65–80 indicating high levels of loneliness. The Arabic version demonstrated strong validity with significant correlations ranging from r = 0.69 to 0.82 with other well-being measures, and excellent reliability with a Cronbach's alpha of 0.92 and test-retest reliability of r = 0.84, confirming its psychometric strength for assessing loneliness among Saudi female undergraduate students.[38]

Instrument for Qualitative

Semi-structured open-ended questions were constructed based on previous literature. In-depth interviews were conducted with students experiencing high stress. The interviews were guided by four open-ended questions:

- Could you elaborate on the impact of your smartphone usage on your daily routines, especially regarding your physical and emotional health?

- How does the manner in which you utilize your smartphone affect your relationships with family and friends, both in face-to-face settings and in the digital realm?
- How does being offline or without smartphone affect your emotional state? Could you elaborate on your feelings during such moments?
- Can you describe any specific situations where you found yourself excessively spending money or time on your smartphone, and how that impacted your daily life?

Three nursing PhD experts reviewed the interview questions to assess their practicality and accuracy. Following their review, minor language modifications were recommended and subsequently implemented.

Setting

The study was conducted at a school located in northern Jordan, with a total student population of 377.

Data Collection

Data collection for this study was conducted in two phases: the quantitative phase followed by the qualitative phase. The former includes the administration of the NMP-Q then PSS, BDI, and UCLA to students, whereas the latter includes semi-structured in-depth interviews with selected students (Figure 1).

Quantitative Data

Prior to data collection, the researcher visited the selected schools to meet with school administrators and gather relevant information regarding both the institutions and the student population. Once all necessary data were obtained, the questionnaires were distributed to the participating students. The researcher first visited the selected schools to meet with school administrators and gather relevant information about the institutions and the student population, including demographics, academic performance, and any factors that could influence the study. This initial visit helped establish rapport with the school staff and ensured that all necessary permissions and context were obtained before proceeding. Once the background information was gathered, the researcher proceeded with the distribution of the questionnaires to the participating students. The questionnaires were administered in a controlled environment, either during class sessions or in designated spaces, to minimize disruption. Prior to distribution, the researcher explained the purpose of the study, emphasized the voluntary nature of participation, and assured students of confidentiality to encourage honest responses. Sufficient time was allocated for students to complete the questionnaires, and the researcher was available to answer any questions or clarify instructions as needed. After completion, the questionnaires were collected and securely stored for analysis. This approach ensured that the data collection process was systematic, respectful of participants' time, and aligned with ethical guidelines.

Qualitative Data

Regarding qualitative part of the study, semi-structured open-ended questions were constructed based on previous literature. In-depth interviews were conducted with students experiencing high stress. Each session, lasting about 60 minutes, took place in a private setting to maintain confidentiality. The researcher introduced the study's purpose and methodology, emphasizing confidentiality and voluntary participation, with students free to withdraw at any time. Participants were encouraged to share their experiences openly, with thorough exploration of each response before progressing. The interviews concluded with the researcher thanking participants for their time and insights, ensuring a respectful and supportive environment. The interviews were guided by open-ended questions.

Data Analysis

Quantitative Data Analysis

SPSS version 20.0 used to analyze quantitative data through descriptive statistics and multiple linear regression to assess stress, depression, and loneliness effects on Nomophobia. The demographic data, Nomophobia level, and psychological correlates (stress, loneliness, and depression analyzed by using descriptive statistics to summarize frequencies,

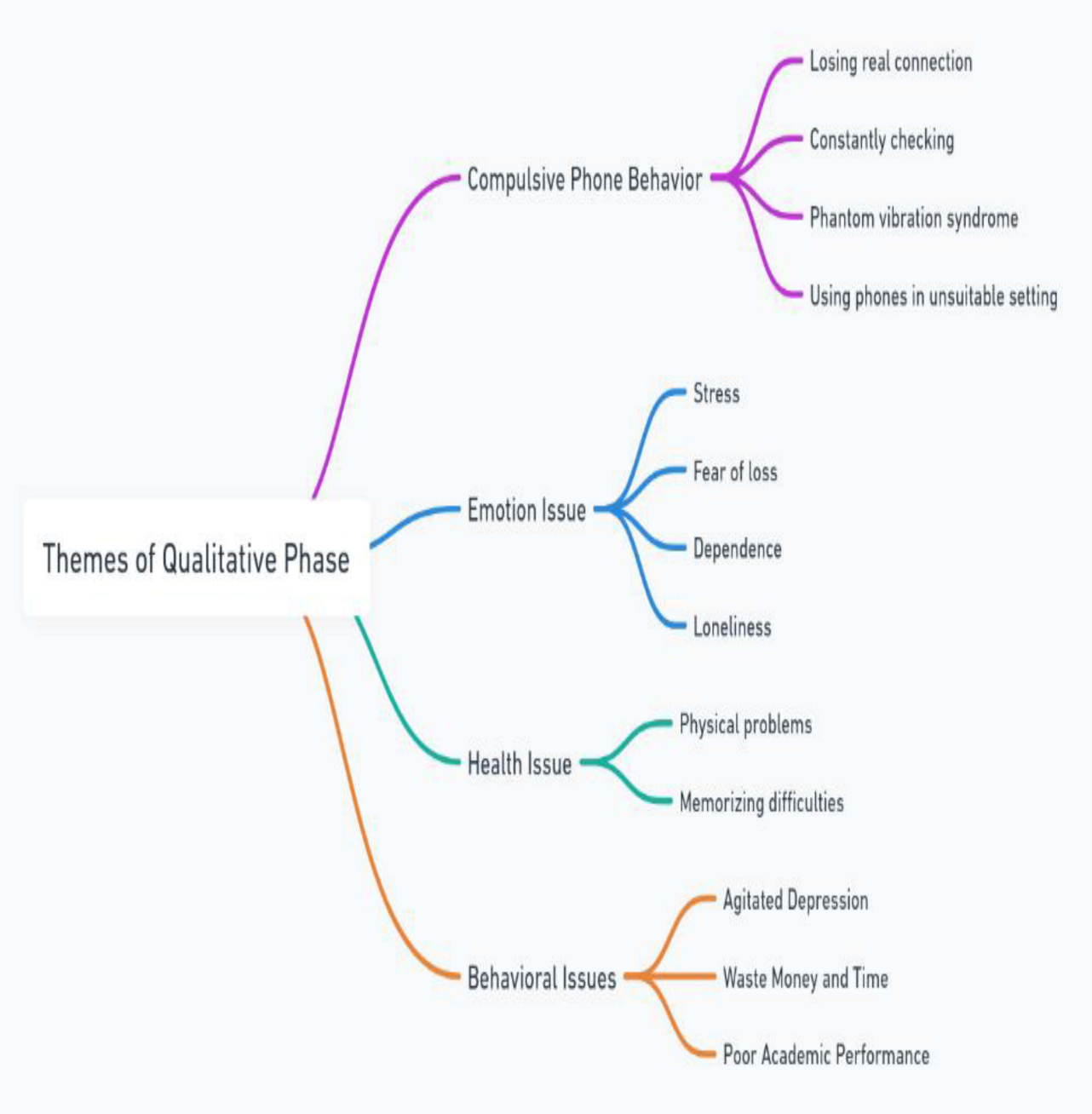

Figure 1 Themes of Qualitative Phase.

percentages, means, and standard deviations. To determine the gender difference between two groups independent samples *t*-tests used. Finally, and multiple regression analysis used to explore the predictive factors of nomophobia with significance tested at the 0.01 level.

Qualitative Data Analysis

The qualitative analysis was conducted through a systematic process that included several key steps. Initially, the collected data was transcribed to convert verbal responses into written form. Following transcription, the data was translated as needed to ensure consistency and clarity across different languages. The next step involved coding, where specific patterns, phrases, or concepts were identified and categorized to facilitate further analysis. Thematic analysis was then performed to examine broader patterns within the data, allowing for the identification of emerging themes and

subthemes. This was complemented by content analysis, which involved a detailed examination of the frequency and context of certain words or concepts, providing deeper insight into the data and supporting the identification of key issues relevant to the research objectives.

Results

Quantitative results

Demographic Data

The study included 180 high school students with smartphones, averaging 16.8 years in age (SD = 0.41). Over half were female (52.2%), with most in grade 12 (34.4%). A majority (61.2%) used their phones 4–7 hours daily, primarily for social networking, communication, and gaming, with only 16.6% using them for educational purposes (Table 1).

Nomophobia Level

Results indicate that a majority of students (76.7%) exhibit high levels of nomophobia, with a slightly higher prevalence among females (78.72%) compared to males (69.76%). Only 8.3% reported low nomophobia levels, distributed similarly between genders. These findings highlight the widespread prevalence of high nomophobia, especially among female students (Table 2).

Table 1 Demographic Data and Daily Behavior Pattern for Using Smartphone

Variables		**Quantitative**	**Qualitative**
		Frequency (%), N = 180	**Frequency (%), N =30**
Student age	Mean (SD) 16.8 (0.41)		
Student Gender	Female	94 (52.2)	16 (53.3)
	Male	86 (47.8)	14 (46.7)
Grade Level	10	60 (33.3)	10 (33.3)
	11	58 (32.3)	9 (30)
	12	62 (34.4)	11 (36.7)
Duration of daily mobile use	< 4	25 (13.8)	1 (3.3)
	4–7	110 (61.2)	25 (83.4)
	>7	45 (25.0)	4 (13.3)
The purposes of using Smart Phone	Browse social networking	180 (100)	30 (100)
	Contacting family and friends	180 (100)	30 (100)
	Playing games	180 (100)	30 (100)
	Watching videos	170 (94.4)	29 (96.7)
	Sending messages	90 (50)	16 (53.3)
	Searching education information	30 (16.6)	9 (30)
Context of using smartphone	During eating/ dinner table	160 (88.8)	29 (96.7)
	In school/ between class	150 (77.7)	22 (73.3)
	Family meeting	145 (80.5)	29 (96.7)
	Public transport	96 (53.3)	28 (93.3)
	Others	35 (19.4)	27 (90)

https://doi.org/10.2147/JMDH.S505535

Table 2 Total Item Mean and Standard Deviation of Nomophobia Level (N=180)

Nomophobia Levels	Mean (SD)	Total N (%)	Frequency (%)	
			Male	Female
Low Nomophobia >20 - <60	21.01 (0.21)	15 (8.3)	7 (8.14)	8 (8.51)
Moderate Nomophobia 60- <100	61.50 (3.44)	31 (17.2)	19 (22.1)	12 (12.77)
High Nomophobia ≥ 100	122.6 (4.06)	134 (76.7)	60 (69.76)	74 (78.72)
Total score	103.61 (3.94)			

Associated Psychological Problems

Table 3 presents that most of the students experienced a high level of stress (mean = 32.96, SD = 1.35), and social loneliness (mean = 67.9, SD = 4.17). Conversely, the majority of students exhibited minimal levels of depression (mean = 7.03, SD = 4.1). Additionally, female students reported higher levels of both stress (mean = 67, SD = 71.3%) and loneliness (mean = 67, SD = 71.28%).

Table 4. show that stress and loneliness/isolation significantly and positively affect nomophobia ($p = 0.01$), while depression's effect is not statistically significant ($p = 0.06$). The unstandardized coefficients indicate that a one-unit increase in stress or loneliness/isolation leads to increases of 1.64 and 1.20 units in nomophobia, respectively, while depression has a smaller, non-significant negative effect. The model explains 90% of the variance in nomophobia ($R^2 = 0.90$, adjusted $R^2 = 0.89$) and is statistically significant ($F = 150.45$, $p < 0.001$). The Durbin-Watson statistic of 2.2

Table 3 Psychological Problems Associated With Nomophobia (N = 180)

Associated Psychological Problems	M (SD)*	Frequency (%)	
		Male	Female
Stress			
Low Stress	5.5 (2.8)	5 (5.82%)	4 (4.2%)
Moderate	24.8 (1.9)	21 (24.41%)	23 (24.5%)
Severe	38.1 (0.9)	60 (69.77%)	67 (71.3%)
Total	32.96 (1.35)		
Depression			
Minimal Range	4.01 (3.1)	70 (81.3%)	74 (78.71%)
Mild	16.01 (1.5)	11 (12.8%)	16 (17.03%)
Moderate	24.02 (2.6)	4 (4.7%)	2 (2.13%)
Severe	35.02 (1.2)	1 (1.2%)	2 (2.13%)
Total	7.03 (4.1)		
Loneliness			
Low	28.1 (2.5)	1 (1.47%)	5 (5.32%)
Moderate	42.6 (3.6)	1 (1.47)	2 (2.13%)
High Moderate	57.2 (4.6)	9 (13.23%)	20 (21.27%)
High	70.9 (5.4)	57 (31.66%)	67 (71.28%)
Total	67.9 (4.17)		

Abbreviation: M (SD), Mean (Standard Deviation).

Table 4 Multiple Regression Analysis Predicting Nomophobia From Stress, Loneliness/Isolation, and Depression

Predictor	b	SE	Beta	t-Value	P-Value
Intercept	−20.05	1.51		−1.33	
Stress	1.64	1.22	0.54	1.35	0.01*
Loneliness/Isolation	1.20	7.24	0.54	1.66	0.01*
Depression	−0.43	5.00	−0.13	−8.61	0.06

Notes: R2 =0.90, Adjusted R2 =0.89,F=150.45, Durbin-Watson= 2.2 * significance P =<0.001, b:Unstandardized Coefficients, SE: Standard Error, Beta: Standardized Coefficients.

suggests no significant autocorrelation in the residuals, supporting the independence assumption. The data was checked for multicollinearity, confirming that the predictors were not highly correlated. Overall, the analysis demonstrates a strong and reliable relationship between the predictors and nomophobia.

Qualitative Results

Demographic Data

The background characteristics of 30 students are outlined in Table 1 to provide context and facilitate a deeper understanding of the students experience of the nomophobia phenomenon.

Themes of Qualitative Analysis

Analysis of textual data from interview transcripts and field notes yielded four major themes with thirteen subthemes, as presented in the Figure 1.

The First Theme Is Compulsive Phone Behavior

Losing Real Connection

All of the students reported lose connection with the real world. When they meet, each student tends to occupy themselves with their smart- phone rather than engaging in conversation or playing together.

One Student Illustrated

> When I meet with my cousins or my brothers, we talk a little, and then, without realizing it, each one of us starts playing on his mobile phone, and we can sit in this position for more than an hour without speaking a single word to each other.

Constantly Checking Mobile

The results revealed that all students checked their phones at least 30 times within an hour. Upon awakening, students first action is to activate their phones and check various social media platforms. Most of them often browse their phones during conversations and while they are studying without being aware of it.

One student reported

> I spend most of my time on the phone. I browse my phone every two minutes. I cannot put it down. I am even talking to my mother or my friends when suddenly, subconsciously, I open my phone and browse social media, send messages, or watch videos.

Phantom Vibration Syndrome

All students indicated a misconception that their mobile is vibrating when, in reality, it is not.

One student illustrated

> Frequently, I hear the ringing of my mobile phone or the sound of a message. Sometimes, if I leave my phone in another room, I hear it ringing. I run to my phone but find that it is not actually ringing.

Using Phones in Unsuitable Settings

All students reported using their phones in various locations, such as the toilet, before sleeping, while walking on the street, in public places, during family meetings, and at school.

One student illustrated

> I can't leave my mobile. I take it everywhere, such as to the toilet, school, mall, etc. "I cannot leave my phone. If I leave, I feel palpitations, sweating, headaches, anxiety, and discomfort. I cannot leave my phone for one minute".

The second Theme Is Emotion Issues

Stress

Students report that mobile device use is a considerable source of stress, stemming from social media interactions, feelings of disconnection from reality, difficulty in detaching from devices, anxiety over phone misplacement, internet connectivity issues, and sudden battery depletion.

One student illustrated

> Engaging in Facebook discussions with differing opinions often leads to arguments, causing anxiety and discomfort for me.

Another student reported,

> I feel intense discomfort and headaches when there's no internet. Hearing a ringtone or notification triggers rapid heartbeat, shortness of breath, and a strong need to check my phone immediately.

Fear of Loss

The results indicated that all students expressed anxiety regarding the potential loss of their mobile or the disconnection from the internet due to battery depletion. Therefore, the majority of them are taking proactive measures to prevent the risk of smartphone loss by using backup Power Banks.

One student illustrated

> I am afraid of losing my mobile phone. I am afraid that the battery will run out, so I always take an extra battery and buy internet packages so that the internet does not run out. I cannot live without my phone. It's the most important thing in my life.

Another student reported

> On my way to visit my grandmother, I realized I didn't have my phone. I felt disturbed, my heartbeat accelerated, and I couldn't continue without it, so I returned home to get it.

Dependence

Findings revealed that most students lack self-sufficiency, as they rarely engage in routine tasks like cleaning their rooms, helping with household chores, participating in social visits, or attending to personal needs.

One student said:

> I spend most of my time on my phone, often neglecting to eat or tidy my room, relying on my mother for help. Tasks are frequently delayed as I get distracted by browsing, watching videos, or chatting with friends. Occasionally, I even ask my family for water when I feel thirsty.

Loneliness

Many students favor solitary smartphone use over direct interaction with family or peers, primarily connecting through social networks, which often impairs their face-to-face communication skills.

One Student illustrated

I prefer sitting alone. Even sitting with my family, I dislike socializing. I find it difficult to communicate with people face-to-face. I prefer sitting alone with the phone, browsing the Internet and social media, and talking to people via phone or text.

The Third Theme Is Health Issue

Physical Problems

Most Students suffered from excessive mobile using, its associated with many health issues such as shoulder and neck pain, elevated heart rate, insomnia, shortness of breath, and dizziness. These symptoms particularly emerge when the device is misplaced, forgotten, or during internet connectivity loss.

One student reported

I suffer from severe neck pain. It takes me a long time to fall asleep. Other than that, when I lose my phone or connection to the Internet, my heartbeat rises, and I feel pain in my chest, difficulty breathing.

Difficulty in Memorization

Many students indicated challenges in preserve information for exams, recalling names of people, and memorizing lesson content.

One student reported

I suffer from memory loss. I memorize the lesson, and when I go to the exam, I forget the information. In addition, I'm confused about my friends' names.

The Fourth Theme Is Behavioral Issues

Agitated Depression

A few students reported persistent sadness, low energy, and pessimism, displaying agitated behaviors like irritability, restlessness, and anger, especially when facing phone related issues like loss or damage.

One student reported

When my little brother dropped my mobile phone into a cup of water, I had angry outbursts. I couldn't bear to lose my phone. I slapped my brother, shattered the table, and did anything I could to avoid the situation. I had a tantrum and couldn't calm down until my father bought me a new phone.

Excessive Money Spending and Wasting Time

The findings indicate that overuse of mobile phones results in a substantial waste of both financial resources and time. All students acknowledged that they allocate considerable money towards data plans and applications, while also losing momentous time to activities such as browsing social media or engaging in gaming. Such patterns of behavior may contribute to reduced productivity and a lot of financial spending.

One student illustrated

I spend more than 19 hours a day on my phone. I cover all of my Internet subscription's expenses. I spent my saved money buying electronic games. I lose track of time when I'm using my phone.

Poor Academic Performance

The results indicate that excessive usage of mobile phone among students are associated with poor academic performance, as students allocate significant time to mobile activities rather than studying.

One student illustrated

I spent a significant amount of time playing, chatting with my friends, and browsing websites, which negatively impacted my academic performance, resulting in a 65% average in the first semester, compared to a 96% average three years ago.

Integration of Themes

The integration of themes around addictive behaviors, emotional issues, health concerns, and behavioral problems reveals the complex dynamics fueling nomophobia in students. Smartphone dependency not only fosters detachment from the physical environment but also exacerbates psychological burdens, contributing to physical strain and cognitive declines like memory loss. Behavioral issues, including agitated depression and resource misuse, further underscore the harmful consequences of nomophobia. This thematic integration provides a comprehensive view of nomophobia's multifaceted impact on students, highlighting the urgent need for targeted interventions to mitigate its effects on well-being and cognitive engagement.

Discussion

The present study aimed to examine the impact of nomophobia among adolescents and explore its psychological correlates, particularly stress, loneliness, and depression. The results reveal that 76.7% of students experienced severe nomophobia, with 78.72% of them being female. Furthermore, the study identified strong positive associations between nomophobia, stress, and social loneliness, as evidenced by high coefficients (1.64 and 1.20, respectively) and R-squared values (0.93 and 0.98, respectively). However, depression, despite showing a negative association with nomophobia (−0.43), was not a significant predictor ($p = 0.06$). The high prevalence of severe nomophobia (76.7%) aligns with existing research, which consistently highlights the growing issue of smartphone addiction among adolescents. Many Studies reported similarly high levels of nomophobia among school age students, particularly those facing academic pressures and social isolation.[23,39] These findings reinforce the idea that nomophobia is becoming a significant public health concern, particularly as younger populations increasingly rely on smartphones for social interaction and academic purposes. While prior literature[40,41] suggest a strong link between depression and problematic technology use, this study recognize that cultural or age-related factors may influence these results. Regarding gender differences, we agree that these should be better contextualized with supporting literature on gendered technology use behaviors.[42] Furthermore, the study's finding that females are more affected by nomophobia (78.72%) is consistent with previous study.[43] One study found that females are more prone to anxiety related to smartphone use and disconnection, which can lead to higher levels of nomophobia.[44] This may be attributed to social and emotional factors, as females tend to rely more heavily on smartphones for communication and social networking, heightening their fear of missing out (FOMO) and increasing their dependence on mobile devices.[45] Similarly, other study reported that females are more vulnerable to nomophobia due to their higher emotional sensitivity to social disconnection.[44] However, some studies offer a different perspective on the relationship between gender and nomophobia. Panova[46] argued that while females may report higher anxiety related to smartphone use, males often display more overt addictive behaviors, such as excessive gaming or internet browsing. This suggests that gender differences in technology addiction may depend on the specific behaviors being examined, indicating the need for future research to explore how digital addiction manifests across genders. Regarding psychological correlates, the strong connection between stress and nomophobia observed in this study aligns with previous research. For instance, Rawas, Bano, Asif and Khan[23] identified stress, particularly in academic and social contexts, as a primary driver of nomophobia among adolescents in Saudi Arabia. The current study's finding that students with higher perceived stress reported significantly higher nomophobia scores reinforces this relationship. Additionally, social loneliness was found to be a significant predictor of nomophobia, which mirrors findings from Demirci, Demirci and Akgonul[47] who reported that adolescents experiencing social isolation tend to become more dependent on their smartphones as a means of maintaining virtual connections. This study also supports the work of Mendoza Pérez and Morgade Salgado[48] which showed that nomophobia negatively affects social relationships, leading to further social isolation and detachment from the real world. The findings of this study align with prior research, which highlighted significant associations between stress, social disconnection, and compulsive smartphone use.[49] These studies highlighted how emotional distress, including anxiety and FOMO, contributes to excessive smartphone use, aligning with the current study's findings regarding stress and fear of loss. However, the one study's results contrast with the findings of this study who suggested a stronger link between depression and nomophobia.[39] In the current study, only two students exhibited signs of agitated depression. This discrepancy could be attributed to demographic or cultural factors, implying that

depression may not be as prominent in adolescents experiencing nomophobia, thus warranting further exploration of age- and culture-specific factors affecting this relationship. The qualitative findings of this study revealed four primary themes: compulsive phone behavior, emotional issues, health concerns, and behavioral problems. Compulsive behaviors involved frequent phone checking, phantom vibrations, and inappropriate phone use, contributing to diminished real-world interactions. Emotional issues, including stress, phone dependence, and fear of phone loss, led to increased anxiety and discomfort. Health concerns such as neck pain, insomnia, and memory challenges were common. Behavioral problems, observed in some students, included poor academic performance, excessive spending, and agitated depression. These findings suggest that excessive smartphone use significantly impacts students' psychological, physical, and academic well-being. In sum, the findings of this study align with prior research in confirming the strong relationship between nomophobia, stress, social disconnection, and compulsive phone behaviors among adolescents. However, the weaker association with depression suggests that cultural and demographic factors may influence the psychological correlates of nomophobia. Future research should explore these nuances and consider interventions aimed at addressing the emotional and social drivers of nomophobia, particularly among adolescents.

Implications in Nursing Practice

School nurses play a vital role in detecting nomophobia and its psychological problems correlates, such as stress, loneliness, and depression, within school[50.] They can suggest targeted counseling to increase awareness among teachers, parents, and students about the early signs of nomophobia and its psychological problems impacts. Furthermore, nurses can integrate many psychotherapies such as Cognitive Behavioral Therapy (CBT), individual therapy and group sessions to help students identify and challenge negative thoughts related to mobile use. For example, nurses might guide students in tracking their phone usage and recognizing patterns of anxiety or avoidance behaviors that arise when the phone is unavailable, teaching them alternative coping strategies. Nurses can also collaborate with parents to implement structured digital detox periods which encouraged students to take breaks from mobile time throughout the day.

Limitation of the Study

This research presents several limitations that must be acknowledged when analyzing the results. Primarily, the sample was obtained through a convenience sampling approach within a singular geographic location, potentially leading to context-dependent outcomes that do not adequately reflect the broader diversity of the overall student population. Consequently, the findings may lack generalizability to students from various regions, cultural contexts, or socio-economic backgrounds. Future investigations could improve the generalizability of the results by employing random sampling methods, particularly across diverse school districts, socioeconomic strata, or geographic areas. Additionally, the cross-sectional design of the study also restricts the ability to draw causal inferences about the relationship between nomophobia and its psychological correlates. Further research with larger, more diverse samples, longitudinal designs is needed to validate and expand upon these findings and corporate with psychological theories. Furthermore, in regarding our conclusion that nomophobia is a "public health issue", we acknowledge that this claim requires stronger longitudinal evidence to substantiate it. As such, we have revised the conclusion to emphasize the need for further longitudinal studies to better assess the long-term impact of nomophobia on public health.

Conclusion

Nomophobia is prevalent among students, significantly impacting their social, mental, and physical health. The excessive use of smartphones contributes to increased stress, social isolation, and physical discomfort. It is essential for parents, educators, and healthcare professionals to acknowledge the detrimental effects of this condition. Developing and implementing strategies that encourage a more balanced approach to smartphone usage is vital. These initiatives should focus on fostering in-person interactions, decreasing reliance on devices, and enhancing overall health. By prioritizing healthier digital practices, students can experience improved social interactions and academic performance.

Data Sharing Statement

The data used in this research is available upon request from the corresponding author.

Ethics Approval and Informed Consent

Ethical approval followed the Declaration of Helsinki and obtained from Research Ethics Committee in the Ministry of Education (No. 71714). The researchers explained the study's objectives to the students and their parents, clarifying that participation was voluntary and that they could withdraw at any time. Oral and written consent were obtained from both the parents and their children, as the students are under 18 years old. To maintain student anonymity, each questionnaire was given a unique code and was securely placed in a sealed envelope. For the qualitative phase, interviews were conducted privately at school, using pseudonyms for participants. Consent was obtained from parents and their students for audio recording and the publication of anonymized responses and direct quotes, with recordings securely stored and accessible only to the research team. Transcripts were de-identified to remove personal information, and all data were kept confidential, ensuring students' privacy throughout the study.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work, the authors used [ChatGpt] to/for preparing the Figure 1.

Acknowledgment

The authors express thanks to the ministry of education, school manager and teachers who facilitated the conduct of this study.

Funding

This research was conducted without any external funding.

Disclosure

The authors report no conflicts of interest in this work.

References

1. León-Mejía AC, Gutiérrez-Ortega M, Serrano-Pintado I, González-Cabrera J. A systematic review on nomophobia prevalence: surfacing results and standard guidelines for future research. *PLoS One*. 2021;16(5):e0250509. doi:10.1371/journal.pone.0250509
2. Gonçalves S, Dias P, Correia A-P. Nomophobia and lifestyle: smartphone use and its relationship to psychopathologies. *Comput Human Behavior Rep*. 2020;2:100025. doi:10.1016/j.chbr.2020.100025
3. Yildiz EP, Çengel M, Alkan A. Investigation of Nomophobia Levels of Vocational School Students According to Demographic Characteristics and Intelligent Phone Use Habits. *Higher Educ Stud*. 2020;10(1):132–143. doi:10.5539/hes.v10n1p132
4. Notara V, Vagka E, Gnardellis C, Lagiou A. The emerging phenomenon of nomophobia in young adults: a systematic review study. *Addiction Health*. 2021;13(2):120.
5. Abdoli N, Sadeghi-Bahmani D, Salari N, et al. Nomophobia (No Mobile Phone Phobia) and psychological health issues among young adult students. *Eur J Invest Health Psychol Educ*. 2023;13(9):1762–1775. doi:10.3390/ejihpe13090128
6. Aslani M, Sadeghi N, Janatolmakan M, Rezaeian S, Khatony A. Nomophobia among nursing students: prevalence and associated factors. *Sci Rep*. 2025;15(1):173. doi:10.1038/s41598-024-83949-5
7. Srivastava DP. *Nomophobia: A Prev*. 2024.
8. Behadili SF, Jabar H, Tahlok WS, Abdulsahib SA. No Mobile Phobia Phenomenon _ A Review. *Iraqi J Electric Electron Eng*. 2021;17(1):1–11. doi:10.37917/jeee.17.1.6
9. Mendoza JS, Pody BC, Lee S, Kim M, McDonough IM. The effect of cellphones on attention and learning: the influences of time, distraction, and nomophobia. *Computers in Human Behavior*. 2018;86:52–60. doi:10.1016/j.chb.2018.04.027
10. Nguyen T-V, Nguyen Q-AN, Nguyen NP, Nguyen UB. Smartphone use, nomophobia, and academic achievement in Vietnamese high school students. *Comput Human Behavior Rep*. 2024;14:100418. doi:10.1016/j.chbr.2024.100418
11. Silmi AZ, Lailiyah S. LITERATURE REVIEW: THE RELATIONSHIP BETWEEN SMARTPHONE USE AND INCIDENTS OF ANXIETY (NOMOPHOBIA) AMONG ADOLESCENTS IN INDONESIA. *J Commun Mental Health Public Policy*. 2024;7(1):1–11. doi:10.51602/cmhp.v7i1.171
12. Aygün A, Ulu E, Akça R. A research on nomophobia: high school students example. *Soc Sci Studi J*. 2023;9(116):8649–8656. doi:10.29228/sssj.72778

13. Abu Eyadah H, Al Khatib M. Suggested Educational Ways to Activate the Role of Social Networks in Developing Cultural Awareness Among Jordanian University Student Following COVID-19 Pandemic. *Al-Zaytoonah Univ Jordan J Human Social Stud*. 2022;3(1):142–161.
14. Hasmawati F, Samiha YT, Razzaq A, Anshari M. Understanding nomophobia among digital natives: characteristics and challenges. *J Critic Rev*. 2020;7(13):122–131.
15. Rodríguez-García A-M, Moreno-Guerrero A-J, Lopez Belmonte J. Nomophobia: an individual's growing fear of being without a smartphone—a systematic literature review. *Int J Environ Res Public Health*. 2020;17(2):580. doi:10.3390/ijerph17020580
16. Liu Y, Dong J, Mei L, Shen R. Digital innovation and performance of manufacturing firms: an affordance perspective. *Technovation*. 2023;119:102458. doi:10.1016/j.technovation.2022.102458
17. Joe B, Linson C. A Descriptive Study to Assess the Prevalence of Nomophobia among School going Children in Selected Districts of Gujarat. *Indian J Holistic Nursing*. 2020;11(4):1–4. doi:10.24321/2348.2133.202004
18. Anderson M, Faverio M, Gottfried J. Teens, social media and technology 2023. *Pew Res Cent*. 2023;;11:1.
19. Nguyen BTN, Nguyen TT, Utt L. Nomophobia and stress among Vietnamese high school students in Covid-19 pandemic: a mediation model of loneliness. *J Biochem Technol*. 2022;13(1–2022):34–40. doi:10.51847/zN5yXlP0nK
20. Tuco KG, Castro-Diaz SD, Soriano-Moreno DR, Benites-Zapata VA. Prevalence of nomophobia in university students: a systematic review and meta-analysis. *Healthcare Inform Res*. 2023;29(1):40–53. doi:10.4258/hir.2023.29.1.40
21. Demirci K, Akgönül M, Akpinar A. Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *J Behav Addict*. 2015;4(2):85–92. doi:10.1556/2006.4.2015.010
22. Abualruz H, Hayajneh F, Othman EH, et al. The relationship between emotional intelligence, resilience, and psychological distress among nurses in Jordan. *Archiv Psychiatric Nursing*. 2024;51:108–113. doi:10.1016/j.apnu.2024.05.014
23. Rawas H, Bano N, Asif U, Khan MA. Nomophobia associated with depression, anxiety, and stress in nursing students: a cross-sectional study in college of nursing, Jeddah, Saudi Arabia. *King Khalid Univ J Health Sci*. 2021;6(1):46–51. doi:10.4103/KKUJHS.KKUJHS_31_20
24. Lee EJ, Kim HO. Effects of depression and social interaction on smartphone addiction among female adolescents. *J Child Adolesc Nurs*. 2022;35 (1):68–75. doi:10.1111/jcap.12349
25. Li Z, Liang M, Le HT, Lc R, Luo Y. *Exploring Design Opportunities for Reflective Conversational Agents to Reduce Compulsive Smartphone Use*. 2023;2023:1–6.
26. Milner J, O'Reilly SL. Beyond distraction: a cross-cultural look at instructors' perspectives on smartphone use in university classrooms. *Innovations Educ Teach Int*. 2024;1–14. doi:10.1080/14703297.2024.2382416
27. Samaha M, Hawi NS. Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Corrigendum*. 2017;2017:1.
28. Panova T, Carbonell X. Is smartphone addiction really an addiction? *J Behav Addict*. 2018;7(2):252–259. doi:10.1556/2006.7.2018.49
29. Cohen S, Kamarck T, Mermelstein R. *Perceived Stress Scale. Measuring Stress: A Guide for Health and Social Scientists*. 1994;10:1–2.
30. Rosoaft. *Rosoaft Sample Size calculation*; 2024.
31. Yildirim C, Correia A-P. Exploring the dimensions of nomophobia: development and validation of a self-reported questionnaire. *Computers in Human Behavior*. 2015;49:130–137. doi:10.1016/j.chb.2015.02.059
32. Jelleli H, Hindawi O, Rebhi M, et al. Psychometric evidence of the Arabic version of nomophobia questionnaire among physical education students. *Psychol Res Behavior Manage*. 2023;Volume 16:2383–2394. doi:10.2147/PRBM.S416312
33. Chan SF, La Greca AM. *Perceived Stress Scale (PSS). Encyclopedia of Behavioral Medicine*. Springer; 2020:1646–1648.
34. Almadi T, Cathers I, Mansour AMH, Chow CM. An Arabic version of the Perceived Stress Scale: translation and validation study. *Int J Nurs Stud*. 2012;49(1):84–89. doi:10.1016/j.ijnurstu.2011.07.012
35. Campos RC, Gonçalves B. The Portuguese version of the beck depression inventory-II (BDI-II). *Eur J Psychol Asses*. 2011;27(4):258–264. doi:10.1027/1015-5759/a000072
36. Maliki I, Elmsellem H, Hafez B, El Moussaoui A, Reda Kachmar M, Ouahbi A. The psychological properties of the Arabic BDI-II and the psychological state of the general Moroccan population during the mandatory quarantine due to the COVID-19 pandemic. *Caspian J Environ Sci*. 2021;19(1):139–150.
37. Russell D, Peplau LA, Cutrona CE. The revised UCLA Loneliness Scale: concurrent and discriminant validity evidence. *J Personality Soc Psychol*. 1980;39(3):472. doi:10.1037/0022-3514.39.3.472
38. AlNajjar A, Dodeen H. Factor structure of the Arabic version of the UCLA loneliness scale. *Int J Re Humanities Arts Literature*. 2017;5 (9):171–184.
39. Karaoglan Yilmaz FG, Ustun AB, Zhang K, Yilmaz R. Smartphone addiction, nomophobia, depression, and social appearance anxiety among college students: a correlational study. *J Rational-Emotive Cognitive Behavior Therapy*. 2024;42(2):305–321. doi:10.1007/s10942-023-00516-z
40. Augner C, Vlasak T, Aichhorn W, Barth A. The association between problematic smartphone use and symptoms of anxiety and depression—a meta-analysis. *J Public Health*. 2023;45(1):193–201. doi:10.1093/pubmed/fdab350
41. Sohn SY, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and GRADE of the evidence. *BMC Psychiatry*. 2019;19(1):1–10. doi:10.1186/s12888-018-1996-0
42. Adalıer A, Balkan E. The relationship between internet addiction and psychological symptoms. *Int J Glob Educ*. 2012;1(2):1.
43. Moreno-Guerrero A-J, Aznar-Díaz I, Cáceres-Reche P, Rodríguez-García A-M. Do age, gender and poor diet influence the higher prevalence of nomophobia among young people? *Int J Environ Res Public Health*. 2020;17(10):3697. doi:10.3390/ijerph17103697
44. Yıldırım M, Çiçek İ. Fear of COVID-19 and smartphone addiction among Turkish adolescents: mitigating role of resilience. *Family J*. 2022;10664807221139510. doi:10.1177/10664807221139510
45. Gezgin DM, Hamutoglu NB, Sezen-Gultekin G, Gemikonakli O. Relationship between Nomophobia and Fear of Missing out among Turkish University Students. *Cypriot J Educl Sci*. 2018;13(4):549–561. doi:10.18844/cjes.v13i4.3464
46. Panova T, Efimova AA, Berkovich AK, Efimov AV. How ICTs can influence psychological wellbeing: an analysis of uses and addiction potential. *RSC Advances*. 2020;10(40):24027–24036. doi:10.1039/d0ra04150e
47. Demirci S, Demirci K, Akgonul M. Headache in smartphone users: a cross-sectional study. *J Neurol Psychol*. 2016;4(1):5.

48. Mendoza Pérez K, Morgade Salgado M. Mobility and the mobile: a study of adolescent migrants and their use of the mobile phone. *Mobile Media Commun*. 2020;8(1):104–123. doi:10.1177/2050157918824626
49. Yildirim C, Correia A-P. *Understanding Nomophobia: A Modern Age Phobia Among College Students*. Springer; 2015:724–735.
50. Khoshgoftar M, Mazaheri MA, Tarahi MJ. The effect of educational intervention based on health belief model to decrease and prevent mobile phone addiction among female high school students in Iran. *Intl J Pediatrics Mashhad*. 2019;7(10):10175.