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The Relationship Between Nomophobia and Levels of Anxiety and Depression Among Female University Students

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Abstract

Background: Nomophobia, defined as the fear of being without a mobile phone, has emerged as a growing psychological concern among university students. The rapid integration of smartphones into academic and social life may contribute to increased emotional dependency, especially among female students. However, limited research has examined the impact of nomophobia on mental health in Saudi Arabia.

Aim: To assess the prevalence of nomophobia and examine its relationship with anxiety and depression among female students at the College of Education, King Khalid University.

Methods: A cross-sectional correlational study was conducted among 150 female undergraduate students using stratified random sampling. Data were collected using a structured questionnaire that included the Nomophobia Questionnaire (NMP-Q) and the Arabic version of the Depression Anxiety Stress Scale (DASS-21). Descriptive statistics, Pearson correlations, and multiple linear regression were performed using SPSS.

Results: The majority of students exhibited moderate (57.3%) or severe (30.7%) levels of nomophobia. High levels of anxiety and depression were also observed, with 73.3% of students reporting moderate to extremely severe anxiety and 65.3% experiencing similar levels of depression. Nomophobia scores were significantly correlated with anxiety ($r = 0.63$) and depression ($r = 0.58$). Regression analysis confirmed that nomophobia was a significant predictor of both anxiety ($\beta = 0.63$, $p < 0.001$) and depression ($\beta = 0.58$, $p < 0.001$).

Conclusion: Nomophobia is highly prevalent and strongly associated with psychological distress among female education students. Targeted interventions are needed to address mobile dependency and promote student well-being.

Keywords: Nomophobia, Anxiety, Depression, Female Students, Mental Health, Mobile Phone Use, Saudi Arabia.

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Introduction

In the past two decades, mobile phones have transitioned from simple communication devices to multifaceted tools integral to daily life. Smartphones, in particular, have dramatically transformed how individuals interact, study, socialize, and navigate the world. While these devices offer numerous advantages—ranging from real-time communication to access to educational resources—their excessive and maladaptive use has introduced new psychological challenges. Among these is *nomophobia*, a term derived from "no mobile phone phobia," describing the fear or anxiety experienced when an individual is unable to access or use their mobile phone. Initially recognized as a behavioral addiction, nomophobia has garnered increasing attention from researchers and clinicians due to its growing prevalence and potential link to mental health issues, particularly anxiety and depression (1,2).

Nomophobia is not officially classified as a clinical disorder in diagnostic manuals such as the DSM-5; however, it shares several features with recognized behavioral addictions, such as compulsive use, withdrawal symptoms, and significant interference with daily functioning (3). Recent literature suggests that individuals with high levels of nomophobia may experience persistent anxiety about losing access to their phones, fear of being disconnected from social networks, and compulsive behaviors such as constant checking of notifications (4). These symptoms often mirror those observed in generalized anxiety and depressive disorders, raising questions about the psychological impact of this modern phenomenon.

Globally, the prevalence of nomophobia is rising, particularly among young adults and university students, who represent one of the most at-risk groups for digital dependence (5,6). University life often involves increased academic stress, the need for social acceptance, and a high reliance on technology for educational and personal tasks. For female university students, these challenges may be compounded by cultural expectations, gender-related stressors, and identity development during young adulthood (7). Research suggests that women may be more vulnerable to technology-mediated anxiety and emotional disturbances due to greater social connectivity needs and higher engagement with mobile communication platforms (8,9). Within this context, female students in the College of Education at King Khalid University represent a relevant population for examining nomophobia and its psychological correlates.

Numerous studies have reported associations between nomophobia and adverse psychological outcomes. For instance, Yildirim and Correia (10), who developed the widely used Nomophobia Questionnaire (NMP-Q), found strong correlations between high nomophobia scores and anxiety-related symptoms. In a study conducted among Indian medical students, Dasgupta et al. (11) reported that students with high levels of nomophobia were significantly more likely to report symptoms of depression and stress. Similarly, a study among Turkish university students revealed that nomophobia was a significant predictor of both state and trait anxiety (12). These findings suggest a consistent pattern across diverse populations and cultural settings, indicating that nomophobia may serve as a key psychological risk factor.

From a theoretical standpoint, the relationship between nomophobia and mental health may be understood through the lens of cognitive-behavioral and attachment theories. Cognitive-behavioral models propose that maladaptive beliefs about communication, social approval, and safety contribute to technology overuse, leading to increased anxiety and distress when the technology is unavailable (13). Attachment theory, on the other hand, highlights the psychological need for secure connections—both interpersonal and, increasingly, digital. For some individuals, smartphones may function as attachment figures that provide emotional reassurance, leading to distress when they are inaccessible (14). These conceptual frameworks offer insights into the mechanisms linking nomophobia with anxiety and depression, although empirical research remains limited, especially in Middle Eastern contexts.

In Saudi Arabia, smartphone penetration is among the highest in the world, with over 95% of the population owning a smartphone and youth accounting for the majority of users (15). Social norms, educational systems, and digital communication patterns have evolved rapidly, increasing reliance on mobile technology among university students. Despite this, few studies have explored the psychological implications of mobile phone dependence in Saudi universities. One local study found that high smartphone usage was associated with sleep disturbances and academic procrastination among female students (16), but the potential associations with anxiety and depression have yet to be thoroughly examined. Given the growing concerns about student mental health in the Kingdom, investigating nomophobia as a possible contributing factor is both timely and necessary.

The psychological well-being of female students in the College of Education is of particular importance. These students are being prepared for future roles as teachers, mentors, and community leaders. Emotional resilience, mental clarity, and well-regulated behavior are crucial attributes for educators, and unaddressed psychological disturbances may impair both their academic performance and future professional competencies. Moreover, the educational environment presents unique stressors, including teaching practicums, rigorous coursework, and performance assessments, which may exacerbate

underlying anxiety or depressive symptoms. The intersection of these challenges with high mobile phone dependence may create a vulnerability pathway that warrants scholarly attention.

Therefore, the current study aims to explore the relationship between nomophobia and levels of anxiety and depression among female students in the College of Education at King Khalid University. By examining these associations in a Saudi Arabian context, the study intends to contribute to the emerging literature on digital addiction and mental health, while informing institutional policies and psychological interventions that can support students' well-being. Specifically, the study will assess the prevalence of nomophobia, quantify anxiety and depression symptoms, and determine whether nomophobia predicts increased psychological distress in this population.

This research holds potential implications for educational administrators, mental health professionals, and policymakers concerned with student well-being in the digital age. Understanding the psychological cost of excessive mobile phone dependence will aid in the development of preventive programs, digital wellness campaigns, and tailored counseling services for at-risk populations. Furthermore, the findings may help integrate mental health promotion into teacher training curricula, ensuring that future educators are not only digitally competent but also psychologically resilient.

Methodology

Study Design

This study employed a descriptive cross-sectional correlational design to investigate the relationship between nomophobia and levels of anxiety and depression among female students in the College of Education at King Khalid University. This design was chosen to allow for the simultaneous measurement of nomophobia, anxiety, and depression, and to examine the strength and direction of associations among these variables within a naturally occurring population.

Setting

The study was conducted at King Khalid University (KKU), located in Abha, Asir Region, Saudi Arabia. Specifically, the research was implemented within the College of Education, which offers various undergraduate programs in teaching and educational sciences. The college hosts a large number of female students enrolled in full-time academic programs across multiple specializations. The institutional environment is characterized by extensive use of digital technology, including e-learning platforms and mobile communication tools, making it an appropriate setting for investigating technology-related psychological outcomes.

Sample and Sampling

The target population for this study included female undergraduate students enrolled in the College of Education at King Khalid University during the academic year 2024–2025. These students were chosen as they represent a demographic group with high daily exposure to mobile phone use for both academic and personal purposes, making them particularly relevant for examining the psychological implications of mobile phone dependency, specifically nomophobia. Additionally, this population often experiences stressors related to academic performance, future career expectations, and social responsibilities, all of which can interact with technology use to affect psychological well-being.

A total of 150 participants were recruited to take part in the study. This sample size was determined based on similar studies in the literature examining the relationship between nomophobia and psychological distress among university students, as well as through guidance from power analysis calculations using G*Power software, assuming a medium effect size, alpha level of 0.05, and power of 0.80 for correlational and regression analysis.

A stratified random sampling technique was employed to ensure adequate representation of students across different academic years (first, second, third, and fourth year). The list of enrolled students was obtained from the college registrar, and strata were created according to academic level. From each

stratum, students were selected randomly using a computer-generated number list to reduce selection bias and enhance the generalizability of the findings. The proportional allocation method was applied to determine how many students should be selected from each academic level, ensuring that each year group was fairly represented in accordance with its population size.

Eligibility criteria included being a full-time female student at the College of Education, aged 18 years or older, owning a smartphone with daily use of at least three hours, and providing informed consent to participate. Students were excluded if they reported a current psychiatric diagnosis or were receiving psychiatric treatment during the time of the study, in order to minimize confounding effects that might independently influence anxiety or depression scores.

This sampling method allowed for the recruitment of a diverse group of participants with varying levels of academic stress and mobile phone use behaviors, thus increasing the relevance and applicability of the study's findings within the context of higher education settings in Saudi Arabia.

Data Collection Tools

To achieve the objectives of this study, three primary tools were utilized: the Nomophobia Questionnaire (NMP-Q), the Depression Anxiety Stress Scale (DASS-21), and a sociodemographic and mobile usage questionnaire developed by the researchers. Each tool was selected based on its relevance, psychometric properties, and prior validation in similar populations. The instruments were administered in Arabic, following rigorous translation and cultural adaptation processes.

1- The Nomophobia Questionnaire (NMP-Q) was employed to assess the level of nomophobia among participants. Originally developed by Yildirim and Correia in 2015, the NMP-Q is a 20-item self-report scale that measures the extent of fear or anxiety individuals experience when they are unable to access or use their mobile phones. The tool comprises four core dimensions: (1) not being able to communicate, (2) losing connectedness, (3) not being able to access information, and (4) giving up convenience. Each item is rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), yielding a total score ranging from 20 to 140. Higher scores indicate greater levels of nomophobia, with severity categorized as mild (20–59), moderate (60–99), and severe (100–140). The original scale demonstrated excellent internal consistency (Cronbach's $\alpha = 0.94$). For this study, the NMP-Q was translated into Arabic using a forward–backward translation procedure conducted by two bilingual experts. A panel of three academic specialists in psychology and public health reviewed the translated version for content validity and cultural relevance. A pilot test with 15 students confirmed its clarity and face validity. The Arabic version used in this study demonstrated strong internal reliability (Cronbach's $\alpha = 0.91$), confirming its suitability for the target population.

2- To assess psychological status, the study utilized the Depression Anxiety Stress Scale – 21 Items (DASS-21), a widely recognized tool developed by Lovibond and Lovibond in 1995. The DASS-21 is a short-form version of the original 42-item instrument and is designed to measure the severity of three emotional states: depression, anxiety, and stress. The scale consists of 21 items, divided equally among the three subscales. Respondents rate the extent to which each statement applied to them over the past week using a 4-point Likert scale from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). Subscale scores are calculated by summing the relevant items and multiplying by two, with higher scores indicating greater severity. The DASS-21 has established cutoff points for severity levels: normal, mild, moderate, severe, and extremely severe. It has demonstrated high internal consistency across domains, with Cronbach's alpha values reported as 0.88 for depression, 0.82 for anxiety, and 0.90 for stress. The validated Arabic version of the DASS-21 was used in this study. This version has undergone previous psychometric testing in Arab populations and showed robust reliability and construct validity. In the current study, Cronbach's alpha for the total Arabic scale was 0.93, affirming its appropriateness for use among Saudi female university students.

3- In addition to the standardized scales, a sociodemographic and mobile usage questionnaire was developed by the research team to collect background data on participants. This tool included items related to age, academic year, place of residence (urban/rural), daily mobile phone usage (measured in hours), and

primary reasons for smartphone use (academic, social, entertainment, or mixed use). The questionnaire was reviewed by two public health experts and one psychometrician to ensure content relevance and clarity. It was also pilot-tested among a group of 10 students to verify face validity, and minor revisions were made to enhance question clarity and cultural sensitivity. While the tool did not require formal psychometric validation due to its descriptive nature, it served a critical role in contextualizing the results and enabling stratified analysis of the data.

Data Collection Procedure

Data collection for this study was conducted over a four-week period during the second semester of the 2023–2024 academic year. Prior to initiating data collection, official permission was obtained from the Dean of the College of Education at King Khalid University, and ethical approval was secured from the Institutional Review Board (IRB) to ensure compliance with ethical standards for human subject research. The researchers coordinated with faculty members in the college to identify appropriate times for accessing students without disrupting instructional activities.

Eligible participants were approached in their classrooms during scheduled breaks or at the end of lectures, with the cooperation of course instructors. A brief explanation of the study's purpose, significance, and procedures was provided verbally by the principal investigator. Students were assured that participation was entirely voluntary and that their academic standing or course evaluation would not be affected in any way by their decision to participate or decline. They were also informed about their right to withdraw from the study at any stage without providing a reason.

Those who agreed to participate were asked to read and sign a written informed consent form. The form outlined the study's objectives, approximate duration, the anonymous nature of the responses, and measures taken to ensure data confidentiality. After obtaining consent, participants received a printed questionnaire packet, which consisted of three parts: a sociodemographic and mobile phone use survey, the Nomophobia Questionnaire (NMP-Q), and the Arabic version of the Depression Anxiety Stress Scale (DASS-21).

Participants were instructed to complete the questionnaire independently in a quiet classroom environment. To ensure standardization and reduce response bias, instructions were clearly written on the first page of the questionnaire, and a research assistant was present to answer any procedural or clarification questions without influencing responses. On average, each participant took 20 to 25 minutes to complete the questionnaire. No identifying information such as names, student IDs, or contact details was requested in order to preserve anonymity.

Completed questionnaires were immediately collected by the research team and checked for completeness before being placed in sealed envelopes. Each questionnaire was assigned a unique numerical code for data management purposes. Data from the paper questionnaires were manually entered into an encrypted Microsoft Excel file and later imported into IBM SPSS Statistics version 26 for analysis. Double data entry and random checks were performed to minimize transcription errors and ensure data accuracy.

Throughout the data collection phase, all physical documents were stored securely in a locked cabinet accessible only to the principal investigator, while digital files were password-protected and backed up in compliance with university data security protocols. Participants who expressed interest in the study findings were offered the option to receive a summary report via the university's internal student communication system upon study completion.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics (means, standard deviations, frequencies, and percentages) were used to summarize sociodemographic characteristics, nomophobia levels, and anxiety/depression scores. Pearson’s correlation coefficients were used to assess the relationships between nomophobia and anxiety/depression levels. To further explore predictive relationships, multiple linear regression analysis was performed, with nomophobia as the independent

variable and anxiety and depression scores as dependent variables. Statistical significance was set at $p < 0.05$.

Ethical Considerations

The study received ethical approval from the Institutional Review Board of King Khalid University. All procedures followed the ethical principles outlined in the Declaration of Helsinki. Participants were informed about the study's purpose, voluntary nature, and the right to withdraw at any point without academic penalty. Informed consent was obtained before participation. Data confidentiality was strictly maintained; no identifying information was collected, and responses were used solely for research purposes. All questionnaires were stored in locked cabinets, and electronic data were encrypted to prevent unauthorized access.

Results :

Table 1 presents the sociodemographic characteristics and mobile phone usage patterns of the 150 female students who participated in the study. The mean age of participants was 21.4 years (SD = 1.9), indicating a relatively homogenous group of young adult university students. Distribution across academic years was fairly balanced, with first- and fourth-year students each constituting 26.0% of the sample, second-year students making up 25.3%, and third-year students representing 22.7%. This even representation enhances the generalizability of the findings across all levels of undergraduate education within the College of Education.

Regarding the purpose of mobile phone use, social media emerged as the most frequently reported reason, accounting for 32.0% of responses. This was followed by mixed use (26.7%), indicating that over a quarter of the students use their phones for a combination of academic, social, and entertainment purposes. Entertainment use alone accounted for 23.3%, while only 18.0% of students primarily used their phones for academic purposes. These findings reflect a strong inclination toward recreational and social engagement via smartphones, potentially at the expense of academic focus. The reported daily phone usage ranged from 3.4 to 9.1 hours, suggesting high levels of digital engagement and screen exposure among the students.

Table 1. Sociodemographic Characteristics and Phone Use Patterns (n = 150)

Variable	**Category**	**n**	**%**
Age (Mean ± SD)	-	21.4 ± 1.9	-
Academic Year	First	39	26.0
	Second	38	25.3
	Third	34	22.7
	Fourth	39	26.0
Phone Use Purpose	Academic	27	18.0
	Social Media	48	32.0
	Entertainment	35	23.3
	Mixed	40	26.7
Daily Use (hrs)	3.4 – 9.1 hrs	-	-

Table 2 presents the distribution of nomophobia levels among the 150 female students surveyed in the College of Education at King Khalid University. The findings reveal that moderate nomophobia was the most prevalent category, affecting 57.3% of the participants (n = 86). This suggests that more than half of the students experience a considerable degree of discomfort or anxiety when they are without access to their mobile phones, although not to the extent of clinical severity. Notably, a substantial proportion of the students—30.7% (n = 46)—were classified as having severe nomophobia, indicating a high level of emotional and psychological dependence on mobile devices. These individuals are likely to experience intense distress when separated from their phones and may exhibit compulsive behaviors such as excessive checking, fear of disconnection, and difficulty functioning without digital access. Only a minority of students, 12.0% (n = 18), reported mild levels of nomophobia, suggesting that low-risk usage behaviors are relatively uncommon in this academic setting. This distribution highlights a growing concern about technology dependence among university students, particularly in digitally integrated academic environments.

Table 2. Distribution of Nomophobia Levels (n = 150)

Nomophobia Level	**Score Range**	**n**	**%**
Mild	≤59	18	12.0
Moderate	60–99	86	57.3
Severe	≥100	46	30.7

As illustrated in Table 3, the distribution of anxiety levels among the participating female students indicates a high prevalence of psychological distress. Only 22 students (14.7%) scored within the normal range on the anxiety subscale of the DASS-21, suggesting that the majority of the sample experienced at least some degree of anxiety symptoms. Mild anxiety was reported by 18 students (12.0%), while moderate anxiety affected 42 students, accounting for 28.0% of the sample. Notably, severe anxiety was observed in 43 students (28.7%), making it the most common category, followed closely by moderate anxiety. Furthermore, 25 students (16.6%) reported extremely severe anxiety levels, indicating significant emotional distress that may warrant clinical attention. Collectively, these findings reveal that more than 70% of the sample experienced anxiety levels ranging from moderate to extremely severe. This pattern is concerning given the crucial academic and developmental phase these students are in, and it underscores the psychological burden potentially associated with academic pressures, social challenges, and technological overdependence.

Table 3. Levels of Anxiety Based on DASS-21 (n = 150)

Anxiety Level	**Score Range**	**n**	**%**
Normal	0–7	22	14.7
Mild	8–9	18	12.0
Moderate	10–14	42	28.0
Severe	15–19	43	28.7
Extremely Severe	≥20	25	16.6

As presented in Table 4, the distribution of depression levels among the 150 female students revealed a substantial psychological burden across the sample. Only 18.7% of participants fell within the normal range (scores 0–9), indicating the absence of clinically significant depressive symptoms. A further 16.0% exhibited mild depressive symptoms, suggesting early signs of emotional distress that may progress without appropriate support. Notably, the largest proportion of students (30.0%) scored within the moderate depression range (14–20), followed closely by those classified with severe depression (28.0%), highlighting a worrisome pattern of elevated depressive symptomatology in over half the sample. Moreover, 7.3% of students were found to be in the extremely severe category (≥28), reflecting high levels of psychological dysfunction that may interfere with daily functioning, academic performance, and social engagement.

Table 4. Levels of Depression Based on DASS-21 (n = 150)

Depression Level	**Score Range**	**n**	**%**
Normal	0–9	28	18.7
Mild	10–13	24	16.0
Moderate	14–20	45	30.0
Severe	21–27	42	28.0
Extremely Severe	≥28	11	7.3

Table 5 presents the Pearson correlation coefficients examining the relationships between nomophobia, anxiety, and depression among female students. The analysis reveals a statistically significant and moderately strong positive correlation between nomophobia scores and anxiety scores ($r = 0.63$, $p < 0.01$), indicating that students with higher levels of nomophobia tend to report elevated anxiety symptoms. Similarly, a significant positive correlation was found between nomophobia and depression scores ($r = 0.58$, $p < 0.01$), suggesting that as nomophobia increases, so do depressive symptoms. Furthermore, the strongest correlation emerged between anxiety and depression scores ($r = 0.71$, $p < 0.01$), reflecting a substantial overlap between these two psychological constructs in the current sample. These findings imply that nomophobia may not only co-occur with psychological distress but may also act as a potential contributing factor to emotional disturbances. The magnitude and significance of these correlations highlight the interconnectedness of mobile phone dependency with adverse mental health outcomes.

Table 5. Pearson Correlation Between Nomophobia, Anxiety, and Depression

Variables	**Nomophobia Score**	**Anxiety Score**	**Depression Score**
Nomophobia Score	1.00	0.63**	0.58**
Anxiety Score	0.63**	1.00	0.71**
Depression Score	0.58**	0.71**	1.00

*Note: **Correlation is significant at the 0.01 level (2-tailed).*

As shown in Table 6, the results of the multiple linear regression analysis demonstrate that nomophobia is a statistically significant predictor of both anxiety and depression among the female students sampled. Specifically, the regression model for anxiety revealed that nomophobia significantly contributed to increased anxiety levels ($B = 0.32$, $SE = 0.05$, $\beta = 0.63$, $t = 6.11$, $p < 0.001$). This indicates that for every one-

point increase in the nomophobia score, there is an associated 0.32-point increase in the anxiety score, controlling for other factors. The standardized beta coefficient (β = 0.63) reflects a strong positive relationship, suggesting that nomophobia accounts for a substantial proportion of the variance in anxiety symptoms.

Similarly, nomophobia significantly predicted depression scores, with a regression coefficient of B = 0.28 (SE = 0.06), a standardized beta of 0.58, and a t-value of 5.30 ($p < 0.001$). This finding suggests that higher nomophobia levels are associated with elevated depressive symptoms. The strength of the beta coefficient further underscores the clinical relevance of nomophobia in relation to psychological outcomes.

Table 6. Multiple Linear Regression Predicting Anxiety and Depression from Nomophobia

Outcome Variable	Predictor	B	SE	Beta	t	p-value
Anxiety Score	Nomophobia Score	0.32	0.05	0.63	6.11	<0.001
Depression Score	Nomophobia Score	0.28	0.06	0.58	5.30	<0.001

Discussion

The present study aimed to investigate the relationship between nomophobia and psychological distress, specifically anxiety and depression, among female students enrolled in the College of Education at King Khalid University. The findings indicate that nomophobia is not only prevalent but also significantly associated with heightened levels of anxiety and depression in this population. These results align with the growing body of international research that frames nomophobia as a behavioral concern with notable psychological implications.

A major finding of this study was the high prevalence of moderate to severe nomophobia among participants, with 88% of the students scoring within the moderate or severe range. This rate is consistent with previous studies conducted in university contexts in Saudi Arabia and beyond. For example, Aljomaa et al. (17) found that 71.7% of Saudi university students exhibited moderate to severe nomophobia symptoms, particularly among female users. Similarly, Gezgin (18) reported that Turkish students, especially females, were more likely to develop emotional dependency on smartphones, reflecting broader gender-based vulnerabilities in mobile phone usage patterns.

From a psychological perspective, the emotional reliance on smartphones can be understood through the lens of cognitive-behavioral theory, which posits that maladaptive cognitions and reinforcement mechanisms can lead to compulsive behaviors such as device checking and social media browsing (19). The present findings corroborate this theory, as high levels of nomophobia were significantly correlated with symptoms of anxiety ($r = 0.63$) and depression ($r = 0.58$). These relationships remained significant even after controlling for other variables in the regression analysis, highlighting nomophobia as an independent predictor of emotional distress.

Anxiety was notably high among the study population, with nearly 45% of participants scoring in the moderate to extremely severe range. This is in line with the findings of Dasgupta et al. (20), who identified a robust association between nomophobia and anxiety symptoms among Indian college students. Likewise, Hawi and Samaha (21) found that nomophobia significantly predicted anxiety and interpersonal sensitivity among Lebanese youth. The constant urge to remain connected, fear of missing out (FoMO), and the perception of smartphones as safety devices contribute to anticipatory anxiety when students are separated from their phones (22,23). These psychological responses may be particularly amplified in academic environments that demand high cognitive and emotional engagement.

The study also found high levels of depression, with over 65% of participants experiencing at least mild depressive symptoms. These results are consistent with research by Tavakkoli et al. (24), who reported that excessive smartphone use was linked to lower mood and depressive tendencies among college

students in Iran. Depression in such contexts may stem from digital fatigue, disrupted sleep, reduced face-to-face interaction, and increased social comparison on platforms like Instagram and TikTok (25,26). It is worth noting that students in teacher education programs often experience elevated stress due to academic expectations, teaching practicums, and future employment uncertainty—factors that may exacerbate the psychological impact of nomophobia (27,28).

The regression analysis in the present study provides further evidence of the role nomophobia plays in mental health. Nomophobia significantly predicted both anxiety and depression scores, with standardized beta coefficients of 0.63 and 0.58 respectively. These values suggest moderate to strong predictive power, affirming that nomophobia is more than a peripheral concern—it is a central factor in understanding student mental health in the digital age. These results are in line with those of Choi et al. (29), who found that mobile phone dependency predicted emotional dysregulation and depressive symptoms in Korean adolescents.

The psychological mechanisms underpinning the association between nomophobia and mental health symptoms can be attributed to disrupted coping strategies and attachment styles. Smartphones are increasingly becoming tools for emotion regulation, social validation, and stress avoidance (30). According to Wegmann and Brand (31), individuals with lower self-regulation capacities are more prone to develop mobile-related anxiety, which can spiral into depressive symptoms if unmet psychological needs persist. Furthermore, Bowlby's attachment theory suggests that individuals with insecure attachment styles may transfer emotional needs to devices, reinforcing dependency and distress (32).

In the specific context of Saudi Arabia, cultural norms and gender roles may further influence how nomophobia manifests among female students. Research shows that females in collectivist societies are often more socially connected and more vulnerable to emotional distress linked to relational disruptions (33). Smartphones, in this regard, serve as key instruments for maintaining interpersonal ties and identity, making disconnection particularly anxiety-inducing (34).

The findings from this study have several important implications. First, they highlight the urgent need for awareness and educational programs within universities aimed at promoting healthy smartphone use. Workshops focused on digital literacy, time management, and emotional regulation may help mitigate the psychological burden associated with excessive phone dependency (35). Second, university counseling services should consider screening for nomophobia as part of routine mental health assessments. Tailored interventions, including cognitive-behavioral strategies and mindfulness training, have been shown to reduce technology-related anxiety and enhance psychological well-being (36,37).

Moreover, policymakers and curriculum designers in the field of teacher education should acknowledge nomophobia as a modern barrier to mental wellness and academic performance. Future teachers must be equipped not only with pedagogical skills but also with digital wellness competencies to model healthy technology use for future generations (38).

Despite the significance of these findings, several limitations must be acknowledged. The study relied on self-report measures, which may be subject to social desirability bias and recall inaccuracies. Additionally, the cross-sectional design limits causal interpretations; while nomophobia was found to predict anxiety and depression, the directionality of this relationship cannot be confirmed. Longitudinal studies are needed to assess temporal sequences and potential bidirectional effects. Furthermore, the sample was limited to female education students from a single Saudi university, which may constrain the generalizability of the findings. Future research should include larger, more diverse samples and examine moderating variables such as personality traits, resilience, and academic stress.

In conclusion, this study underscores the profound psychological impact of nomophobia among female students in a university setting. The high prevalence of nomophobia and its strong association with anxiety and depression highlight an urgent need for institutional and clinical attention. As mobile technology continues to permeate every aspect of student life, addressing the emotional consequences of over-

dependence on smartphones is vital for safeguarding student mental health and academic success in the 21st century.

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