Research article

Nomophobia (no-mobile-phone phobia) among the undergraduate medical students

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ABSTRACT

Nomophobia (no-mobile-phone phobia) is the fear and anxiety of being without a mobile phone. This study pioneers the investigation of nomophobia in Afghanistan using the Nomophobia Questionnaire (NMP-Q), addressing a crucial gap in the field. We collected statistical data from 754 undergraduate medical students, comprising men (56.50 %) and women (43.50 %), and analyzed the dimensions of nomophobia. While results revealed that all but two participants were nomophobic, they identified three significant dimensions affecting the level of nomophobia among participants: (a) gender, (b) age, and (c) marital status. The study's contributions are precious, given the peculiarity of Afghan political turmoil, security, and human rights issues, especially for women. For example, the study's data collection was abruptly halted in December 2022 due to the Taliban regime's decision to make it illegal for women to enroll in universities as students. Therefore, while examining the characteristics of nomophobia across societies is imperative, it is also vital to investigate what is true of one society, Afghanistan, at one point in time and space. The study concludes by emphasizing the need to broaden participants' scope in future studies to better understand the prevalence of nomophobia across broader societal contexts and forces.

1. Introduction

Nomophobia, which stands for no-mobile-phone phobia, is a condition that causes fear and anxiety in individuals without their smartphones [1–3]. The practicality of smartphones, which combine functions like a camera, game console, flashlight, watch, music player, and video recorder, contributes to nomophobia. Unlike moderate use of smartphones, excessive use can lead to nomophobia [3]. As discussed over 100 years ago, technology brings both progress and distress [4].

Scholars have examined nomophobia in various contexts, including Pakistan [1], Russia [5], Iran [6], Paraguay [7], Oman [8], India [9], the United States [10], Spain [11], China [12], and Canada [13]. These studies consistently highlight the negative

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consequences of nomophobia on different populations and emphasize the need for further research across nations. While it is necessary to study what is true of all societies about nomophobia, it is equally critical to investigate what is true of one society, Afghanistan, at one point in time and space. Present-day Afghanistan is the sixth poorest country in the world and the poorest in Asia [14–16]. Afghanistan is a unique context that has experienced political turmoil and trauma [14–16]. These socio-political conditions in Afghanistan can be attributed not only to the actions of the Taliban but also to the operations and subsequent withdrawal of support by the United States and other international allies in 2021 [14,15]. While undertaking nomophobia research in Afghanistan would give various stakeholders unique insights, empirical research on nomophobia in Afghanistan does not exist.

This study fills a substantial void in the field by conducting the first-ever investigation of nomophobia in the Afghan context. Our findings indicate that nomophobia is prevalent among almost all participants, with only two exceptions. The study identifies three critical dimensions that influence the level of nomophobia among participants: (a) gender, (b) age, and (c) marital status. The unique sociopolitical landscape of Afghanistan, characterized by political turmoil, security challenges, and human rights issues [14–16], particularly for women, radiates the urgency and importance of this research. Due to the Taliban regime's decision to prohibit women from enrolling in universities, our data collection was abruptly suspended in December 2022. This context underscores the urgent need to understand and address nomophobia in a setting where most people have limited access to technology, and women face significant educational restrictions. We aim to fill this gap by addressing the following questions.

- (1a) Does nomophobia interact with men and women similarly among university students?
- (1b) Does nomophobia interact with married and unmarried students similarly among university students?
- (1c) What are the levels of nomophobia across age groups among university students?

2. Literature

2.1. Smartphone usage: Evolution of mobile phone technology

Back in 1953, Mark R. Sullivan foresaw a future where people could carry phones in their pockets and engage in video conversations [17]. Today, with the increasing use of smartphones, many individuals struggle with addiction [18,19]. This historical reference is pertinent to our study as it highlights the evolution of mobile phone technology, central to our exploration of nomophobia (no-phone phobia) in contemporary Afghan society. Sullivan's vision has materialized with the advent of smartphones, but it has also led to widespread issues of addiction. As of January 2024, Afghanistan's population was approximately 42.80 million; at the same time, the country had 7.88 million internet users, representing an internet penetration rate of 18.4 % [20]. Social media usage was also notable, with 3.70 million users, accounting for 8.6 % of the population [20]. Moreover, Afghanistan had 27.67 million active cellular mobile connections in early 2024, equating to 64.6 % of the total population [20]. This number marks an increase of 570 thousand connections (a 2.1 % rise) from the beginning of 2023 [20]. However, the report does not address the variations in smartphone usage between men and women, nor does it consider the potential influence of gender dynamics on smartphone usage and addiction. Understanding these differences is crucial for analyzing mobile phone usage and its societal impacts.

In Afghanistan, the Taliban regime, since 2021, has restricted women's access to education and freedom to travel without men as guardians [14,15]. Scholars suggest that smartphones provide security [22,23]. While the subjugation of Afghan women may reduce their access to smartphones, an individual's relationship status can impact their experience of nomophobia. Findings from 22 studies (55 %) in a systematic review indicate that the primary cause of nomophobic behavior is the desire to communicate with and keep track of loved ones [3]. No studies have investigated the impact of marriage on the vulnerability to nomophobia across genders.

2.2. Gender and nomophobia

Some studies have demonstrated that women are more vulnerable to nomophobia than men [24,25]. However, other studies have concluded that men are more vulnerable than women [6,7]. Additionally, many studies did not find significant differences between men and women [26,27]. A systematic review of 108 studies published in English and Spanish could not reach a definitive conclusion about the gender dimension of nomophobia—specifically, whether men or women are more vulnerable [2]. One plausible explanation for the inconclusiveness is that researchers did not use a similar measuring tool. As such, studies that validated the NMP-Q were more sensitive to detecting severe nomophobia than those that developed their questionnaires. Therefore, it is difficult to come to a definitive conclusion about gender and nomophobia connections.

2.3. Age and university students

In contrast to gender, there is a straightforward pattern regarding age and vulnerabilities to nomophobia [2,3]. Most studies reviewed from 2015 to 2020 highlighted that younger adults are more vulnerable to nomophobia than older cohorts [3]. For example, these studies have focused on university undergraduate students, resulting in a narrow age gap sample size, e.g., mostly 18–25 years old cohort [8,27,28]. However, a few studies that did not focus on university/college students, such as a survey of 187 deaf/hard-of-hearing youths in Saudi Arabia [29] and a survey of 270 business professionals in Canada [13], arrived at a similar conclusion. All these studies were conducted on young individuals. Consequently, similar age groups are likely to have similar findings.

2.4. Sample sizes and approaches

Table 1 shows that the sample sizes vary among many studies. Additionally, while King et al. [30] used a single participant case report, three systematic reviews [3,18,22], indicate that the vast majority of empirical studies on nomophobia - particularly peer-reviewed articles, book chapters, and conference papers - have predominantly employed quantitative methods. For instance, in a review conducted by Rodríguez-García et al. [18] of 42 studies, only a few studies, such as Yildirim and Correia [23], utilized mixed methods and qualitative techniques [31,32]. Furthermore, according to a review [3] of all empirical works published between April 2015 and August 2020, only one study in India [9] used a mixed method. Although the method used in this study in India differed, the result did not significantly differ from 39 other studies on nomophobia.

2.5. How this present work differs from previous contributions

This study stands out for its pioneering exploration of nomophobia in the Afghan context, marking the inaugural validation of the NMP-Q in this region. The significance of this research becomes particularly pronounced when considering the circumstances surrounding data collection. Regrettably, the opportunity to amass a comparable dataset, inclusive of female participants, has been irrevocably curtailed. In December 2022, the Taliban regime instituted a prohibition against women's enrollment as university students, abruptly halting the data collection efforts presented in this study.

3. Materials and methods

3.1. Data collection

We obtained ethical approval for **KUMS-RC-12-12-2022-No 19** from the Research Committee at the Kabul University of Medical

Table 1
Studies evaluating the prevalence and level of nomophobia.

Studies	Context	Method of Inquiry	Sample Size	Core Findings
Ma and Liu [12]	China	Quantitative Approach	966 College Students	It showed that women are more susceptible to experiencing nomophobia than men. Additionally, the NMP-Q has been tested and validated in the Chinese context.
Qutishat et al. [8]	Oman	Quantitative Approach	735 University Students	99.33 % of students reported having phobias, often of moderate intensity. Even while there was a small correlation between severe nomophobia and poor academic achievement (P = 0.706), this was not statistically significant.
Tams et al. [13]	Canada	Quantitative approach	270 Young Professionals	The study revealed that nomophobia induces stress in individuals through social threats, mainly when there is a lack of control or uncertainty. Nomophobia does not result in stress only when there is a high level of control and low uncertainty.
Awed and Hammad [29]	Saudi Arabia	Quantitative Approach	187 Deaf/hard-of-Hearing (DHH) Youths	Most participants displayed severe nomophobic behavior. DHH, young men were less nomophobic than their counterparts, while there was no gender difference concerning impulsivity.
Farooq et al. [1]	Pakistan	Quantitative Approach	455 of University Students	It showed that while most participants have nomophobia, women are more susceptible to experiencing nomophobia than men. Additionally, the NMP-Q has been tested and validated in Pakistan.
Sezer and Atilgan [27]	Turkey	Quantitative Approach	680 Medical Students	The likelihood of experiencing nomophobia is unaffected by gender, social status, or place of residence, but it changes considerably with age, academic success, style of dwelling, and carrying a phone charger.
Gentina et al. [32]	USA and France	Quantitative Approach	472 Students	The concept of emotional intelligence (EI) has a direct correlation with the propensity to engage in cheating behavior, while also having an indirect effect on the reduction of nomophobia.
Daei et al. [6]	Iran	Quantitative Approach	320 University Students	Most university students exhibit a mild form of nomophobia, and 73.0 % reported using smartphones to a mild degree. Nomophobia was correlated with gender, age group, and educational attainment. Men were less willing to travel than women.
Aguilera-Manrique et al. [11]	Spain	Quantitative Approach	304 nursing Students	The number of participants who utilized their cellphones during clinical practice was likewise quite high. Therefore, implementing rules that prohibit the use of cellphones during work hours may help participants who are nomophobic.
Gutiérrez-Puertas et al. [33]	Spain and Portugal	Quantitative Approach	258 University Students in Spain and Portugal	The investigated dimensions reveal noteworthy levels of nomophobia within both cohorts of nursing students, with comparatively elevated levels observed among the Portuguese group in contrast to the Spanish group.
Jilisha et al. [9]	India	Quantitative approach	774 Undergraduate Students	23.5 % of people reported having severe nomophobia. Nomophobia was substantially correlated with the length, frequency, and purpose of smartphone usage as well as checking cellphones after waking up in the morning.

Sciences, Kabul, Afghanistan, to conduct the study. All processes followed relevant guidelines and regulations, including the declaration of Helsinki and its revisions. We used a cross-sectional study design with a purposive sampling method. Data collection took place from October to December 2022, involving a total sample of 754 participants (56.50 % men and 43.50 % women). This sample size aligns with prior studies on nomophobia listed in Table 1.

All participants were active undergraduate medical students at the Kabul University of Medical Sciences, Kabul, Afghanistan. First, we adopted the English questionnaire by Yildirim and Correia [23]. Second, we recorded responses on a 7-point Likert scale. Third, we translated the questionnaire into *Dari*, which can be described as a lingua franca in Afghanistan. To ensure precision and uphold academic standards, we rigorously followed the methodology outlined in Table 2 while translating the questionnaire. Fourth, we opted for the traditional pen-and-paper questionnaire method for data collection. In contrast to computer-aided approaches, this method eliminates the necessity for participants to utilise their smartphone data. This decision acknowledges that while using mobile data for survey completion is cost-effective in countries like Canada, Sweden, Belgium, and Japan, Afghanistan is one of the poorest nations in Asia and globally. Consequently, we considered the potential hindrance posed by the need to use or purchase mobile data to encourage broader participation.

Fifth, we conducted a pilot study first to:

1. Determine the feasibility of the research methodology,
2. Ensure that the questionnaire was adequately formulated and easy to understand and
3. Gather all the required data by giving the draft questionnaire to a few participants, according to inclusion criteria (i.e., any adult who is an undergraduate medical student enrolled at the university).

After experts checked the questionnaire's feasibility and validity, we distributed it broadly among active undergraduate students. Research team members who are professors at the university verbally provided students/participants with a concise overview of the study in classroom settings, ensuring they understood its purpose before seeking their informed consent. Students were also told that participation in the study was completely voluntary. They were instructed to complete the distributed questionnaire at their convenience and return it to a designated box within the university within the week if they agreed to participate. A total of 754 participants completed the questionnaire.

3.2. Data analysis description

Using relevant Statistical Packages for the Social Sciences (SPSS) analysis commands, we analyzed data to capture essential descriptive attributes. Therefore, the tables and figures below summarize the data using standard measures of central tendency and measures of dispersion in addition to presenting the distribution of participants by selected socio-demographic characteristics.

3.2.1. Descriptive statistics

We utilized the Nomophobia Questionnaire (NMP-Q) to analyze 773 cases of undergraduate medical students in Afghanistan. The data comprised two main components.

1. **Demographic Characteristics:** We gathered categorical data, except for Age (considered an ordinal variable), based on inquiries about participants' gender, age, marital status, and daily smartphone usage (measured in hours).
2. **Nomophobia Questions:** Responses to 20 NMP-Q items were recorded on a 7-point Likert scale, ranging from "1" (strongly disagree) to "7" (strongly agree).

Two additional variables were computed to gauge the prevalence of nomophobia.

Table 2
Translation steps from English to Dari.

Translations Steps	Rationale and Description
1. Understanding the Questionnaire	To begin the process, we thoroughly understood the NMP-Q in its original language, which is usually English. This involved carefully examining each question's purpose and the basic concepts it aimed to evaluate. Having a solid understanding of these fundamental aspects was crucial for an accurate translation.
2. Engaging a Professional Translator	We hired an experienced translator who is proficient in both English and Dari. They have extensive experience translating academic and psychological questionnaires.
3. Forward Translation	Our translator translated the NMP-Q from English to Dari, focusing on conceptual equivalence rather than literal translation.
4. Bilingual Expert Review	We aimed to improve accuracy by consulting with bilingual members of the academic community within our network who were knowledgeable in the subject matter of both languages. The purpose was to identify discrepancies and suggest modifications to accurately measure intended constructs.
5. Back Translation	We performed a back translation to ensure accuracy. This involved having another professional translator translate the Dari version back into English. Any differences between the original and back-translated versions were carefully addressed to maintain the questionnaire's integrity.
6. Cultural Adaptation	We considered cultural nuances and accounted for the differences between English and Dari speakers. The rationale was to ensure cultural relevance and appropriateness while maintaining questionnaire integrity.

- **Nomophobia Score:** This score is derived by summing points from each of the 20 NMP-Q questions, resulting in scores ranging from 20 to 140.
- **Nomophobia Categories:** The Nomophobia score was grouped into four distinct categories, reflecting varying levels of nomophobia.

The survey, which included 27 comprehensive questions, was completed by a significant number of participants, as shown in Table 3. The analysis, which focused on measures of central tendency and dispersion of NMP-Q across variables of interest and those derived from demographic questions, was thorough and complete. It is important to note that we opted to use descriptive statistics in our study to provide an initial understanding of the data's basic characteristics, given the exploratory nature of this study, which is the first of its kind in the Afghan context. Descriptive statistics summarizing the central tendencies, distributions, and variability within our sample serve as essential first steps in understanding the data landscape and identifying key patterns and trends that can guide future research. While the results were not significantly impacted by participants' choice to respond or not respond to a question described above, the results we produced are outlined below.

4. Results

4.1. Nomophobia categories

The majority of participants exhibited signs of nomophobia, with only two exceptions, as outlined in Table 3 below.
Fig. 1. Scatter plot of the frequency of nomophobia score.
Fig. 1 depicts a bell-shaped distribution of nomophobia scores, with most scores clustering around the mean NMP-Q score. Key statistical measures include.

- **Mean NMP-Q Score:** The central tendency of the distribution was reflected in a mean NMP-Q score of 89.88, exhibiting the average level of nomophobia among participants.
- **Standard Deviation (SD):** The spread of scores was measured by a standard deviation of 22.75, providing insights into the variability around the mean.
- **Mode NMP-Q Score:** The most frequently occurring score, or mode NMP-Q, was 88, observed in 21 participants.
- **Median NMP-Q Score:** The middle point of the distribution, or median NMP-Q score, was determined to be 92.
- **Quartiles:** Participants in the bottom 25 % scored 75.75 or less, indicating a lower level of nomophobia. On the other hand, the top 25 % scored 107 or above, representing a higher level of nomophobia.

For a detailed breakdown of nomophobia scores, refer to Table 4.

4.1.1. Gender distribution and nomophobia categories

The participant data revealed a gender distribution, with 56.50 % identified as men and 43.50 % as women. However, due to missing answers, nomophobia categories could only be computed for 754 participants, constituting 96 % of the total.

Table 5 illustrates that men (54 %) and women (55 %) show a similar prevalence of moderate nomophobia, but men (37 %) are slightly more likely than women (33 %) to experience severe nomophobia. Overall, the majority of both men and women exhibit moderate to severe nomophobia.

Upon closer examination, as depicted in Fig. 2, men and women exhibit similar mean, median, and mode nomophobia scores. However, women tend to have a more extensive range. The bottom 25 % scores for men were 77 or lower, while the top 25 % were 107 or above for men and 106 or above for women.

Note: Caution is advised when interpreting descriptive figures or measures of central tendency and spread, as more appropriate tests are needed to make meaningful inferences.

Fig. 2 visually represents the distribution of nomophobia scores for men and women, highlighting the similarities and differences in mean, median, and mode scores.

Table 3
Nomophobia category.

Score	Category	Frequency	Valid %	%
20	Nomophobia Absent	2	0.3 %	0.3 %
21 to 59	Mild Nomophobia	78	10.3 %	10.1 %
60 to 99	Moderate Nomophobia	408	54.1 %	52.8 %
100 to 140	Severe Nomophobia	266	35.3 %	34.4 %
	Total Valid	**754**	**100 %**	**97.5 %**
Missing System		19		2.5 %
Total		**773**		**100 %**
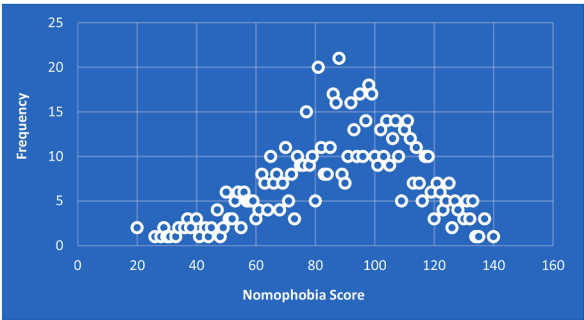
Fig. 1. Distribution of nomophobia scores.

Table 4

Descriptive results of nomophobia score.

Cases		
Valid		754
Missing		19
Mean		89.88
Median		92
Mode		88
Std. Deviation		22.751
Variance		517.598
Range		120
Minimum		20
Maximum		140
Percentiles	25	75.75
	50	92
	75	107

Results based on gender.

Table 5

Participants by gender and nomophobia category.

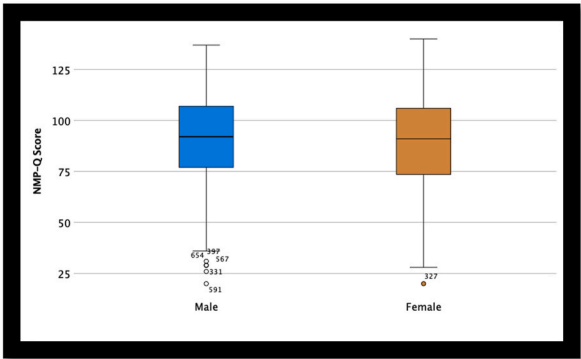| Category	Men	%	Women	%	Total	%
Nomophobia Absent	1	0.23 %	1	0.31 %	2	0.27 %
Mild Nomophobia	39	9.13 %	39	11.93 %	78	10.34 %
Moderate Nomophobia	229	54.63 %	179	54.74 %	408	54.11 %
Severe Nomophobia	158	37.00 %	108	33.03 %	266	35.28 %
Total	427	100.00 %	327	100.00 %	754	100.00 %

Fig. 2. Boxplot of Nomophobia score by gender.

Table 6
Age and nomophobia affect the frequency and percentage of participants.

Age	Nomophobia Absent	Mild Nomophobia	Moderate Nomophobia	Severe Nomophobia	Total
18–21	2	49	255	161	467
%	0.43 %	10.49 %	54.60 %	34.48 %	100.00 %
22–25	0	27	139	96	262
%	0.00 %	10.31 %	53.05 %	36.64 %	100.00 %
26–29	0	2	12	8	22
%	0.00 %	9.09 %	54.55 %	36.36 %	100.00 %
30 & over	0	0	2	1	3
%	0.00 %	0.00 %	66.67 %	33.33 %	100.00 %
Total	2	78	408	266	754
%	0.27 %	10.34 %	54.11 %	35.28 %	100.00 %

4.2. Results based on age

Nomophobia is more common among those aged 18–21, with two cases of absence, as shown in Table 6.

Table 6 reveals that over 80 % of participants across all age groups exhibit moderate and severe nomophobia, with the percentages being 90 % for 18–21, 90 % for 22–25, 91 % for 26–29, and 91 % for 30 and above.

As shown in Fig. 3, the nomophobia score range is wider for those aged 18–25 than those aged 26 and above.

The range of nomophobia scores varies across age groups, with the following values.

- Aged 30 and over: Range of 30
- Aged 26–29: Range of 87
- Aged 22–25: Range of 114
- Aged 18–21: Range of 117

Notably, Fig. 3 depicts numerous outliers for both the 18–21 and 22–25 age groups. Simply put, Fig. 3 visually highlights the presence of outliers in nomophobia scores, particularly in the 18–21 and 22–25 age groups.

4.3. Results based on marital status

Moderate and severe nomophobia are significant concerns for both married and single individuals, as indicated in Table 7.

Both single and married respondents reported experiencing moderate or severe nomophobia, with 660 individuals (87.65 %) being single and 93 individuals (12.35 %) being married.

Fig. 4 visually presents the distribution of nomophobia scores categorised by marital status. Key statistical measures reveal that the mean score is 89 for single respondents and 93 for their married counterparts. The median score is 91 for singles and 93 for married individuals, while the range is 120 for singles and 111 for married individuals.

4.4. Results based on smartphone daily usage

A significant portion of participants (50 %) reported spending more than 3.12 h daily on their smartphones, with usage ranging from a minimum of 1 h to a maximum of 7 h, as depicted in Table 8.

Further analysis is needed to determine if gender differences in smartphone usage are statistically significant.

While Fig. 5 visually suggests that nomophobia increases with more extended daily use of smartphones, Table 9 provides detailed
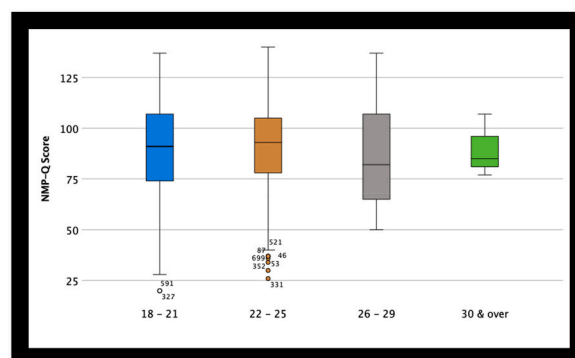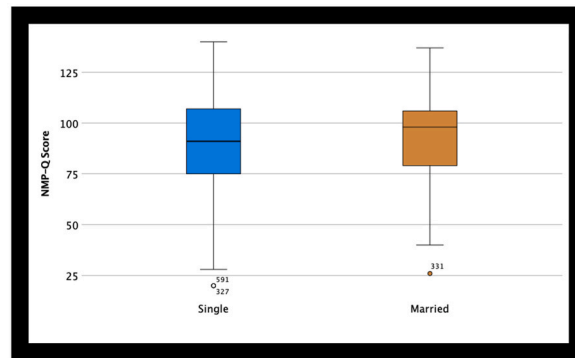

**Fig. 3.** Boxplot of Nomophobia score by age group.

Table 7
Marital status and nomophobia affect the number of participants.

Category	Single	%	Married	%	Count	%
Nomophobia absent	2	0.30 %	0	0.00 %	2	0.27 %
Mild Nomophobia	70	10.61 %	8	8.60 %	78	10.36 %
Moderate Nomophobia	363	55.00 %	44	47.31 %	407	54.05 %
Severe Nomophobia	225	34.09 %	41	44.09 %	266	35.33 %
Total Column	660	100.00 %	93	100.00 %	753	100.00 %
Total Row	660	87.65 %	93	12.35 %	753	100.00 %

Fig. 4. Boxplot of nomophobia score by marital status.

Table 8
Frequency of smartphone usage in hours.

Usage in Hours	Frequency	Percent
<1Hour	75	9.7 %
1 Hour −2 Hours	179	23.2 %
2 Hours −3 Hours	203	26.3 %
3 Hours <	316	40.9 %
Total	773	100 %
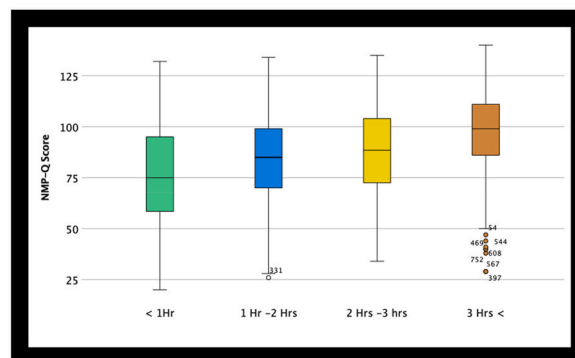
Fig. 5. Nomophobia score increases with daily smartphone use.

descriptive statistics to substantiate this observation.

Table 9 shows a positive correlation between average nomophobia scores and daily smartphone usage. However, it is essential to exercise caution when interpreting findings (i.e., Table 9), as similarities or differences may not be statistically significant to the general population.

Furthermore, Table 10 provides a comprehensive breakdown of item-wise average scores on the Nomophobia Questionnaire, offering insights into specific aspects contributing to nomophobia. Additionally, please refer to Table 10 for a detailed exploration of average scores on the Nomophobia Questionnaire categorised by individual items.

Table 9

Nomophobia is a major factor in the use of smartphones.

Descriptive	<1Hour	1 Hour −2 Hours	2 Hours −3 Hours	3 Hours <
Mean	77	84	88	97
Median	75	85	89	99
Mode	65	70	88	95
Standard Deviation	26	22	21	21
Variance	664	491	460	428
Range	112	108	101	111
Percentile 25	58	70	73	86
Percentile 75	98	99	104	111

Table 10

Item-wise average scores on the nomophobia questionnaire.

Item	Variable	N	Range	Min	Max	Mean	Std. Dev	Variance
1	Unable Getting News	772	6	1	7	2.98	1.56	2.45
2	Staying up to Date Social Media Network	769	6	1	7	3.89	1.88	3.52
3	Checking Emails	771	6	1	7	3.92	1.95	3.80
4	Getting Stranded without using phone	770	6	1	7	4.00	1.95	3.80
5	Get a Hold of Me	767	6	1	7	4.21	1.88	3.52
6	Disconnected from Online Identity	767	6	1	7	4.24	1.96	3.83
7	Feeling Weird	771	6	1	7	4.27	2.01	4.02
8	Instant Communication with Family	769	6	1	7	4.33	2.02	4.07
9	Feeling Awkward Not Checking Notifications	770	6	1	7	4.37	1.79	3.19
10	Calls and Messages Receiving	765	6	1	7	4.48	1.94	3.76
11	Running Out Battery	771	6	1	7	4.52	1.96	3.85
12	Running Out Data	771	6	1	7	4.66	1.94	3.76
13	Using Smartphone & Its Capability	768	6	1	7	4.78	1.79	3.21
14	Looking for WI-FI Constantly	771	6	1	7	4.82	1.91	3.65
15	Constant Access to Info Through Smartphone	772	6	1	7	4.82	1.75	3.07
16	Constant Connection Breaking	767	6	1	7	4.87	1.74	3.03
17	Constant Desire Checking Phone	771	6	1	7	4.90	1.85	3.41
18	Keep in Touch Family & Friends	767	6	1	7	4.90	1.73	3.00
19	Looking to Info	771	6	1	7	5.27	1.68	2.83
20	Getting Worried for Not Being Reached	766	6	1	7	5.42	1.69	2.86

5. Discussion

5.1. Core findings and implications

5.1.1. Gender dimension of nomophobia

Our exploration of nomophobia dimensions revealed three core findings pertaining to (1) gender, (2) age, and (3) marital status. Notably, we found that 93 % of men experienced moderate to severe nomophobia, while the corresponding figure for women was 88 %. Our findings in Afghanistan indicate that men experience moderate to severe nomophobia more frequently than women, which aligns with prior studies from Iran [7] and Paraguay [6]. However, these results differ from the findings of studies conducted in Pakistan [1], Oman [8], Spain and Portugal [33], India [34], China [12], and the United States [10]. Specifically, we found a 5 % higher prevalence of moderate to severe nomophobia in men compared to women. The general inconclusive outcomes regarding gender differences in the empirical literature on nomophobia vulnerability are likely due to variations in measurement tools and methodological approaches among studies. For instance, studies that validated the NMP-Q appeared more sensitive to detecting severe nomophobia than those that developed their questionnaires. Thus, attributing gender differences in nomophobia solely to social and contextual factors is not compelling, given the nuances and disparities between our study and previous research.

However, this does not negate the significance of acknowledging that gender substantially influences individuals' lives. Gender is a situational achievement, socially constructed, and culturally performative [35–39]. For instance, these scholars highlight the geography of masculinities and femininities [35,36,38,39].They spotlight the interplay among local, regional, and global levels. This approach helps to contextualize how societal norms and expectations influence men's and women's differential experiences in various settings. They also address embodiment in contexts of privilege and power, shedding light on how life experiences may manifest differently based on individuals' socio-economic status, power dynamics, access to technology in society [36,37], education and marriage, and their gendered consequences [39]. Therefore, a more nuanced and gender-sensitive approach is warranted to re-evaluate nomophobia among medical students and the general population in Afghanistan.

Furthermore, in general, context is essential for understanding the differences between Western and non-Western places [38]. It is critical to clarify the difference between sex and gender in Afghanistan, which differs significantly from many contexts, particularly those in Western societies. Sex is typically understood as a biological characteristic - immutable and determined at conception [35,40, 41]. In contrast, gender is seen as a social category influenced by various factors such as patriarchy, socialism, and the role of the state

[35,40,41]. This distinction is particularly crucial in contexts like Afghanistan, where the state enforces a strict binary understanding of both sex and gender. Specifically, in Afghanistan, only heterosexual marriage and tendencies are legal, and any deviation from a person's expected sexuality is strongly prohibited [21]. Individuals identified as male or female at birth are expected to maintain those identities throughout their lives, making both sex and gender binary and largely immutable.This holds true in Afghanistan in 2024 and the foreseeable future, as well as in other regions with similar cultural and societal norms regarding sex and gender identities. This stands in stark contrast to perspectives in the West, where gender is increasingly viewed as a fluid and socially constructed concept.

This strict binary understanding has significant implications for our discussions of nomophobia. The rigid gender norms and expectations may influence the ways in which nomophobia is experienced and reported among different genders. This influence can potentially exacerbate the stress and anxiety associated with mobile phone use. Thus, we stress the need to consider these cultural and societal factors when evaluating the prevalence and impact of nomophobia in the Afghan context.

5.1.2. Age dimension of nomophobia

Our study reveals that a significant proportion of participants across all age groups reported experiencing moderate to severe nomophobia, as illustrated in Fig. 3. Notably, over 80 % of participants fell into this category. The majority of our participants were aged 18–25 years, which aligns with findings from previous studies focused on university students [1,8,27,28]. This consistency underscores the prevalence of moderate to severe nomophobia within this age group. Specifically, our findings corroborate prior research indicating that university undergraduate students, predominantly aged 18–25 years, are particularly susceptible to nomophobia [1,8,27,28]. Nonetheless, certain methodological and generalizability concerns must be addressed. The literature indicates that younger adults are more susceptible to nomophobia than older adults. This susceptibility is predominantly due to the focus on university undergraduate students, which results in age restrictions within the sample.

5.1.3. Marital status dimension of nomophobia

Furthermore, the study showed that participants' levels of nomophobia were influenced by their marital status, as demonstrated by the breakdown of nomophobia scores in Fig. 4. Our study is distinctive in its exploration of the marital dimension of nomophobia, an area that has been largely overlooked in existing scholarship. This under-exploration is evident, as the marital aspect of nomophobia has not been prominently reflected in numerous recent systematic literature reviews conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol, such as [2,3,18,22]. Married respondents had higher mean and median scores than single respondents, indicating that marriage may be associated with higher levels of nomophobia. However, the range of scores for single respondents was more significant, suggesting more variability in their responses than married respondents.

The difference mentioned above could be due to gender-related factors associated with marriage in Afghanistan. Men have cultural permission to monitor and control their spouses in Afghan society [14,42]. Men monitoring spouses via smartphones may contribute to this gap between single and married respondents. Indeed, the unequal power relations between men and women in society are enduring, according to feminist perspectives [35–37]. This suggestion diverges from findings that masculinity predicts a greater readiness to live without a mobile phone compared to femininity, as evidenced by a study conducted in the Russian context [5]. Therefore, more research is needed to draw definitive conclusions about the relationship between marital status and nomophobia in Afghanistan and elsewhere.

5.1.4. Considering the potential impact of COVID-19

It is also vital to consider nomophobia among undergraduate medical students in relation to the COVID-19 pandemic. This is because, in every region of Kabul, Afghanistan, COVID-19 required significant life adjustments for the general population, particularly between 2020 and 2022 [15] - a period that overlaps with our data collection for this study. Lăzăroiu et al. [43] and Nemat et al. [15] highlight the strain that COVID-19 placed on healthcare systems and personnel during this time. This context is crucial for understanding the mental health impact on various populations, shaping conditions such as depression, anxiety, and stress, including among students, as noted by Lăzăroiu et al. [44]. The pandemic has heightened anxiety and stress levels worldwide, which may have contributed to an increase in conditions like nomophobia among students. During lockdowns and social isolation, these students relied heavily on mobile phones for communication, information, and support.

Our current study highlights the specific challenges faced by Afghan students, including the Taliban's policies on women's education. These socio-political factors significantly affect both the mental health landscape and access to healthcare and technology, drawing a connection between our study and the findings of Lăzăroiu et al. [43] and Nemat et al. [15]. The financial strain on hospitals discussed by Lăzăroiu et al. [43] and Nemat et al. [15] can be related to the availability and allocation of mental health resources for addressing issues like nomophobia in our study. Despite the differing contexts, the emphasis on financial losses and the need for efficient resource management in healthcare, as discussed by Lăzăroiu et al. [43], is relevant to resource-constrained settings like Afghanistan.

5.2. Originality and implications

5.2.1. Originality and significance

Our research pioneers the first exploration of nomophobia in the unique context of Afghanistan, employing the NMP-Q assessment tool. In other words, it is the first study to utilize the NMP-Q assessment tool to study nomophobia in the Afghan context. We collected statistical data from 754 undergraduate medical students, consisting of 56.50% men and 43.50% women. However, we aimed to gather more data but were halted by a significant educational ban. The Taliban regime banned women from enrolling as university

students in Afghanistan, which brought our data collection efforts to an abrupt end. This regulatory change not only prevents the replication of our dataset for the foreseeable future, especially with female participants, but it also significantly enhances the value of our contribution. The collection of similar data has become impossible, making this study truly unique.

5.3. Empirical constraints and implications

5.3.1. Our data was drawn from a university environment, which restricts our ability to generalize the study's findings to the broader population. This limitation raises the question of whether individuals in the general public exhibit comparable levels of nomophobia as observed in medical students.

5.3.2. The Afghan context significantly differs from that of developed nations. The study does not provide insight into how socioeconomic factors, such as poverty and the scarcity of mobile data among Afghan citizens, influence nomophobic behavior.

5.3.3. It is important to recognise that the NMP-Q questionnaire, by its nature, has limitations in addressing contextual and sociocultural influences, as highlighted by Sui and Sui [45], particularly those related to the ongoing political instability and insecurity in Afghanistan, according to research [14,46].

5.3.4. Our study contributes valuable insights but may not be directly generalized to the broader population beyond undergraduate students. Moreover, beyond the methodological and generalizability issues discussed earlier, the mere suggestion of potential negative impacts of excessive mobile phone use on mental health, relationships, and productivity lacks specific evidence or examples to substantiate these claims. Consequently, further research should explore the causal relationship between nomophobia and these adverse outcomes.

5.3.5. The opportunity to gather a similar dataset that includes female participants in Afghanistan is no longer available due to the gendered ban, as discussed above. In December 2022, the Taliban government implemented a ban on women enrolling as university students, abruptly ending the data collection efforts presented in this study. Consequently, this study could have achieved much more.

5.4. Representativeness and generalizability of the study

We conducted this study in the capital of the country, which hosted all ethnic and socio-cultural representatives of Afghan society. Students involved in our research come from different provinces of the country and represent the diverse demographic spectrum of society. Kabul University of Medical Sciences is the only medical university in Afghanistan. Therefore, publishing this study is essential, as it is the first to explore nomophobia in Afghanistan, providing insights that have not yet been covered in the literature.

However, we also acknowledge the challenges that affect the sample and findings of our study. Our sample consisted of undergraduate medical students who provided valuable data. However, this group may not fully represent the broader Afghan population, especially those without the educational or economic means to enroll in such a unique medical university. Therefore, while our findings contribute significantly to understanding nomophobia within the studied cohort – university medical students, we must exercise caution when extending these conclusions to broader societal contexts in Afghanistan.

6. Conclusion

This research represents a pioneering endeavor, exploring dimensions of nomophobia within Afghanistan and filling a critical gap in the existing literature. The findings underscore the pivotal role of marital status as a determinant in the degree of nomophobia experienced by our subjects. The significance of this study is magnified when situated within the precarious political climate, security challenges, and human rights issues that currently characterize Afghanistan. Notably, the gender dimension of our study assumes substantial importance, given the current impracticability of acquiring a comparable dataset that includes female participants due to the Taliban regime's policies. While it is important to scrutinize the characteristics of nomophobia across diverse societies, our study highlights the equal significance of exploring deeply into the specifics of a single society—Afghanistan—at a particular juncture in time and space. Our research has yielded profound insights into nomophobia within the distinctive socio-geopolitical landscape of Afghanistan. Our study addressed key objectives, including examining whether nomophobia affects men and women similarly among university students and exploring differences in nomophobia between married and unmarried students. Additionally, we assessed the levels of nomophobia across various age groups within the university student population.

6.1. Practical implications

Universities and educational institutions can develop targeted programs to address nomophobia, particularly focusing on vulnerable students based on marital status or gender. These programs could include workshops and seminars that educate on healthy smartphone usage and coping strategies for managing anxiety related to disconnection. Counseling services should be equipped to recognize and address nomophobia. They could offer specific sessions or support groups to help students develop healthier relationships with their smartphones and reduce dependency. Policymakers can use insights from this study to draft regulations and guidelines aimed at mitigating excessive smartphone use. This could include restrictions during classes or exams and promoting offline activities to balance digital and real-life interactions. Given the socio-political context in Afghanistan, there is a need for gender-specific strategies, especially for female students, considering the limitations imposed by the Taliban regime, to provide necessary support without compromising safety. Additionally, marital status significantly influences nomophobia, suggesting the need for tailored interventions for married and unmarried students, including family counseling sessions to address the impact of smartphone

dependency on relationships. Technological solutions, such as apps that track and limit smartphone usage, can be promoted, with universities collaborating with tech companies to integrate these tools into student life, ensuring a balanced approach to technology.

6.2. What are the next steps?

For future research, we recommend conducting longitudinal studies to track changes in nomophobia within the same population over time. Comparative studies across different regions and cultures are also needed to understand its global prevalence and variations. Additionally, in-depth qualitative research should explore personal experiences and coping mechanisms in restrictive socio-political environments. It will be worthwhile to investigate how changes in the socio-political landscape of Afghanistan influence nomophobia and can provide valuable insights for policymakers and mental health professionals working in similar contexts. Nonetheless, our study has laid the groundwork for a deeper, more comprehensive analysis of nomophobia in future research on Afghanistan and beyond.

Data availability statement

The data supporting the findings of this study are provided within the article and its supplementary materials. While no data have been deposited in public repositories, additional data can be obtained from the corresponding author upon reasonable request.

CRediT authorship contribution statement

Suleman Lazarus: Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Conceptualization. **Abdul Rahim Ghafari:** Project administration, Methodology, Investigation, Data curation. **Richard Kapend:** Writing – original draft, Visualization, Investigation, Formal analysis. **Khalid Jan Rezayee:** Project administration, Methodology, Investigation, Data curation. **Hasibullah Aminpoor:** Methodology, Investigation, Data curation. **Mohammad Yasir Essar:** Investigation, Data curation. **Arash Nemat:** Investigation, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2024.e36250.

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