

# Nomophobia and Health Hazards: Smartphone Use and Addiction Among University Students

## Abstract

**Background:** Nomophobia, a state of socio-psychological illness, refers to a fear of lack of access to mobile phone, which is thought to be a modern age disorder that causes negative health risks and harmful psychological effects. This study aimed to determine the relationship between the smartphone use and nomophobia disorder among university students. **Methods:** The study utilized a cross-sectional method in which 320 students were selected via cluster sampling. Data collection tools included a nomophobia and smartphones use questionnaires. Data were analyzed using SPSS 22 software in two sections: descriptive statistics and inferential statistics. **Results:** The incidence rate of nomophobia among the students was moderate (3.1), and 73% of the students were moderate smartphone users. Nomophobia had a significant relationship with gender, age group, and level of education; and the frequency of using smartphones had a significant relationship with age group and level of education. There was a positive correlation coefficient between nomophobia and the frequency of using smartphones. The mobile phone use predicted nomophobia with a beta coefficient of 0.402 ( $P < 0.05$ ). **Conclusions:** Given the incidence rate of nomophobia disorder was moderate, it is necessary to make preventive decisions and plan educational programs in this regard for the health of university students. Alternative actions are recommended for the treatment in low rate of nomophobia, but drug therapy should be used in more advanced stages; therefore, it is suggested that more attention to be paid to students' free time and entertainments.

**Keywords:** Addiction, Iran, nomophobia, smartphone, students

## Introduction

Mobile phones have undoubtedly made one of the biggest changes in the field of personal communications in the present era.<sup>[1-4]</sup> Despite the advantages of new technologies in our lives, using these technologies may put one at the risk of adverse effects such as excessive use of mobile phones<sup>[5,6]</sup>; therefore, seemingly some people become so dependent on their mobile phones which is the sign of behavioral addiction<sup>[5]</sup> and it can lead to isolation and feeling of loneliness, decreased interpersonal relationships, and social interactions in them.<sup>[1,3]</sup> According to a survey conducted in the United Kingdom in 2012, 66% of people were afraid of missing their mobile phones and being without them. Studies in the United States showed that the fear of 66% of adults is recognized as nomophobia.<sup>[7]</sup>

After the expanding use of information and communications technologies (ICT),

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researchers investigated multiple problems due to using mobile phones (UMPs) including overuse of mobile phones and nomophobia.<sup>[4,8-11]</sup> Nomophobia is defined as a fear of lack of access to one's mobile phone, and is thought to be a disorder in the modern age.<sup>[5,7,12-14]</sup> This term also refers to mobile phone dependency or mobile phone addiction.<sup>[12]</sup> Nomophobia, a state of socio-psychological illness,<sup>[15]</sup> includes two phrases: "no mobile" and "phobia." In their study, King *et al.* considered nomophobia as a 21<sup>st</sup>-century disorder resulting from new technologies. They defined nomophobia as a discomfort or anxiety when being out of mobile phone or computer contact.<sup>[16]</sup> Han *et al.* described nomophobia as anxiety due to separation from one's smartphone.<sup>[17]</sup> Recently, nomophobia has attracted some researchers' attention in the field of mobile phones.<sup>[4,5,12,13,16,18-28]</sup>

According to reported documents, smartphones are very popular among young people, and students are considered pioneers in using them,<sup>[29]</sup> and smartphones determine the way the

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young generation and students communicate. The lives of many students have changed under the influence of this phenomenon<sup>[26]</sup> because of its negative health risks and harmful psychological effects. Students as an important and vulnerable population in the society, on the one hand, and as an active and dynamic population, on the other hand, need special attention. In addition, given a limited number of studies have so far been conducted on students with regard to nomophobia in Iran, it seems essential to conduct studies for measuring the intensity of nomophobia to plan and take appropriate measures inside the country by taking into account the expansion of ICTs, especially among the young population and students as the pioneers of using smartphones. Accordingly, the aim of this study is to investigate the relationship between the frequency of UMPs and nomophobia disorder among students at Isfahan University of Medical Sciences.

## Methods

The present survey was conducted by using a cross-sectional study. The population in this study consisted of all students in Isfahan University of Medical Sciences in 2017, out of whom 384 students were selected as a sample using the Krejcie-Morgan table and a cluster sampling method. The response rate was 83.3% (320 subjects). Data collection tools included two questionnaires: a nomophobia questionnaire and a questionnaire for measuring the frequency of UMPs. The former was derived from the Nomophobia Questionnaire (NMP-Q) developed by Yildirim and Correia<sup>[23]</sup> in 2015, which was translated into Persian by Sayyah *et al.*, and whose psychometrics were evaluated.<sup>[3]</sup> The questionnaire consists of four sub-scales and 20 items, which are scored based on a 5-point Likert scale from 1 “completely disagree” to 5 “completely agree.” The total score is calculated by summing up the answers given to the questions, and shows mild, moderate, and/or severe nomophobia. In the original questionnaire,<sup>[23]</sup> the Cronbach’s alpha coefficients for the entire scale and the said sub-scales were calculated equal to 0.945, 0.939, 0.874, 0.827, and 0.814, and in the Persianized questionnaire,<sup>[3]</sup> they were 0.81 for the entire questionnaire, and 0.81, 0.79, 0.82, and 0.83 for the rest of the factors, indicating proper validity for conducting the study.

For UMPs questionnaire, efforts were made to use a valid and simple questionnaire on mobile phone uses,<sup>[16,19,20,30-32]</sup> which does not take much of participants’ time. To

this end, a questionnaire for measuring the frequency of UMPs, derived from a study by King *et al.*,<sup>[19]</sup> was used (the developers of this questionnaire are from among those active in nomophobia and mobile phone addiction). After being translated into Persian, the validity of this questionnaire was re-examined by 4 specialists in psychology and information science. The reliability of this questionnaire was measured by 30 individuals who had not participated in the main study. The total Cronbach’s alpha coefficient for this tool was 0.83, which showed the appropriate validity of the questionnaire. Finally, 20 questions were determined to measure the frequency of UMPs, which are scored based on No or Yes scale from 0 to 1. The total score is calculated by summing up the answers given to the questions, and it shows “low” UMPs for scores from 0 to 7, “moderate” for scores 7.01 to 14, and “high” for scores 14.01 to 20.

The inclusion criteria for the study were having a mobile phone and willingness to participate in the study. The exclusion criterion was lack of time to participate in the study or non-use of mobile phones. The respondents were free to participate in the study and verbal consent was obtained. Also, there was no need to enter their personal information in the questionnaire. Data were analyzed using SPSS 22 software, descriptive statistics (the mean and standard deviation), and inferential statistics (a Pearson correlation test, a *t*-test, and an analysis of variance (ANOVA)).

## Results

Students participating in the study, based on their gender, consisted of 188 women (59%) and 132 men (41%). 82.5% of the students were in the age group under 25 years. As for the distribution of subjects based on their levels of education, 49% were studying in an undergraduate program (the highest percentage), and 11% were studying in a professional doctorate program or completing their residency (the lowest percentage). As for the rate of participation in the study, among the nine schools at Isfahan University of Medical Sciences, two highest participation rates belonged to the School of Medicine with a participation rate of 31% and the School of Nursing with a participation rate of 18%, and the lowest participation rate belonged to the School of Modern Technologies with a participation rate of 1%.

Table 1 shows the incidence rate of nomophobia among students. As can be seen, dimension IV is lower than

**Table 1: Incidence rate of nomophobia among students at Isfahan University of Medical Sciences**

Dimensions of Nomophobia	Benchmark=3			
	Mean	Standard deviation	<i>t</i>	<i>P</i>
Dimension I: Not being able to communicate	3.1	0.93	1.83	0.068
Dimension II: Losing connectedness	3.2	0.86	1.4	0.000
Dimension III: Not being able to access information	3.1	0.79	3.15	0.002
Dimension IV: Giving up convenience	2.85	0.86	-3.12	0.002
Nomophobia	3.1	0.72	1.79	0.074

the moderate level, and the rest of the dimensions are at a moderate level. Ultimately, the incidence rate of nomophobia is generally at a moderate level.

Table 2 shows the frequency of UMPs among students at Isfahan University of Medical Sciences. Most students were moderate mobile phone users.

Table 3 is allocated to the relationship between the incidence rate of nomophobia and demographic variables. As can be seen, the results of the *t*-test, correlation test, and ANOVA showed that nomophobia had a significant relationship with gender, age group, and level of education ( $P < 0.05$ ), and that the frequency of UMPs had a significant relationship with age group and level of education ( $P < 0.05$ ), but no significant relationships were found in other cases.

Table 4 shows the correlation coefficient between nomophobia and the frequency of UMPs. As can be seen, there is a positive correlation coefficient between nomophobia and the frequency of UMPs (0.402).

Based on the data in Table 5, the frequency of UMPs predicts the level of nomophobia with a beta coefficient of 0.402 and at a significance level of 0.05.

## Discussion

The aim of this study was to determine the relationship between the frequency of UMPs and nomophobia disorder among students at Isfahan University of Medical Sciences. The incidence rate of nomophobia among students, in this study, is generally at a moderate level, which indicates an increase in the prevalence of nomophobia disorder among young people. In confirmation of the findings of the present study, a study by Pavithra *et al.* on medical students showed 39.5% of the students had nomophobia, and 27% were at the risk of developing it.<sup>[33]</sup> Moreover, the results of the study by Yildirim *et al.* showed that 42.6% of the young people had nomophobia disorder, and that their greatest fear was connected with the

dimension “not being able to access information.”<sup>[24]</sup> A study by Anshari *et al.* showed that 46% of participants suffered from some kind of nomophobia disorder<sup>[8]</sup> and another showed that the prevalence of nomophobia was on the rise among students of medicine in India.<sup>[4]</sup> Some studies showed higher prevalence of nomophobia. The study conducted by Sharma *et al.* on Indian medical students showed that nearly 75% of the participating students had nomophobia disorder, and 83% of them had experienced panic attacks when they were not able to access mobile phones.<sup>[34]</sup> In another study, Askari stated that 73% of the subjects slept with their cellphones. He also added that 53% of the subjects experienced anxiety when their phone battery was dead, their phone credit finished, or the mobile network was out of reach, and that 68% of the subjects felt the vibration or ringtone of their phone before receiving the call.<sup>[28]</sup>

Our study showed that the frequency of UMPs was at a moderate level, which is consistent with the findings of a study by Koo and Park that showed 88.7% of the young people were regular mobile phone users.<sup>[30]</sup> The study by Singh, *et al.* indicated that 76% of the respondents checked their mobile phones constantly and made greater use of them.<sup>[4]</sup> In the present era, due to the rise of smartphones with advanced technologies, similar to a computer, multitasking support, and easy to communicate with others,<sup>[8]</sup> we are witnessing an increasing use of mobile phones in all individuals; and this tool has become an important part of individuals’ everyday lives.<sup>[5]</sup>

This study made it clear that there was a statistically significant relationship between nomophobia disorder and gender, and that its prevalence was higher in men than in women. It seems that men see mobile phones as a very powerful technology that increases their level of independence. Men often accept mobile technologies sooner than women, and use all of their functions, whereas women mostly use mobile phones for communication. The results of this study are consistent with those of a study by Majidaei *et al.*,<sup>[35]</sup> Emelin *et al.*,<sup>[32]</sup> Yaseminejad *et al.*,<sup>[31]</sup> and Yildirim *et al.*<sup>[24]</sup> Psychological studies show that 70% of women and 61% of men are afraid of being without a mobile phone.<sup>[28]</sup> Study of Arpaci *et al.* showed significant gender differences in nomophobia, where women scored significantly higher than men.<sup>[25]</sup> In contrast, studies by Zamani *et al.*,<sup>[36]</sup> Adawi

**Table 2: Frequency of UMPs**

Frequency of use	Number	Percentage
Low (scores from 0-7)	63	19.7
Moderate (from 7.01-14)	235	73.4
High (from 14.01-20)	22	6.9
Total	320	100

**Table 3: Incidence rate of nomophobia and frequency of UMPs based on demographic variables**

Variables	Nomophobia		The frequency of UMPs	
	<i>t</i>	Significance level	<i>t</i>	Significance level
Gender	-3.74	0.000	-0.154	0.878
Age	Correlation coefficient	Significance level	Correlation coefficient	Significance level
	-0.286	0.000	-0.116	0.038
School (faculty)	<i>F</i>	Significance level	<i>F</i>	Significance level
	1.291	0.247	1.565	0.135
Level of education	<i>F</i>	Significance level	<i>F</i>	Significance level
	12.386	0.000	4.531	0.004

*et al.*,<sup>[2]</sup> and Pavithra *et al.*<sup>[33]</sup> showed no relationship between nomophobia disorder and gender.

The present study showed that nomophobia and the frequency of UMPs had a statistically significant relationship with age. Between inconsistent studies, the study conducted by Yildirim *et al.*<sup>[24]</sup> and Argumosa-Villar *et al.*,<sup>[5]</sup> which showed that age did not have any effects on individuals' nomophobic behaviors is noteworthy. Study carried out by Emelin *et al.* found a correlation between age and excessive use of mobile phones.<sup>[32]</sup> Farooqui and Gothankar believe that the age which can be most affected by nomophobia is between 20 and 24 years<sup>[7]</sup> because young people employ new technologies and tools faster than other people.<sup>[5,28]</sup> Using smartphones has in some way become a dominant and defining feature and a symbol for the status of young generation.<sup>[5]</sup> Hanley believes addiction to mobile technologies can turn into a widespread social problem in the society.<sup>[28]</sup> Mobile phones have become a full-time tool that meets the basic needs of young people for socialization through communication. This dependency on tool prevents young people from following some basic issues such as development and promotion of health.<sup>[28]</sup>

Findings showed no significant relationship between nomophobia and frequency of UMPs and the faculty variable and no certain study was found in relation to these findings. Seemingly, this disorder has affected all students from any academic discipline. This study showed that nomophobia and the frequency of UMPs had a statistically significant relationship with the level of education, which is not consistent with the study conducted by Pavithra *et al.*<sup>[33]</sup>

This study found that there was a positive correlation coefficient between nomophobia and the frequency of UMPs, and that the frequency of UMPs predicted nomophobia; therefore, higher frequency of UMPs increased the rate of nomophobia. The study by Pavithra *et al.* showed that nomophobia scores were higher in students who used their smartphones more than 3 h a day.<sup>[33]</sup> Adawi *et al.* showed that nomophobia was connected with the number of hours spent on mobile phones.<sup>[2]</sup> In contrast, the findings of the

study by Emelin *et al.* showed that the frequency of UMPs was not a predictor of mental dependence,<sup>[32]</sup> and that the frequency of UMPs could not have a significant relationship with mobile phone dependence.

### Limitations

One of the limitations of this study is that it is conducted only on the students of one university. Therefore, caution is needed in generalizing the findings to other individuals and students. Other limitations were its cross-sectional nature and using a correlational method to show the relationship between variables. Hence, it is necessary to conduct longitudinal studies to achieve greater clarity for the relationship shown between the variables. Psychological variables, which can affect the frequency of UMPs and nomophobia, can be used in future studies.

### Conclusions

This study showed that the incidence rate of nomophobia and the frequency of UMPs are at a moderate level among the students, and at the same time, they have a positive correlation with each other. It seems that this disorder is becoming prevalent among young people. Given this disorder plays a decisive role in the health of individuals, it is necessary to make preventive decisions and plan educational programs in this regard for university students, which could be done in the form of workshops and holding some consultation sessions on media literacy to discuss this topic. Alternative actions like sports and social programs are recommended for the treatment in low rate of nomophobia, but drug therapy should be used in more advanced stages. Hence, it is suggested that more attention to be paid to students' free time, especially should focus on the students living in dormitories because being away from their families and lack of recreational and entertainment facilities can push them towards UMPs. It is also suggested that students use time management as a solution to reduce the risks of this disorder.

### Declaration of patient consent

The authors certify that they have obtained all appropriate participant consent forms. In the form, the participants have given their consent for their images and other clinical information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Table 4: Correlation coefficient between nomophobia and frequency of UMPs**

	Frequency of UMPs
Nomophobia	
Correlation coefficient	0.402
Significance level	0.000
Number	320

**Table 5: Beta coefficient in predicting nomophobia based on frequency of UMPs**

Predictive variable	Benchmark variable	Non-standard coefficients		Standard coefficients	<i>t</i>	Significance level
		<i>B</i>	Standard error	Beta		
Frequency of UMPs	Nomophobia	1.717	0.219	0.402	7.836	0.000



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## Conflicts of interest

There are no conflicts of interest.

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