

Investigating Different Dimensions of Nomophobia among Medical Students: A Cross-Sectional Study

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Abstract

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BACKGROUND: Today, mobile phones are recognised as an inseparable part of our daily lives, facilitating communication between users. Based on the studies, addiction to cell phones can lead to several complications including depression, anxiety, anger, and aggression.

AIM: This study aimed to investigate nomophobia (no mobile phone phobia) among medical students of Islamic Azad University, Tehran Branch.

METHODS: This descriptive cross-sectional study was conducted on 100 students studying in different majors of medical sciences in Islamic Azad University, Tehran Branch, from 2016 to 2017. Demographic data of all participants were recorded in a data sheet. In the next stage, a questionnaire was designed by the researcher to evaluate the effect of age, gender, education, and the duration of using cell phone variables on discomfort, anxiety, and insecurity due to lack of access to cell phone or other related issues. Raw data were analysed using SPSS statistical software version 21. The significance level was considered $P < 0.05$.

RESULTS: The results of the study showed that participants with lower mean age felt more discomfort, anger, anxiety, and insecurity due to lack of access to mobile phones and other related issues compared to other people. However, no variable was statistically significant (P -value > 0.05). Except anxiety, results showed that longer duration of mobile phone use might lead to a significant decrease in discomfort, anger, and insensibility variables among users (P -value > 0.05). The incidence of nomophobia (with its different aspects) was significantly lower in females (P -value > 0.05). Also, in participants with higher educational status, the nomophobia was recorded to be more frequent (P -Value > 0.05).

CONCLUSION: Understanding the pattern of nomophobia occurrence among cell phone users can facilitate our path to prevent its harms including discomfort, anger, anxiety, and feeling of insecurity among users of technology.

Introduction

Rapid advances in telecommunication technology and the efforts of researchers to transfer data and information as fast as possible have made today communities information dependent more than ever. In the recent years, technological advances have had a significant impact on economics, commerce, and financial markets, so that they have

affected the trend of developing information technology and production processes, as well as increasing the productivity and standards of living in several countries [1]. Most thinkers and sociologists believe that techniques for utilising tools should be reconsidered based on the new advances in technology because they have a major impact on the lives of people [2]. The emergence of smartphones has progressed this trend. According to studies, the unlimited use of mobile phones affects the physical health of users, especially children and teenagers [3],

[4]. Researchers believe that the pattern of using cell phones depends on factors including gender, personality, marital status, socioeconomic status, age and educational status [5], [6], [7]. Using cell phones is common among people between the ages of 25 and 35. It is obvious that mobile phones are among the most utilised products in developed and developing societies, thereby, some researchers believe that mobile phones have facilitated societies to enter the age of information [8]. Considering that the goal of creating these products is the comfort of human, excessive use of them can lead to several physical and psychological harms, which eventually leads to the alternation of various aspects of people's lives. Today, the damage caused by technology has attracted the attention of many researchers. One of the damages related to communication is nomophobia. Nomophobia which is a combination of the phrases "No Mobile Phobia" was first reported in England [9], [10]. Based on the definition of Nomophobia, this phenomenon is a consequence of anxiety, stress, and fear due to lack of access to mobile phones and related issues [11]. This fear is followed by a feeling of frustration, insistence, expectation, persistence, and obsessive thoughts and imaginations. Researches have shown that the effects of nomophobia are more obvious in people with underlying diseases (such as depression, anxiety, fear, dependency, low self-confidence and social issues) [12]. Several people are involved with nomophobia globally. In a study conducted in 2005, it was shown that Nomophobia is more prevalent in teenagers and young adults [13]. Cognitive-behavioural therapy along with pharmacological interventions is recommended by the specialists to treat Nomophobia disorder [12]. Up today, some dimensions of this disorder are still not clear, which shows that this disorder is a suitable context for researchers to design studies. Therefore, in this study, we designed and conducted an evaluation of Nomophobia among students of medical sciences of Islamic Azad University, Tehran Branch.

Material and Methods

The population of this cross-sectional study included medical students of Islamic Azad University, Tehran Branch, between 2016 and 2017. Participants entered the study according to ethical principles of research and with complete knowledge about the research process. Exclusion criteria included individuals with no cell phone, disagreement with the principles of the study, studying in majors other than medicine, and not having smartphones. In this study, we investigated Nomophobia among medical students of Islamic Azad University, Tehran Branch. In the first step, the demographic data were recorded using a questionnaire. Then, data on nomophobia variables

were extracted. The variables included 1. Discomfort, (Questions: 1) do I feel uncomfortable If I do not have access to my mobile data at any moment? 2) Do I feel very annoyed If I cannot access my mobile data during work? 3) Without my mobile, are all my connections to the network lost and do I get upset? 2. Anger, (Questions: 1) If I cannot get updates of the news via my phone, do I get nervous? 2) If I cannot use my phone or the battery dies, do I get angry and upset? 3) If my mobile phone is not with me, do I get nervous because of the thought that someone might try to contact me? 3. Anxiety, (Questions: 1) If my battery charge is running out, so I get worried? 2) If I use limited services on my phone, am I always nervous about the ending of them? 3) If I forget to bring my mobile phone, do I get worried, because of the possibility that I might be unable to contact my family or friends immediately? 4) If my mobile phone is not by my side, do I get nervous because of the possibility that I would not be able to access my messages and call logs? 5) If my mobile phone is not by my side, do I get worried about the status of my family? 6) If my cell phone is away, would all my relationships and access to my friends' numbers be limited so I might get anxious? 7) If my cell phone is far away from me, do I get nervous because I would not be able to access my emails? And 4. Insecurity, (Questions: 1) If my cell phone is away from me, do I feel insecure because someone might have accessed my data? 2) Do I feel insecure without my mobile phone and I don't know what to do? 3) If I forget to take my phone, do I feel nervous about leaving home?

Raw data were analysed using IBM SPSS Statistic software version 23. Descriptive and analytical statistics were analysed to reach the objective of the study which was evaluating factors affecting nomophobia including the prevalence of this phenomenon in males and females, the effect of age on the prevalence, and the occurrence of anger in nomophobia. After determination of the normality of data, K-S test was used for statistical analysis of ANOVA, as well as Kruskal-Wallis and nonparametric Chi-Square test. Also, the statistical significance (P-value) was considered less than 0.05 in this study.

Results

In this study, we investigated the effect of age, gender, education level, and duration of mobile phone using variables on the discomfort of individuals due to unavailability or other mobile-related issues. The results showed that discomfort variable decreases along with the increase in age. In other words, participants who were more uncomfortable with the unavailability of their phones or other mobile-related issues had a lower average age. However, this level of difference was not statistically significant (P-

value = 0.168). In this study, the relationship between the average duration of mobile use and discomfort due to unavailability of mobile phone or other related issues was studied. Although the difference between the results was not significant, the average duration of mobile use was less among users who were uncomfortable with the unavailability of mobile phone or other related issues. In other words, the increase in the duration of mobile phones use among users has led to a decrease in their discomfort due to unavailability of mobiles or other related issues (P-Value = 0.382) (Table 1).

Table 1: The effect of age variable and duration of mobile phone use on the discomfort status of individuals

Discomfort vs Age					
		N	Mean	Std. Deviation	P-Value
Age	No	44	24.4773	5.91210	0.168
	No comment	10	22.9000	4.79467	
	Yes	37	22.4595	3.14991	
Total		91	23.4835	4.89072	
Duration of mobile phone use vs Discomfort					
		N	Mean	Std. Deviation	P-Value
Duration of mobile phone use	No	63	8.0159	2.73857	0.382
	No comment	5	7.0000	2.73861	
	Yes	21	7.3810	3.62596	
Total		89	7.8090	2.95372	

Also, the descriptive statistics in this study showed that the frequency of discomfort variable in females (38%) is lower than males (46.4%). However, this difference was not statistically significant (P-value = 0.625). The results from the comparison between education level variable and discomfort indicate that there was no significant relationship between the level of education and discomfort variable in the participants. However, the descriptive statistics showed that participants with a bachelor's or higher degree have a higher relative frequency of discomfort due to nomophobia (P-Value = 0.793) (Table 2).

Table 2: The effect of gender and education level variables on discomfort status of individuals

Sex vs Discomfort						
		Discomfort			Total	P-Value
		No	No comment	Yes		
Sex	Male	13 (46.4%)	2 (7.14%)	13 (46.4%)	28	0.625
	Female	35 (49.2%)	9 (12.6%)	27 (38%)		
Total		48	11	40	99	
Level of Education vs Discomfort						
Level of Education		Discomfort			Total	P-Value
		No	No comment	Yes		
Level of Education	Highschool graduate and Associate degree	6 (66.6%)	1 (11.11%)	2 (22.22%)	9	0.793
	Bachelor's degree	16 (47%)	3 (8.82%)	15 (44.1%)		
	Higher education	25 (45.4%)	7 (12.7%)	23 (41.8%)		
Total		47	11	40	98	

Investigating the effect of age, gender, level of education, and duration of mobile use variables on anger status due to unavailability of mobile phone or other related issues showed that participants with a higher mean age were less likely to show symptoms of neural nomophobia. In other words, the anger due to the unavailability of mobile phone or other related issues was higher in participants with lower mean age. However, this level of difference was not statistically significant (P-Value = 0.912). The results

also showed that participants with lower duration of cellphone use were angrier with the unavailability of mobile phones or other related issues compared to others, though; the difference was not statically significant (P-Value = 0.247) (Table 3).

Table 3: The effect of age variable and duration of mobile phone use on anger status of participants

Anger vs Age					
		N	Mean	Std. Deviation	P-Value
Age	No	37	24.0811	6.12544	0.912
	No comment	15	22.8667	4.10342	
	Yes	40	23.1500	3.73171	
Total		92	23.4783	4.86404	
Duration of mobile phone use vs Anger					
		N	Mean	Std. Deviation	P-Value
Duration of mobile phone use	No	43	7.8140	2.71903	0.247
	No comment	9	9.1111	3.25747	
	Yes	38	7.4211	3.06357	
Total		90	7.7778	2.92904	

Statistical analysis indicates that the frequency of anger status in females (43%) was lower than males (44.4%). However, this difference was not statistically significant (P value = 0.829). Comparing the variables of education level and anger status showed that there is no significant relationship between the level of education and anger status in participants. Though, analysing the descriptive statistics showed that the percentage of diagnosed nomophobia is higher in participants with a higher level of education (P-value = 0.328) (Table 4).

Table 4: The effect of gender and education level variables on anger status

Sex vs Anger						
		Discomfort			Total	P-Value
		No	No comment	Yes		
Sex	Male	10 (37%)	5 (18.5%)	12 (44.4%)	27	0.829
	Female	31 (43%)	10 (13.8%)	31 (43%)		
Total		41	15	43	99	
Level of Education vs Anger						
Level of Education		Discomfort			Total	P-Value
		No	No comment	Yes		
Level of Education	Highschool graduate and Associate degree	6 (66.6%)	1 (11.11%)	2 (22.22%)	9	0.328
	Bachelor's degree	16 (47%)	5 (14.7%)	13 (38.2%)		
	Higher education	18 (32.7%)	9 (16.3%)	28 (50%)		
Total		47	40	15	43	

The findings of the study showed that the increase in age led to a decrease in the feeling of insecurity due to the unavailability of mobile phone and other related issues. However, this relationship was not statically significant (P-Value = 0.172).

Table 5: The effect of age variable and duration of mobile phone use on the status of insecurity

Insecurity vs Age					
		N	Mean	Std. Deviation	P-Value
Age	No	63	23.8571	5.19881	0.172
	No comment	6	21.5000	5.31977	
	Yes	21	23.2857	3.67618	
Total		90	23.5667	4.88071	
Duration of mobile phone use vs Insecurity					
		N	Mean	Std. Deviation	P-Value
Duration of mobile phone use	No	47	7.7021	2.97756	0.663
	No comment	4	9.0000	3.46410	
	Yes	38	7.6158	2.87445	
Total		90	89	7.8090	

The results from Kruskal Wallis statistical test

showed that participants who felt less comfortable with the unavailability of mobile phones or other related issues tend to spend less time with their cell phones (P-Value = 0.663) (Table 5).

According to statistical analyses, this disorder was seen less in females (39.43%) compared to males (50%). However, this difference was not statistically significant (P-value = 0.567). According to assumptions, there was no significant relationship between the level of education and insecurity variables due to unavailability of mobile phone or other related issues in participants (P-Value = 0.813) (Table 6).

Table 6: The effect of gender and education level variables on insecurity status

Sex vs Insecurity		Discomfort			Total	P-Value
		No	No comment	Yes		
Sex	Male	11 (42.3%)	2 (7.69%)	13 (50%)	26	0.567
	Female	39 (54.9%)	4 (5.63%)	28 (39.4%)	71	
Total		50	6	41	97	
Level of Education vs Insecurity		No	Discomfort No comment	Yes	Total	P-Value
Level of Education	Highschool graduate and Associate degree	7 (77.7%)	0	2 (22.22%)	9	0.813
	Bachelor's degree	21 (65.6%)	3 (9.37%)	8 (25%)	32	
	Higher education	42 (75%)	3 (5.35%)	11 (19.64%)	56	
Total		70	6	21	97	

It was found that the anxiety of participants reduced as their age increased (however it was not statistically significant) (P-value = 0.367). This means that participants with anxiety resulted from nomophobia tend to have lower mean ages, and as the age increases, the anxiety level decreases. The research shows that the anxiety of participants due to the unavailability of mobile phones or other related issues increased along with the increase in the duration of mobile phone use. (P-Value = 0.465) (Table 7).

Table 7: The effect of age variable and duration of mobile phone use on anxiety status

Anxiety vs Age		N	Mean	Std. Deviation	P-Value
Age	No	46	23.9130	6.01415	0.367
	No comment	6	21.1667	2.48328	
	Yes	38	23.1579	3.31684	
Total		90	23.4111	4.86883	
Duration of mobile phone use vs Anxiety		N	Mean	Std. Deviation	P-Value
Duration of mobile phone use	No	36	7.3333	2.98568	0.465
	No comment	14	8.2143	2.11873	
	Yes	41	8.0732	3.10153	
Total		91	7.8022	2.92202	

Based on descriptive data, anxiety resulted from nomophobia in females (20%) was lower than males (25%) (P-value = 0.864). Statistical data showed that a higher percentage of people with higher education experienced anxiety due to the unavailability of their cell phones or other related issues. Despite that, no significant relationship was seen between these statistics (P-Value = 0.672)

(Table 8).

Table 8: The effect of gender and education level variables on anxiety status

Sex vs Anxiety		Discomfort			Total	P-Value
		No	No comment	Yes		
Sex	Male	19 (67.8%)	2 (7.14%)	7 (25%)	28	0.864
	Female	52 (74.2%)	4 (5.71%)	14 (20%)	70	
Total		71	6	21	98	
Level of Education vs Anxiety		No	Discomfort No comment	Yes	Total	P-Value
Level of Education	Highschool graduate and Associate degree	5 (55.5%)	1 (11.11%)	3 (33.33%)	9	0.672
	Bachelor's degree	20 (58.8%)	2 (5.8%)	12 (35.2%)	34	
	Higher education	24 (45.2%)	3 (5.66%)	26 (49%)	53	
Total		49	6	41	96	

Discussion

Today, cell phones have become an important part of life, especially among young people. According to studies, teenagers are more attached to their phones than adults. Also, the trend of using mobile phones is increasing among students [14]. Studies by experts on the negative physical and psychological complications of excessive use of cell phones indicate that it can lead to dependency syndrome [15]. According to researchers, excessive use of cell phones can lead to a wide range of complications including headaches and even microbial infections [16]. One of the most common new disorders in the world is nomophobia. Nomophobia is a modern phobia which is a consequence of interactions between a human being and mobile communications technology, especially smartphones [17]. Nomophobia is recognised as a behavioural addiction to cell phones which is characterised by psychological symptoms as well as physical dependence [18]. Most important characteristics of this disorder include discomfort, anxiety, anger, or stress due to lack of contact with the cell phone [19]. We tried to identify and describe the dimensions of nomophobia by creating a questionnaire for the students of medical sciences at the Islamic Azad University of Tehran. Up to date, several studies have addressed this issue. Dixit et al., (2010) designed and implemented a study entitled "investigating the level of mobile dependency among college students and medical students of the Indian Medical Center". Their results indicate that 73 per cent of students bring their mobile phones to bed at the time of sleep, and even do not let go of it all over the 24 hours of the day. Also, they found that 38.5% of the participants repeatedly checked their mobile phones for SMS and calls [20]. In another study by Singh et al., (2013), it was found that the prevalence

of nomophobia is increasing. They concluded that users are becoming more dependent on their mobile phones every day, which can lead to psychological and personality issues for them. They also stated that the psychological dependence to cell phones and the tendency to nomophobia is associated with several complications including hearing the fake sound of ringtone, and constant checking of pocket or bag to ensure the presence of the mobile phone [21].

Katharine et al. (2008) evaluated nomophobia in 2163 participants in England. The results of their study showed that 52 per cent of users experienced anxiety and stress in case of losing their mobile phones, dying battery charge, or being short on credit, so lacking access to their mobile phones. Also, their results showed that 58 per cent of males and 48 per cent of females had nomophobia. They concluded that the main reason for the stress of the participants was the lack of access to friends or family [22]. Prasad et al., (2017) evaluated the pattern of mobile phone usage among 554 dental students. The results of their study indicated that circa 39.5% of students believe that if they spend more time using their mobile phones, they will get lower grades in the professional exam.

Moreover, they stated that 24.12% of students are at risk of depression. Statistical analysis of the results in their study showed that there is a significant difference between education level and depression due to nomophobia in students. They concluded that the excessive use of mobile phone among dentistry students has led to an addiction to mobile phones and consequently depression, which has also affected the educational performance of them [23].

A comprehensive review of the results in the present study shows that nomophobia occurrence is increased with reduction in the duration of mobile phone use, and younger people, as well as people with higher education levels. Although different studies have addressed several aspects of nomophobia, the findings of the present study confirm the findings of previous researches and are in line with them. Considering the limited number of conducted studies in this area with a different methodology, all seeking to answer their questions, it is not possible to accurately compare the results at this time. However, the general concepts of the results are the same and consistent in all studies.

In conclusion, the advances in technology and the widespread use of it has emerged new disorders and dependencies. Addressing these issues can show us some vital but vague aspects of technical complications. By using the results of this study, we can conclude that the prevalence of homophobia is higher in lower ages, short-duration mobile phone users, as well as males and people with higher levels of education. Although the data of the study are not significant for any of the statistics, using the statistical descriptions would make us able to decide on the

future studies and design them, and determine a target community with greater influence.

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