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Prevalence of nomophobia and its associated factors among medical students of a private medical college in Lahore

Aniq Saleem^{1*}, Maham Shahzad¹, Seema Husnain², Hafsa Asad¹

ABSTRACT

Background and Objective: Mobile phones have become an indispensable part of our daily life. Nomophobia (NMP) is an abbreviation for “no-mobile-phone phobia,” which defines apprehension faced by mobile phone users in its absence which leads them to become technically unable to communicate. Objective of the study is to determine the prevalence of NMP and its association with the demographic factors among medical students of a private medical college in Lahore.

Methods: A cross-sectional study was conducted among the medical students from first to final year classes from May to November 2021. A validated NMP questionnaire was used along with questions related to the sociodemographic profile and frequency of mobile phone usage by the respondents. The self-reported questionnaire was filled out by all the students who were present on the day of data collection. Data were analyzed by SPSS 20.

Results: Out of 646 medical students, 618 filled the questionnaire. Out of 618 respondents, 51.5% had moderate and 38.2% had severe NMP. Among sociodemographic variables, females (40.8%) had a statistically significant association with NMP ($p = 0.027$). Usage of mobile phones per day and disturbance in the students' daily routine had a statistically significant association with the NMP ($p = 0.029$ and $p < 0.001$, respectively).

Conclusion: NMP is very common among medical students and females are more likely to experience this phenomenon. Frequent usage of mobile phones is directly related to NMP affecting the daily routine of the medical students.

Keywords: Medical students, mobile phone, phobia, dependency, nomophobia, females.

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Introduction

Mobiles phones have become an integral part of our daily lives; it is impossible to carry out our everyday chores without them. Mobile phones are used in a variety of ways, including as a communication tool, personal organizer, online shopping device, and so on. Nomophobia (NMP) is an abbreviated form of “no-mobile-phone phobia.” The term was first devised in 2008 in a study conducted by the United Kingdom Postal Office, which found that conditions such as phone loss, battery not charged, forgetting their mobile phones at homes, and no network coverage lead to feelings of fear and anxiety among such people.¹ NMP is a psychological condition in which people are afraid of losing their mobile phone connection. According to Diagnostic and Statistical Manual of Mental Disorders-V, the term NMP is

defined as an excessive and unreasonable fear or anxiety associated with an object or anticipated situation for a particular/specific thing.”²

In terms of global statistics, 5.19 billion (67%) people are using mobile phones whereas the number of mobile phone users in Pakistan has increased to 164.9 million by January 2020.³ It is well documented in the literature that usage of mobile phones in Pakistan has tremendously increased during the last decade.⁴

The uncontrolled use of mobile phones offers an open space for individuals to interact and share views, ideas, and imagination with peer groups which also affects their physical, mental, social, and financial health. The use of mobile phones is considered a new addictive epidemic of the century and

the main sufferers are the students.⁵ Individuals who exhibit nomophobic behavior become anxious which adversely affects their ability to accomplish daily activities.⁶ The lives of many students have been affected due to this phenomenon because of its harmful physical and psychological effects. Students need special concern in this respect since they are a significant and vulnerable population.⁷

NMP can be related to poor academic performance and achievements.⁸ Students' capacity to think critically is negatively impacted by difficulties in paying attention and increased degrees of anxiousness and uneasiness.⁹ A study on dental students of India emphasized the negative effects of mobile phone addiction on their academic achievements. Nearly 40% of the participants believed that their poor grades were because of the amount of time they spent on their mobile phones.¹⁰ A study from Egypt reported that almost all medical students had NMP and females were more affected.¹¹ Higher levels of NMP have been related to a variety of demographic factors, including gender, educational level, and mobile phone usage time.¹²

Regardless of the fact that smartphones purchase and use has increased substantially in Pakistan in the last decade, there is a lack of research on the prevalence of NMP in this population. Moreover, due to the tremendous increase in mobile phone usage especially during COVID-19 pandemic, its unfortunate consequences among the undergraduate medical students still need to be explored with respect to the levels of NMP and its predictors among the medical students. The objectives of the study were to assess the prevalence of NMP among medical students and the relationship of sociodemographic factors and extent of usage of mobile phones with the degree of NMP.

Methods

This cross-sectional study was conducted among the medical students of a private medical college at Lahore from May to November 2021. The total number of enrolled students from first year to final year was 646 through convenience sampling technique. The inclusion criteria was all students who were present during the day of data collection. The dependent variable was NMP and independent variables included in the study were age, gender, academic status, place of residence urban/rural, mode of residency as day scholar/hostel resident, time spent on mobile phone/day, estimated hours of usage per day, estimated number of times checking the phone, phantom ring sensation and checking of phone during staying in bed for sleeping. After taking approval from the institutional ethical review board, the data were collected on a single day from all classes. Three to four students were selected from the Batch-A of fourth year class by the supervisor of this research project, who were assigned with

the task to get the pre-tested, self-reported questionnaire filled out soon after the lecture with a prior permission from the relevant heads of the departments. Data were collected from students who were present on that day after taking informed consent from them. The questionnaire had three major sections including demographic profile, use of mobile phones, and a validated NMP Questionnaire (NMP-Q). The NMP-Q has 20 questions, each scores on a 7-point Likert scale. The total score on the NMP-Q is 20 at its lowest ($20 * 1$) or 140 ($7 * 20$) at its highest. The total score of 20 means no NMP, score between 21 and 59 reflecting mild, score ranging from 60 to 99 indicates moderate while the score between 100 and 140 indicates severe NMP.¹³

Statistical analysis

Data were entered and analyzed by using SPSS version 20. Frequency tables were generated for dependent and independent variables. Chi-square test was applied to determine the statistical association between NMP and sociodemographic factors and usage of mobile phones. Statistical significance level was set at p -value less than 0.05. Descriptive statistics like frequencies and proportions were used to summarize the data.

Results

Out of 646 medical students, 618 (95.6%) filled the questionnaire and 363 (58.7%) were in the age group of 17-22 years with a mean age of 21.9 ± 1.78 years. More than half 392 (63.4%) of the respondents were female students. The number of students in first, second, third, fourth and final year was 98 (15.9%), 99 (16%), 116 (18.8%), 161 (26.1%), and 144 (23.4%) respectively. A total of 543 students (87.9%) were urban residents; 363 (58.5%) were day scholars while 490 (79.3%) had a nuclear family. The number of students using mobile phones for 5-10 years was 325 (52.6%) and the estimated duration of usage was 1-5 hours by 354 (57.3%) students. Out of 618 students, 210 (34%) checked their mobile phones after more than 20 minutes, the phantom ringing sensation was experienced by 274 (44.3%) whereas 452 (73.1%) accepted disturbance in daily routine by mobile phones. Checking of mobile phones during staying in bed at night was confirmed by 517 (83.7%) students.

Out of 618 respondents, 318 (51.5%) had moderate NMP and 236 (38.2%) had severe NMP (Figure 1). Out of 116 third-year students, 69 (59.4%) had moderate NMP as compared to 88 of 161 (54.7%) students of fourth year (Figure 2). Regarding the relationship between various sociodemographic variables and NMP, only gender had a statistically significant association with NMP (p -value = 0.039); females (40.8%) were more affected than male students. Other variables like age, family type, current place of residence, place of origin and

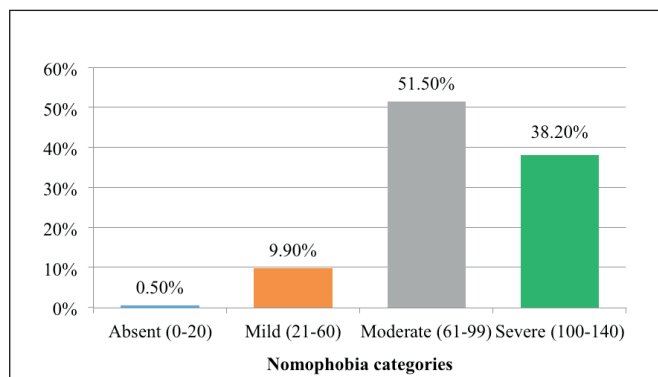


Figure 1. Scoring of NMP among 618 respondents (medical students).

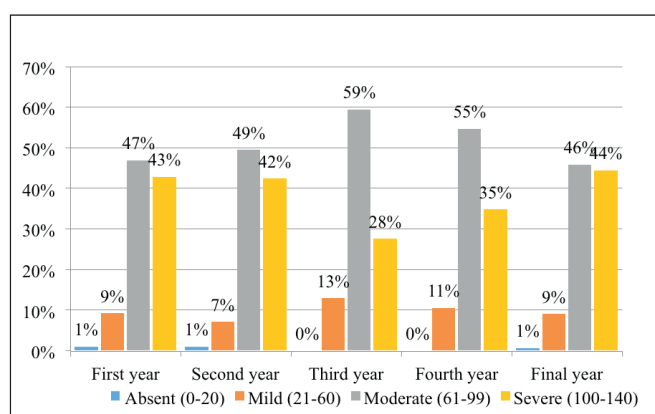


Figure 2. Scoring of NMP among medical students according to year of study.

academic year had reportedly no significant association with NMP (Table 1). Usage of mobile phone per day in hours and NMP had a significant association (p -value = 0.047). Similarly, there was a significant association between disturbance in the daily routine of the students and the grades of NMP (p -value = <0.001) (Table 2).

Discussion

The current study was undertaken among first-year through final-year medical students at a private medical college in Pakistan to assess the prevalence of NMP and its correlation with other variables as it is becoming a major public health problem.¹⁴ Out of 618 students, 9.9% had mild NMP, 51.5% had moderate while 38.2% had severe NMP. Overall NMP was present in 99.6% of the participants. Various studies all over the world had reported different degrees of NMP among medical students using the validated NMP-Q. According to a study conducted by Rawalpindi Medical University, Pakistan, 17.4%, 61.7%, and 20.9% medical students had mild, moderate and severe NMP respectively, which is comparable to our study, where majority of students had

moderate NMP.¹⁵ Similar results are depicted by a study in Telangana where almost all the medical students had NMP with the highest percentage (64.3%) having moderate NMP.⁹ However, a study from Malaysia reported 51% NMP which is much less as compared to the present study.¹⁶ A study from Egypt reported 54.8% of respondents having moderate NMP and 27.1% had severe NMP and there was a statistically significant association between grades of NMP and gender of the participants, females had more severe NMP (35.5%).¹¹ These findings are consistent with the present study. An American study done by Cain and Malcom¹⁷ reported that 99.5% of pharmacy students had NMP. Whereas in a study reported from China, 82.9% of college students reported having NMP.¹⁸ Thus, the prevalence of NMP is between 77% and 99% in both developed and developing countries, and highest among young adults.¹⁹ As mobile phones have become a basic necessity for everyone, the wide variation globally in the levels of NMP reflects the sociocultural and economic development of various countries.

Regarding the relationship between sociodemographic factors and NMP, no statistically significant relationship between age and prevalence of NMP was seen in the present study. In contrast to the current study, a one-way analysis of variance was used in a Turkish study to determine whether the NMP levels of prospective physicians varied with the age. The findings revealed that students' levels of NMP varied significantly with age ($p = 0.000$).²⁰ Another study from Saudi Arabia found that the severity of NMP differed significantly by age group ($p = 0.032$), with older students having higher percentage of severe NMP.²¹ The reason for this could be the respondents' early use of mobile phones and the length of time they have owned a mobile phone. A significant association was found between gender and various grades of NMP. NMP is found more prevalent among the females in the present study (chi-square test = 8.59 and p -value = 0.039) which is comparable to the previous study conducted by Ozdemir et al.²² for comparison of NMP among university students of Pakistan and Turkey. The similarity in results is due to the fact that generally, females become more anxious if they are unable to communicate when required. In contrast to our findings, another study found a statistically significant relationship between NMP disorder and gender, with the prevalence of the disorder being higher in males. The reason reported by the author was that men use almost all of the functions available in mobile phones, whereas females use mobile phones primarily for communication.⁷ However, another study reported that the prevalence of NMP does not vary by gender, with the results of the independent samples t -test revealing no statistically significant differences in NMP levels between male ($x'''' = 72.51$) and female ($x'''' = 77.95$) students [$t(678) = 2.98, p > 0.05$].²⁰ The reason could

Table 1. Association of sociodemographic variables with NMP in 618 respondents.

Variables		NMP				Total	Statistical test
		Absence (Score = 20)	Mild level (Score = 21-60)	Moderate level (Score = 61-99)	Severe (Score = 100-140)		
Age groups (years)	18-22	2 (0.6%)	31 (8.5%)	191 (52.6%)	139 (38.3%)	363	Chi-square test = 1.88 p-value = 0.600
	23-28	1 (0.4%)	30 (11.8%)	127 (49.8%)	97 (38%)	255	
Gender	Male	1 (0.4%)	32 (14.2%)	117 (51.8%)	76 (33.6%)	226	Chi-square test = 8.59 p-value = 0.039
	Female	2 (0.5%)	29 (7.4%)	201 (51.3%)	160 (40.8%)	392	
Academic year	First year	1 (1%)	9 (9.2%)	46 (46.9%)	42 (42.9%)	98	Chi-square test = 14.25 p-value = 0.213
	Second year	1 (1%)	7 (7.1%)	49 (49.5%)	42 (42.4%)	99	
	Third year	0 (0%)	15 (12.9%)	69 (59.5%)	32 (27.6%)	116	
	Fourth year	0 (0%)	17 (10.6%)	88 (54.7%)	56 (34.8%)	161	
	Final year	1 (0.7%)	13 (9%)	66 (45.8%)	64 (44.4%)	144	
Residence	Urban	2 (0.4%)	55 (10.1%)	275 (50.6%)	211 (38.9%)	543	Chi-square test = 2.66 p-value = 0.505
	Rural	1 (1.3%)	6 (8%)	43 (57.3%)	25 (33.3%)	75	
Current place of stay	Day scholar	1 (0.3%)	35 (9.6%)	190 (52.3%)	137 (37.7%)	363	Chi-square test = 1.03 p-value = 0.798
	Hostelite	2 (0.8%)	26 (10.2%)	128 (50.2%)	99 (38.8%)	255	
Type of family	Nuclear	2 (0.4%)	51 (10.4%)	247 (50.4%)	190 (38.8%)	490	Chi-square test = 1.70 p-value = 0.636
	Joint	1 (0.8%)	10 (7.8%)	71 (55.5%)	46 (35.9%)	128	
Total		3 (0.5%)	61 (9.9%)	318 (51.5%)	236 (38.2%)	618	

Table 2. Relationship of use of mobile phones and NMP in 618 respondents.

Variables		NMP				Total	Statistical test
		Absence (Score = 20)	Mild level (Score = 21-60)	Moderate level (Score = 61-99)	Severe (Score = 100-140)		
For how many years you are using mobile phones	Less than 5 years	0 (0%)	26 (14.9%)	91 (52%)	58 (33.1%)	175	Chi-square test = 12.86 p-value = 0.034
	5-10 years	3 (0.9%)	27 (8.3%)	159 (48.9%)	136 (41.8%)	325	
	>10 years	0 (0%)	8 (6.8%)	68 (57.6%)	42 (35.6%)	118	
Estimated frequency of usage of mobile phone/day in hours	Less than 1 hour	0 (0%)	4 (20%)	13 (65%)	3 (15%)	20	Chi-square test = 11.97 p-value = 0.047
	1-5 hours	1 (0.3%)	42 (11.9%)	176 (49.7%)	135 (38.1%)	354	
	>5 hours	2 (0.8%)	15 (6.1%)	129 (52.9%)	98 (40.2%)	244	
Estimated frequency of checking mobile phone	1-5 minutes.	1 (1.3%)	10 (13.3%)	25 (33.3%)	39 (52%)	75	Chi-square test = 18.7 p-value = 0.017
	6-10 minutes.	0 (0%)	10 (6.5%)	81 (52.9%)	62 (40.5%)	153	
	11-20 minutes.	0 (0%)	16 (8.9%)	103 (57.2%)	61 (33.9%)	180	
	>20 minutes	2 (1%)	25 (11.9%)	109 (51.9%)	74 (35.2%)	210	
Phantom ringing sensation	Yes	0 (0%)	23 (8.4%)	124 (45.3%)	127 (46.4%)	274	Chi-square test = 15.74 p-value = 0.001
	No	3 (0.9%)	38 (11%)	194 (56.4%)	109 (31.7%)	344	
Does use of mobile phone affects daily routine?	Yes	1 (0.2%)	30 (6.6%)	224 (49.6%)	197 (43.6%)	452	Chi-square test = 34.25 p-value = <0.001
	No	2 (1.2%)	31 (18.7%)	94 (56.6%)	39 (23.5%)	166	
Checking mobile phone during staying in bed for sleeping	Yes	1 (0.2%)	47 (9.1%)	259 (50.1%)	210 (40.6%)	517	Chi-square test = 13.54 p-value = 0.007
	No	2 (2%)	14 (13.9%)	59 (58.4%)	26 (25.7%)	101	
Total		3 (0.5%)	61 (9.9%)	318 (51.5%)	236 (38.2%)	618	

be that both male and female students rely equally on mobile phones for their studies. There was no statistically significant association found between various degrees of NMP and academic years in this study. The study which confirms our finding reported that students' levels of NMP did not differ significantly with class standing, i.e., with the level of academic year [$F(5,674) = 2.227, p = 0.050$]²⁰ and the possible reason for this could be the use of the mobile phone by students of all academic years for E-learning (online learning). Similarly in a study in Turkey, there was a significant difference between NMP levels of different year students indicating that the degree of NMP level of students tended to increase from first year to fourth year.²² The stress and workload that increases with the start of clinical work in the third to final year could be the reason for this trend.

There is a statistically significant association between time spent per day on mobile phones and moderate and severe NMP (chi-square test = 11.97 and p -value = 0.047). The same results are reported in a study in which individuals who spent more time on their phones per day ($p = 0.000$) and checked their phones more frequently ($p = 0.000$) and had significantly higher NMP scores.²³

The present study reports a statistically significant association between NMP and phantom ringing sensation (chi-square test = 15.74 and p -value = 0.001). The phantom ringing sensation was experienced by 59% medical students in an Indian study due to continuous and persistent use of mobile phones.²⁴

The impact of mobile phone use on individual users' daily lives was also investigated. The average NMP score of those who believed their mobile phone use was consuming time and affecting their other daily activities was significantly greater than that of those who did not ($p = 0.001$). In a study reported from Bangalore, 43% of participants reported that mobile phones had a significant negative impact on their studies and academic achievements.¹⁹ A statistically significant association was found between checking of mobile phone during staying in bed and moderate and severe NMP. This result is in congruence with a study conducted on medical residents in Egypt¹¹ in which 53.3% of respondents were using a mobile phone while staying in bed for sleeping; this similarity might be because of sleep deprivation and anxiety associated with the medical profession. A study among the university students of Indonesia reported that there is a significant correlation between NMP and poorer sleep (p -value = 0.013) thus indicating that if students use mobile phones continuously for fear of appearing apprehensive or unable to use them, then such individuals will have lack of sleep.²⁵

NMP is significantly associated with frequent use of mobile phones per day and disruption in daily routine, emphasizing the importance of raising awareness among students about

the negative impact of mobile phones on their physical and psychological health and educating them on ways to reduce mobile phone dependence.

Conclusion

The prevalence of nomophobia has been reported in all medical students from first year to final year, with varying degrees of severity, indicating that it is a serious concern that must be addressed. Female students are more affected as compared to male students.

Limitations of the study

There are some limitations of the study as this study only included students from one medical college in Lahore, hence no generalizations can be made to other socio demographic groups especially to the public sector medical students in the country.

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List of Abbreviations

NMP Nomophobia
NMP-Q Nomophobia questionnaire

Conflict of interest

None to declare.

Grant support and financial disclosure

None to disclose.

Ethical approval

Ethical approval for the study was obtained from the Institutional Review Board of the Fatima Memorial Hospital College of Medicine and Dentistry, Lahore, Pakistan on May 9, 2022 vide Letter No. FMH-01/4/2022-IRB-1042. Conditional IRB approval was taken before data collection on August 31, 2021 vide Letter No. FMH-08-2021-IRB-939-M.

Authors' contributions

Aniq Saleem, MS, HA: Acquisition and analysis of data, drafting the manuscript.

SH: Conception and design of study, critical intellectual input and revisions.

ALL AUTHORS: Approval of the final version of the manuscript to be published.

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