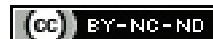# A Cross-sectional Study on Nomophobia among Undergraduate Medical Students in Chennai, India

GANESH SHANMUGASUNDARAM ANUSUYA[1], HANSCIE DINAH[2], BALAJI ARUMUGAM[3], RECHARLA CHENCHU KARTHIK[4], RADHAKRISHNAN ANNAMALAI[5], EZHILVANAN MANI[6]

ABSTRACT

Introduction: Nomophobia is the fear of being away from mobile phone contact or in other words nomophobia is the irrational fear of being without mobile phone. Nomophobia is an emerging psychological public health problem.

Aim: To determine the prevalence of nomophobia and pattern of mobile phone usage among medical students in Chennai.

Materials and Methods: This cross-sectional study was done among 400 undergraduate medical students of Tagore Medical College and Hospital, Chennai, Tamil Nadu, India, studying from 1st year to 4th year, over a period of two months (July 2019 and August 2019). A structured questionnaire, developed by Yildirim C and Correia AP, was used to determine the prevalence of nomophobia among the study population. Stratified simple random sampling technique was used, where 100 students from each study year were selected. Descriptive statistics and chi-square test were done to compare the severity of nomophobia with various variables.

Results: Out of 400 students, 50% (200) were males and 50% (200) were female students. Overall, 85% (340) used mobile internet. The top three reasons for using mobile internet were WhatsApp (95%), YouTube (81.3%) and Instagram (74.3%). The overall prevalence of nomophobia was 99% (396); 17.5% (70) showed severe nomophobia, 56.3% (225) moderate nomophobia, and 25.3% (101) had mild nomophobia. Severe nomophobia was associated with mobile usage >5 hours in a day (p-value=0.013).

Conclusion: Health education and health awareness campaigns regarding nomophobia should be created among the undergraduate medical students.

INTRODUCTION

The fear of being out of contact with one's own mobile phone (situational phobia) is called Nomophobia [1]. The term NOMOPHOBIA or NO MObile PHone PhoBIA is used to describe a psychological condition in which people have a fear of being detached from mobile phone connectivity [2]. Among college students smartphone is the one of the most popular electronic gadget due to the variety of functions and features it provides. According to a survey conducted by the Mobile Ecosystem Forum in 2019, the highest number of smartphone users was in the age group of 16 to 24 years, with 37 percent [3]. Smartphone is a boon that makes it possible to perform a range of day-to-day tasks in a single device, including calling, texting people, sending emails, scheduling meetings, surfing the internet, e-shopping, social networking, playing games, entertainment, etc.

Nomophobic behaviours have the tendency to alter our daily habits, and it has been proposed that they be treated as an addiction [4,5]. For this reason it was proposed that nomophobia be included in the Diagnostic and Statistical Manual of Mental Disorders-V (DSM-V) [6]. Nomophobics show some typical characteristics like using multiple mobile phones and chargers, frequently eyeing phones to see for notifications, and keeping mobile phones close during sleep [7]. People with nomophobia seem to be preoccupied with the virtual world and avoid face-to-face interaction [7,8]. Various risks associated with nomophobia are tachycardia, sweating, respiratory distress, disorientation, and agitation [8,9].

Many studies have shown a positive relationship between mobile phone usage and sleep deprivation and anxiety [10,11]. Research shows that nomophobia is on the rise across India and more and more people fear being without being or losing their mobile phones even for a day or even an hour but the research into nomophobia has been scanty [1].

According to a survey conducted by the Mobile Ecosystem Forum from November to December 2019, the highest smartphone users were in the age group of 16 to 24 years, with 37% from India [3]. The medical undergraduate students also come under the above age group. Also, nomophobia is an emerging public health problem which has not been much studied among the medical undergraduate population. Hence, by identifying the prevalence and predictors of nomophobia among undergraduate medical students, we can prevent them from becoming nomophobic by implementing preventive measures in college. Thus, this research aimed to study the prevalence and predictors of nomophobia among undergraduate medical students.

MATERIALS AND METHODS

This cross-sectional study was conducted among undergraduate medical students, studying from 1st year to 4th year in Tagore Medical College and Hospital, Chennai, Tamil Nadu, India. The study duration was of two months (July 2019 and August 2019). Ethical clearance for the study was obtained from the Institutional Ethical Committee (IEC No:01/June/2019).

Sample size calculation: Based on the prevalence of nomophobia (39.5%) [12], sample size was calculated to be 382, with absolute precision of 5% and the confidence interval of 95%. It was finally rounded off to 400. Hence, there were 100 students from each year of the academic session (1st to 4th).

Inclusion criteria: Both male and female undergraduate medical students who were willing to participate in the study, and gave informed consent were included into the study.

Exclusion criteria: Interns were not included in the study. Students who were not using mobile phones were excluded.

Sampling Method

Stratified simple random sampling technique, where 100 students from each study year (1st to 4th), was used to avoid bias. The sampling was done in two stages.

Stage 1: The study population was divided into four strata, each consisting of 150 members. In each strata 100 participants were selected proportionately.

Stage 2: Within each strata, the required sample of 100 participants was selected by simple random sampling, using computer generated random numbers.

The questionnaire was pretested through a pilot study on 40 of the study participants which comprised of 10% of the total study sample.

Questionnaire: The questionnaire was divided into three main sections: basic socio-demographics, the pattern of mobile phone usage and nomophobia questionnaire. A structured questionnaire developed by Yildirim C and Correia AP was used to determine the prevalence of nomophobia among the study population [13]. The nomophobia questionnaire consists of 20 items. A 7-point Likert scale was used starting from 1 ("strongly disagree") to 7 ("strongly agree") was chosen as the rating scale. By adding up all the responses of each item the total score was derived, which results in nomophobia score ranging between 20 to 140. Higher scores correspond to greater nomophobia severity. The Nomophobia Questionnaire (NMP-Q) questionnaire has good validity and reliability (Cronbach's alpha=0.945) [13].

The total score interpretation is as follows:

- 20=absence of nomophobia
- 20 to 60=mild level of nomophobia
- 60 to 100=moderate level of nomophobia
- 100 to 140=severe level of nomophobia

STATISTICAL ANALYSIS

The data was collected and entered into Excel and analysed using Statistical Package for the Social Sciences (SPSS) version 20.0. Descriptive frequency tables were computed for all collected variables. Chi-square test was done to compare the severity of nomophobia with various variables. The p-value <0.05 was considered as significant.

RESULTS

[Table/Fig-1] shows the baseline characteristics regarding gender, the number of participants from each academic year, house location, resident of hostel or days scholars, type of family and the different levels of nomophobia. The mean age of the study population was 20 years. The overall prevalence of nomophobia was 99%, and remarkably, 17.5% showed severe nomophobia. The mean score of nomophobia for the whole population was 75.13.

Variables	N (%)
Gender	
Male	200 (50%)
Female	200 (50%)
Students year	
1st year	100 (25%)
2nd year	100 (25%)
3rd year	100 (25%)
4th year	100 (25%)
House location	
Rural	4 (1%)
Urban	396 (99%)
Residing in	
Hostel	186 (46.5%)
Day scholars	214 (53.5%)
Type of family	
Nuclear	352 (88%)
Joint	39 (9.8%)
Three generations staying together	9 (2.2%)
Degrees of nomophobia	
Absent	4 (1%)
Mild	101 (25.3%)
Moderate	225 (56.2%)
Severe	70 (17.5%)

[Table/Fig-1]: Baseline characteristics (N=400).

[Table/Fig-2] shows the various patterns of mobile phone usage. It shows that majority, 100% were android phone users, 94.8% had only single phone, 63% had only 1 sim, and other baseline details are given in [Table/Fig-2]. [Table/Fig-3] shows the various reasons for using mobile internet. An 85% (340) of the medical students accepted that they use mobile internet. The top three reasons for using mobile internet were Whatsapp (95%), YouTube (81.3%) and Instagram (74.3%).

Variables	N (%)
Type of phone used	
Android	400 (100%)
Basic	0 (0%)
Number of phones used	
1 Phone	379 (94.8%)
2 Phones	20 (5%)
3 Phones	1 (0.2%)
Number of sim used	
1 sim	252 (63%)
2 sims	145 (36.3%)
3 sims	2 (0.5%)
4 sims	1 (0.2%)
Hours used	
>5 hours	87 (21.8%)
<5 hours	313 (78.2%)
Number of years used	
≤5 years	298 (74.5%)
>5 years	102 (25.5%)
More usage during	
Day time	98 (24.5%)
Night time	302 (75.5%)
Reasons for using mobile phones	
Calling	400 (100%)
Listening to music	354 (88.5%)
Setting up of alarm	349 (87.3%)
Messaging	224 (56%)
Playing games	214 (53.5%)
Taking selfies	207 (51.7%)
Taking pictures	248 (62%)

[Table/Fig-2]: Pattern of mobile phone usage.

No nomophobia and mild nomophobia were merged into 'mild', and moderate nomophobia and severe nomophobia were merged into 'severe'. [Table/Fig-4] shows that the only significant factor that can predict nomophobia was using mobile phones more than five hours in a day. Total 83.3% of students using phones more than five hours in a day had severe nomophobia when compared to 70.5% in students using mobile phones more than five hours in a day and the finding was also statistically significant (p-value=0.013).

DISCUSSION

Nomophobia: The current younger generation spends more time with mobile phones, so the present study findings will be important

Reasons for using mobile internet	N (%)
WhatsApp	380 (95%)
YouTube	325 (81.3%)
Instagram	297 (74.3%)
Shopping	215 (53.8%)
Movies	193 (48.3%)
Emails	181 (45.3%)
Facebook	174 (43.5%)
Web series	152 (38%)
E-books	83 (20.8%)
PUBG	65 (16.3%)
TikTok	41 (10.3%)
IMO calls	36 (9%)

[Table/Fig-3]: Reasons for using mobile internet.

Variables	Mild nomophobia n (%)	Severe nomophobia n (%)	p-value (Chi-square test)
Gender			
Male	54 (27)	146 (73)	0.820
Female	51 (25.5)	149 (74.5)	
Residing in			
Hostel	44 (23.7)	142 (76.3)	0.306
Days scholar	61 (28.5)	153 (71.5)	
Usage in hours			
Usage <5 hours	88 (29.5)	210 (70.5)	0.013*
Usage >5 hours	17 (16.7)	85 (83.3)	
Usage in time			
More in day time	33 (33.7)	65 (66.3)	0.064
More in night time	72 (23.8)	230 (76.2)	
WhatsApp			
Yes	99 (26.1)	281 (73.9)	0.794
No	06 (30)	14 (70)	
Playing games			
Yes	51 (23.8)	163 (76.2)	0.211
No	54 (29.5)	129 (70.5)	
Youtube			
Yes	86 (26.5)	239 (73.5)	0.885
No	19 (25.3)	56 (74.7)	
Instagram			
Yes	75 (25.3)	222 (74.7)	0.439
No	30 (29.1)	73 (70.9)	
Online shopping			
Yes	52 (24.2)	163 (75.8)	0.362
No	53 (28.6)	132 (71.4)	
Watching movies			
Yes	45 (23.3)	148 (76.7)	0.212
No	60 (29)	147 (71.0)	
Checking Emails			
Yes	39 (21.5)	142 (78.5)	0.053
No	66 (30.1)	153 (69.9)	
Facebook			
Yes	45 (25.9)	129 (74.1)	0.909
No	60 (26.5)	166 (73.5)	

[Table/Fig-4]: Predictors of Nomophobia.
*p-value <0.05 was considered as statistically significant

in terms of identifying the prevalence and predictors of nomophobia among undergraduate medical students. The overall prevalence of nomophobia in the present study was 99%.

The prevalence in the present study is comparable with the studies done by Sethia S et al., (99.8%) and by Madhusudan M et al., (99%) [14,15]. Both the studies have used the same questionnaire of Yildirim C and Correia A, as the index study [13]. Similar other studies done by Harish BR et al., among under graduate medical students showed the prevalence of nomophobia was 99% [16]. In the year 2015 a study by Pavithra MB et al., was done in Bangalore among medical students and the prevalence of nomophobia was only 39.5% [12]. The reason for the difference in the prevalence of nomophobia can be attributed to the different questionnaire used for assessing nomophobia. The questionnaire used in the study done by Pavithra MB et al., was a pretested and validated questionnaire which was modified from the original version of the questionnaire developed by Raines ML [12].

In the present study, 17.5% (70) of the medical undergraduates showed severe nomophobia, 56.3% (225) had moderate nomophobia and 25.3% (101) were having mild nomophobia i.e., 99% participants in our study had some degree of nomophobia while 1% of the study population had no nomophobia. In a similar study done by Sethia S et al., 32.15%, 61.5% and 6.15% of the study participants had mild, moderate and severe nomophobia, respectively, while 0.2% participants had no nomophobia [14]. A similar study by Kanmani A et al., reported that among the medical undergraduate students, 98.7% had some or the other degree of nomophobia; 41.5% had mild, 40.4% had moderate and 16.8% had severe nomophobia [2].

A study done by Arumugam B et al., among medical students in Chennai reported that nearly 52% accepted that they were addicted to mobile phones [17]. It was done in 2014 while the present study was done in the year 2019. The mobile phone users worldwide have increased from 4.15 billion in 2015 to 4.57 billion in 2018 [18,19]. The difference in the prevalence of addiction percentage could be attributed to the methodology and sample size. The addiction by Arumugam B et al., was defined as a self-reported perceived one, while the present study used a structured questionnaire to determine the prevalence of nomophobia [17].

Pattern of mobile usage: In this study, it was found that 100% of the students used mobile phones for making calls with their family and friends, 88.9% used it for listening to music and 53.5% used it for playing games. Similarly, a study done by Madhusudan M et al., in Kerala with a study population of 249, also showed that 99.06% of the population uses smart phones for making calls to their family members, 91.84% used for calling friends, 88.74% for listening music and 57.58% for playing games [15]. Similarly, a study conducted by Harish BR et al., in Mandya with a study population of 450 showed that 90.3% used mobile phones for communicating with their family members, 84.4% for listening to music and 54.7% for playing games [16].

A study done by Pavithra MB et al., in Bangalore, among undergraduate medical students in 2015 with a study population of 200, showed that 10% of the population used smart phone for making calls to their family members, 8% for calling friends, 8.5% for listening music and 11% for playing games [12]. This difference in the pattern of mobile phone usage can be attributed to the year of the study and the difference in the demographic variables between the two study settings. There has been a drastic increase in mobile phone usage from 2015 to 2019 which may be due to easy availability of bandwidth, improved device penetration and cheap internet data plans. The introduction of 4G technology is fueling the speed of mobile data consumption in India. And a wide range of affordable internet data packages is a boon for the customers which make them explore various areas of their interest, making smart phone a necessary device in day-to-day activities. India had the world's second-largest internet population, at over 749 million users in 2020. Of these, 744 million users accessed the internet via their mobile phones [19].

Hours of phone usage: This study showed that the important predictor for nomophobia is usage of mobile phone >5 hours in a day. This finding was comparable with study done by Schwaiger E and Tahir R in Pakistan among undergraduate students. The study also found in multiple regression analysis that hours of usage per day (ß=0.226, p-value <0.05) was the strongest and only significant predictor of nomophobia [20]. As number of hours increased, so did the nomophobia scores. Sethia S et al., also found that those using mobile for 2-4 and 4-6 hours per day were had a larger proportion of mild and moderate nomophobia [14].

Limitation(s)

This study has been done among the undergraduate medical students and hence the study findings cannot be directly extrapolated to the general population.

CONCLUSION(S)

This study shows that the usage of internet through mobile phones is high among undergraduate medical students. Social networking like WhatsApp, YouTube and Instagram were among the top three reasons to use mobile internet. The overall prevalence of nomophobia was 99% and 17.5% were severely nomophobic. The important predictor for becoming nomophobic is using mobile phones >5 hours in a day. Based on this study findings authors strongly recommend for health education and health awareness campaigns regarding nomophobia among medical undergraduate students in medical colleges. Authors also recommend for health education and counselling sessions to minimise the usage hours of mobile phones among medical undergraduate students studying in medical colleges.

REFERENCES

[1] Dixit S, Shukla H, Bhagwat AK, Bindal A, Goyal A, Zaidi AK, et al. A study to evaluate mobile phone dependence among students of a medical college and associated hospital of central India. Indian J Community Med. 2010;35(2):339-41.

[2] Kanmani A, Bhavani U, Maragatham RS. Nomophobia-An Insight into Its Psychological Aspects in India. Int J Indian Psychol. 2017;4(2):05-15.

[3] Statista. The Statistics Portal. Available at: https://www.statista.com/statistics/1135692/india-smartphone-users-by-age-group/. Last Accessed on 07th October 2021.

[4] Emanuel R, Bell R, Cotton C, Craig J, Drummond D, Gibson S. The truth about smartphone addiction. College Student Journal. 2015;49(2):291-99.

[5] Lukacs A, Tavolacci MP, Kiss-Toth E, Sasvar P, Ladner J (2016, July) Internet addiction in university students: Cross-border study in Algeria, France, Hungary. Paper presented at 5th European Symposium on Substance Use, other Health Behaviours in Students Conference 30th June, 1st July 2016, Rouen, France.

[6] Bragazzi NL, Del Puente G. A proposal for including nomophobia in the new DSM-V. Psychol Res Behavior Manag. 2014;7:155-60.

[7] Bhattacharya S, Bashar MA, Srivastava A, Singh A. Nomophobia: No mobile phone phobia. J Family Med Prim Care. 2019;8(4):1297-1300.

[8] Jahrami H, Abdelaziz A, Binsanad L, Alhaj OA, Buheji M, Bragazzi NL, et al. The association between symptoms of nomophobia, insomnia and food addiction among young adults: Findings of an exploratory cross-sectional survey. Int J Environ Res Public Health. 2021;18(2):711, Doi: 10.3390/ijerph18020711.

[9] Kaur A, Sharma P. A descriptive study to assess the risk of developing nomophobia among students of selected nursing 316 colleges Ludhiana, Punjab. Int J Psychiatr Nurs. 2015;1:01-06.

[10] Haruka T, Nishida T, Tsuji A, Sakakibara H. Association between excessive use of mobile phone and insomnia and depression among Japanese adolescents. Int J Environ Res Public Health. 2017;14(7):01-11.

[11] Munezawa T, Kaneita Y, Osaki Y, Kanda H, Minowa M, Suzuki, K, et al. The association between use of mobile phones after lights out and sleep disturbances among Japanese adolescents: A nationwide cross-sectional survey. Sleep. 2011;34(8):1013-20.

[12] Pavithra MB, Suwarna M, Murthy TS. A study on nomophobia-mobile phone dependence, among students of medical college in Bangalore. Natl J Community Med. 2015;6(3):340-44.

[13] Yildirim C, Correia AP. Exploring the dimensions of nomophobia: Development and validation of a self- reported questionnaire. Computers In Human Behavior. 2015;49:130-37. Doi: https://doi.org/10.1016/j.chb.2015.02.059.

[14] Sethia S, Melwani V, Melwani S, Priya A, Gupta M, Khan A. A study to assess the degree of nomophobia among the under graduate students of a medical college in Bhopal. Int J Community Med Public Health. 2018;5(6):2442-45.

[15] Madhusudan M, Sudarshan BP, Sanjay TV, Gopi A, Fernandes SDA. Nomophobia and its determinants among the students of medical college in Kerala. Int J Med Sci Public Health. 2017;6(6):1046-49.

[16] Harish BR, Bharath J. Prevalence of nomophobia among the under graduated medical students of Mandya Institute of Medical Sciences, Mandya. Int J Community Med Public Health. 2018;5(12):5455-59.

[17] Arumugam B, Sachi S, Nagalingam S. A descriptive study on behavior associated with mobile phone usage and its effect on health among medical students in Chennai. J Evol Med Dental Sci. 2014;3(7):1590-95.

[18] Statista. The Statistics Portal. Available at: https://www.statista.com/statistics/274774/forecast-of-mobile-phone-users-worldwide/. Last Accessed on 28th October 2021.

[19] Statista. The Statistics Portal. Available at: https://www.statista.com/statistics/558610/number-of-mobile-internet-user-in-india/.Last Accessed on 28th October 2021.

[20] Schwaiger E, Tahir R. Nomophobia and its predictors in undergraduate students of Lahore, Pakistan. Heliyon. 2020;6(9):e04837.

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.
2. Student, Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.
3. Professor and Head, Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.
4. Associate Professor, Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.
5. Assistant Professor, Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.
6. Statistician cum Assistant Professor, Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Recharla Chenchu Karthik,
Associate Professor, Department of Community Medicine, Tagore Medical College and Hospital, Rathinamangalam, Chennai-600127, Tamil Nadu, India.
E-mail: rchenchuk86@gmail.com