

A study on nomophobia, quality of sleep and associated behavioural problems in engineering students

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Abstract

Background: Growing smartphone usage among students globally has resulted in considerable issues of NOMOPHOBIA which is defined as a psychological condition when people have a fear of being detached from mobile phone connectivity. The use of smartphones among younger people increases concerns about their dependence on phones as well as its correlation with quality of sleep and mental health issues. **Aims:** To study prevalence of nomophobia, quality of sleep and associated behavioural problems among engineering students. **Settings and Design:** Students were evaluated by providing self-administered questionnaires in classrooms which consisted of: Socio demographic details and pattern, duration of mobile phone use, for what purpose and in which context they use mobile phone. **Methods and Material:** A cross-sectional study was conducted and data was collected from 1400 engineering students using a pretested self-reported questionnaire. Scales used were Nomophobia questionnaire (NMP Q), Depression, Anxiety and Stress sub scores (DASS-21) and Pittsburgh sleep quality inventory (PSQI). **Statistical analysis:** SPSS 20.0 statistical software was used for statistical analysis. Chi-square tests were used to find significant association. P value <0.05 was considered statistically significant. **Results:** Majority of the study participants (65.3%) were belonged to 18 – 20 years age group. About 19.9% were having mild, 60.4% having moderate and 18.5% having severe nomophobia. Among nomophobia associated behavioural problems, depression accounted for 54.8%, anxiety 65.8%, and stress 36.7%. On PSQI Scale 39.5% subjects suffered poor quality of sleep. **Conclusions:** Nomophobia was highly prevalent among younger individuals with significant behavioural and sleep problems owing to excessive usage of smartphone.

Keywords: Nomophobia Questionnaire (NMPQ), Pittsburgh sleep quality inventory (PSQI), Mobile user (MU).

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NOMOPHOBIA or No Mobile Phone Phobia is referred to characterize a psychological condition where people are scared to be detached from usage of mobile phone. Nomophobia is constructed on definitions described in the DSM-IV, it has been labelled as a “phobia for a particular/specific thing” and was not changed in the most recent, fifth edition of the manual (DSM-5).² Persons with nomophobia will have an unreasonable fear about being out of mobile contact or not being able to be using their smartphones and would try to minimize the likelihood of not using their smartphones. When they couldn't use their phones, they 'd experience extreme fear, distress and anxiety. Nomophobia is reported to be associated with behavioural problems like anxiety, stress and depression with sleep disturbances and other physiological conditions.

INTRODUCTION

The word 'NOMOPHOBIA' was introduced in 2008 by the UK Post Office during a study conducted by a UK-based research organization called YouGov.¹ The word

A number of studies was carried out to study prevalence of nomophobia in foreign countries and India among university students but with little focus on association of nomophobia with mental health conditions like stress, anxiety and depression with quality of sleep among engineering students have been conducted.^[3] Most of the Indian studies are metro city based, hence this cross sectional study was designed to determine the prevalence of nomophobia and its association with depression, anxiety, stress and quality of sleep among engineering students of Kalaburagi district of Karnataka. In the present study we have endeavored to understand and report nomophobia prevalence in engineering students, the association between nomophobia and quality of sleep and the association between nomophobia and behavioural problems.

MATERIALS AND METHODS

The study was approved by the Institutional Ethics Committee, Mahadevappa Rampure Medical College Kalaburagi, Karnataka. In this cross-sectional study, a sample size of 1400 students of various engineering colleges, Kalaburagi, was involved in the study. The students were well explained about the study and written informed consent was obtained. Study participants were undergraduate students, selected randomly. Students were evaluated by providing self-reported English questionnaires in classrooms which consisted of: Socio demographic details and pattern, duration of mobile phone use, for what purpose and in which context they use mobile phone and nomophobia questionnaire (NMP-Q) was used. The NMP-Q is a validated questionnaire, specifically developed by Yildirim and Correia in 2015,^[4] to assess nomophobic behaviours of college students. It consists of twenty items addressing four factors of NMP: (1) Not being able to communicate, (2) Losing connectedness, (3) Not being able to access information, and (4) Giving up convenience. All items are rated using 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).^[4] Total score ranges from 0 to 140 i.e. 0 to 20 No nomophobia, 21 to 59 (Mild), 60 to 99 (Moderate), 100 to

140 (Severe). The Pittsburgh Sleep Quality Index (PSQI) scale has been used as an efficient instrument for assessing quality of sleep and its pattern among individuals.^[5] It distinguishes “poor” from “good” sleep by measuring 7 domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication usage, and daytime dysfunction over the last 1 month. The individual self-rates each of these 7 areas of sleep. Scoring of the answers is based on a 0 to 3 scale, whereby 3 reflects the negative extreme on the Likert Scale. A global sum of “5” or greater indicates a “poor” sleeper. Depression anxiety stress score 21 (DASS 21) was used which consists of 21 item self-report questionnaires designed to assess the severity of core symptoms of depression, anxiety and stress. It is rated on a Likert scale which is of four points, with each item scored between 0 and 3.^[6] For each scale, the total of the specific 7 items multiplied by 2 reflects the scores of the participants for each of depression, stress and anxiety. The filled-up questionnaires were collected by the researchers at a pre-specified time from the participants at their respective colleges. During collection, the questionnaires were cross-checked for completeness. The data analysis was done using SPSS 20.0 statistical software. To find out the association, Chi-square test was used. P < 0.05 was considered as statistically significant.

RESULTS

A total of one thousand four hundred students were approached in different engineering college and students completed the questionnaire. There were no incomplete forms. Among 1400 engineering students, 759 (54.2%) were males and 641 (45.8%) were females [Table 1].

Table 1: Distribution across sex

Gender	Number	Percent (%)
Male	759	54.2
Female	641	45.8
Total	1400	100

Majority of the participants (65.3%) were in the age group 18-20 years and 34.6% of participants were in the age group 21–24 years [Table 2].

Table 2: Indicating levels of Nomophobia according to age

Age in years	No Nomophobia (%)	Mild Nomophobia (%)	Moderate Nomophobia (%)	Severe Nomophobia (%)
18	1.8	21.0	60.4	16.8
19	0.8	16.5	66.9	15.7
20	0.6	20.9	60.4	16.1
21	0.7	20.9	58.8	19.6
22	0.5	20	55.7	23.8
23	0	24.4	52.2	23.3
24	0	18.9	51.4	29.9

There was increase in the prevalence of nomophobia as the age increases and showed statistically significant (X^2 17.8, $P < 0.001$). Out of 1400 participants, overall prevalence of nomophobia was found out to be 98.8% (1383) with Mild 19.9% (278), Moderate 60.4% (846) and Severe 18.5% (259) and participants with No nomophobia were about 1.2% (17) [Figure 1].

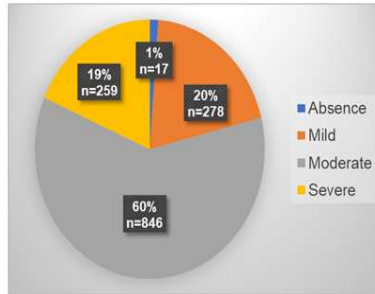


Figure 1. Distribution of grades of Nomophobia

The prevalence of nomophobia was found to be higher in males 58% (748) when compared to females which is about 42% (635). The prevalence of severe nomophobia was higher in female participants 21.4% (137) compared to male participants 16.1% (122) and was significant statistically ($P < 0.001$) [Table 3].

Table 3: Levels of Nomophobia according to Gender

Gender	No Nomophobia	Mild Nomophobia	Moderate Nomophobia	Severe Nomophobia	Total
Male	11 (1.4%)	153 (20.2%)	473 (62.3%)	122 (16.1 %)	759 (100 %)
Female	6 (0.9%)	125 (19.5)	373 (58.2%)	137 (21.4 %)	641 (100 %)
Total	17(1.2%)	278 (19.9%)	846 (60.4%)	259 (18.5 %)	1400 (100 %)

Out of 1400 participants 60.1% of participants started using mobile phone at the age between 14 – 18 years and 4.9% started using mobile phone before 14 years of age [Table 4].

Table 4: Distribution of students based on the usage of mobile across age

Age at which started using smart phone	Numbers	Percentage %
<14 yrs	70	4.9
14-18 yrs	940	60.1
19-22 Yrs	476	34
>22 yrs	14	1
Total	1400	100

About 48.2% were using their phones for more than 3 hrs per day, 40.6 % were using for 4-6 hours and 5.4 % use mobile phones for more than 10 hours. Our results showed duration of mobile phone usage was directly proportional to nomophobia with statistical significance ($\chi^2 = 8.043$, $P < 0.005$) [Table 5].

Table 5: Distribution of nomophobia on duration of mobile use per day

Mobile Phone Used (hrs/day)	Numbers	Percentage (%)
<3 Hrs	675	48.2
4-6 Hrs	569	40.6
7-9 Hrs	84	6
>10 Hrs	72	5.4
Total	1400	100%

Around 77.71 percent of participants used their mobile phones to speak with friends and family members, 75.17 % for social media, and 74.14 % for listening music, which were the most common purpose for using mobile phones [Figure 2].

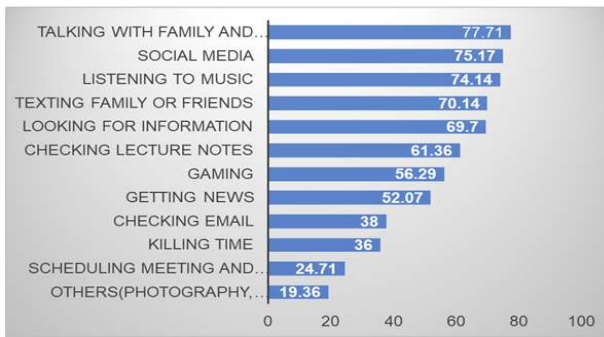


Figure 2: Purpose for mobile use

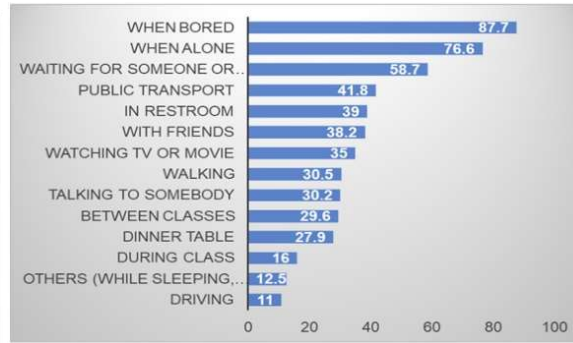


Figure 3: Context of mobile usage

Whereas, about 87.7 % students were using mobile phones when they got bored, 76.6 % when they were alone and 58.7 % when they were waiting for someone, which were the most common contexts for using mobile phones [Figure 3]. Out of all nomophobics 1383 (i.e. 98.8 %), 751 (54.8 %) had depressive symptoms in which 188 (13.4 %) had mild depression, 309 (22.7 %) had moderate, 154 (11.6 %) had severe and 100 (7.1 %) had extreme depression. These findings were highly statistical significant (P- 0.000) and positive correlation (0.332) was seen between nomophobia and depression [Table 6].

Table 6: Association between nomophobia and depression

Nomophobia categories	Normal	Mild	Moderate	Severe	Extreme Severe	Total
Mild	132	58	72	10	06	278
Moderate	353	157	178	120	38	846
Severe	147	31	59	56	56	259
Total	632	188	309	100	100	1383

Pearson’s correlation = 0.332, P = 000, statistically significant.

Out of 98.8% nomophobics (1383), 914 (65.8%) had anxiety symptoms. Results showed that there was statistically significance (P-000) and positive correlation (0.340) was found between nomophobia and anxiety [Table 7].

Table 7: Association between nomophobia and anxiety

Nomophobia categories	Normal	Mild	Moderate	Severe	Extreme Severe	Total
Mild	208	38	22	06	04	278
Moderate	186	68	257	54	281	846
Severe	75	11	24	98	51	259
Total	469	117	303	158	336	1383

Pearson’s correlation = 0.340, P = 000, statistically significant.

There was a highly statistically significant association found between nomophobia and stress in which (P-0.01) and had positive correlation (0.339), among 1383 nomophobics (98.8%) 514 (36.7%) had stress symptoms [Table 8].

Table 8: Association between nomophobia and stress

Nomophobia categories	Normal	Mild	Moderate	Severe	Extreme Severe	Total
Mild	185	46	31	16	00	278
Moderate	538	125	102	29	12	846
Severe	146	20	60	56	17	259
Total	869	191	193	101	29	1383

Pearson’s correlation = 0.339, P = 0.01, statistically significant.

Out of 1383 (98.8%) nomophobics 553 (39.5%) had poor quality of sleep and 830 (60.5%) have normal sleep quality. This findings were statistical significance (P-000) and positive correlation (0.211) was found between nomophobia and sleep quality [Figure 4].

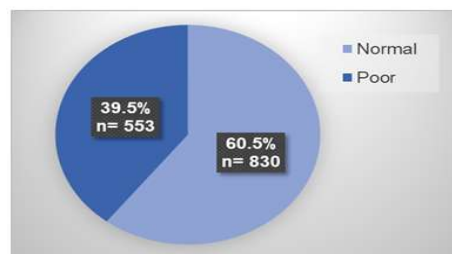


Figure 4: Association between nomophobia and quality of sleep

DISCUSSION

Our study constituted 54.2 % males and 45 % females which was similar findings reported by Khilnani *et al.* wherein male and females percentage was 58% and 42 % respectively.⁷ The prevalence of nomophobia in our study was 98.8 % with mild (19.9%) moderate (60.4%) and severe (18.5%) which was in accordance to Madhusudan M *et al.* reported that 97% of students were nomophobic among which 33.3% mild nomophobic, 56.2% moderate nomophobic and 7.5% severe nomophobic.⁸ Another study by Aparna kanmani *et al.* shows that the prevalence of nomophobia was 98.3% among which 41.6% mild nomophobic, 42% moderate nomophobic and 15.2 severe nomophobic.⁹ The prevalence of nomophobia was higher in male participants (58%) when compared to the female participants(42%) in our study these findings are in concurrence with reports of Pavithra MB *et al.* wherein the number of nomophobes were higher in males i.e. 44.8%) when compared to females i.e. 33.7%.¹⁰ In this study, it was found that severe nomophobia prevalence was higher among females(21.4%) than males (16.1%) which is in accordance by study conducted by Aparna kanmani *et al.* were the prevalence of severe nomophobia in females was (15.5%) when compared to males (14.7%).⁹ In our study, out of 1400 participants, 60.1% of participants started using mobile phone in the age between 14 – 18 years and 4.9% started using mobile phone before 14 years of age. More than 54% of participant began using their mobile phone before the age of 18 years in our study. In another study which is conducted by Soumitra Sethia *et al.* found that 54.5% of participants started using mobile phone in the age between 14-18 years and 3.1% before 14 years and majority of participants (57%) started using their mobile phones before 18 years.¹¹ In the present study duration of mobile phone usage revealed that 48.2 % were using their phones for more than 3 hrs per day, 40.6 % were using for 4-6 hours and 0.8 % used mobile phones for more than 12 hours. More the duration of mobile phone used per day more the nomophobia was seen (P<0.005). Pavithra MB *et al.* reported that 48% responded that they use mobile phones more than 3 hrs per day followed by 16 % 3-5 hours and 5 % less than 5 hours a day. Scores of nomophobic found much higher among students who used more than three hrs of mobile phones compared with students who used less than three hrs per day (P<0.05). The most common purpose for the use of mobile phone in our study was talking with family and friends 77% followed by social media 75%, listening to music 74.14% and texting family and friends 70.14% which was similar to findings of other studies. the findings of Pallabi Dasgupta *et al.* revealed that the most common purpose for the use of mobile phone was talking or texting family or friends (92.5%) followed by listening to music (90%) and

social media by (84%).¹² In our study the most common context during which they used mobile phone are when bored (87.7%) followed by alone (76.6%), waiting for others (58%) and public transport (41.8%). Pallabi Dasgupta *et al.* reported 92% of subjects uses mobile phone when they are alone (92%), 70.5% when they are waiting for others and 42.6% on public transport.¹² In this study 39.5% of participants were having poor quality of sleep according to PSQI scale. However, Nida Nowreen *et al.* reported poor sleep quality about in about 62.7% of subjects with positive correlation (0.122) between Nomophobia and poor quality of sleep (P=0.000).¹³ Literature study delineated that the excessive use of mobile phone may impair construction of sleep such as by reducing rapid eye movement (REM) sleep, slow wave sleep, and sleep efficiency.¹⁴ Another study reported by Thomee S *et al.* showed that excessive use of mobile phones may cause physical discomfort and headaches that may affect sleep negatively.¹⁵

CONCLUSIONS

In conclusion, nomophobia was highly prevalent among the engineering students who are above 18 years with male predominance. The prevalence of severe nomophobia was predominant in females. The duration of mobile phone usage was directly proportional to prevalence of nomophobia. Furthermore, nomophobia was strongly associated with behavioural issues viz. depression, anxiety and stress, with adverse impact on quality of sleep.

Limitations of the study

Nomophobia is a widely spread issue, therefore it is difficult to generalize a study of 1400 to the whole population. Also, all the study participants were student of engineering and may not cover the entire population. Longitudinal studies with higher sample size with respect to different backgrounds in education and age are much needed to understand more about this particular problem.

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