

RESEARCH ARTICLE

A study to evaluate the behavioral dimensions of “Nomophobia” and attitude toward smartphone usage among medical students in Bengaluru

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ABSTRACT


Background: Smartphones have become the most popular electronic gadgets in India and student communities across the country have been in awe of these devices. Medical students have found profound applications of smartphones in their course besides the primary purpose of communication. With the ever-increasing utilization of smartphones, several psychological and behavioral problems have emerged. Among them, nomophobia has been one of the alarming constructs. **Aims and Objectives:** This study aims to estimate the prevalence of nomophobia among medical students, to evaluate the sociobehavioral determinants of nomophobia, and to explore the behavioral subdimensions of nomophobia along with attitude of medical students toward smartphone usage. **Materials and Methods:** A cross-sectional design was used to conduct the study among the 1st year medical students of a private medical college in rural Bengaluru. Data were collected using pretested questionnaire and analyzed using Microsoft Excel 2010 and SPSS software (Version 24). **Results:** In the current study, majority of the subjects were frank nomophobics (86.9%), 13% were at risk of developing nomophobia, and only 7.6% were normal. It revealed “annoyance for not being able to use smartphone, clinging to phone all the time, feeling stressed if not using the phone, knowing the adverse impact on academic performance, sleep deprivation, and compulsiveness for taking calls while studying” as the most recurring responses in terms of psychological and behavioral attributes of nomophobia. There was a statistically significant association between gender and nomophobia ($P = 0.003$) and also between perceived smartphone addiction and nomophobia ($P = 0.0001$). **Conclusion:** The current study supports the trend toward increased prevalence of nomophobia among medical students. In addition, nomophobia has shown a female preponderance. The present study also highlights the evolving psychological and behavioral dimensions among smartphone users such as compulsiveness, annoyance, stress, poor academic performance, and clinginess to smartphones.

KEY WORDS: Attitude; Behavioral Dimensions; Medical Students; Nomophobia; Smartphone

INTRODUCTION

Smartphones have become quintessential possessions of modern youth. Smartphone has become more attractive than

a regular mobile phone due to the integration of advanced features. Student communities all over the world are not exempt from the ever-increasing influence of smartphones. Medical students are also in awe of this popular gadget and find smartphones useful in different spheres of their professional and personal lives. With the growing popularity of smartphones, especially among the youth, there have been reports of smartphone abuse/misuse or problematic use which have become a cause of considerable concern. Of the multitude of problems arising out of smartphone addiction, nomophobia is relatively newer and is defined as “the feeling

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of discomfort or anxiety experienced by individuals when they are unable to use their mobile phones or utilize the affordances these devices provide.^{2[1-3]} It is described as a form of situational phobia by Lin *et al.*^[4] and its inclusion in the diagnostic and statistical manual of mental disorders, 5th edition has been recommended.^[5,6] Nomophobia is also defined as a separation anxiety from smartphone and that it makes the user seek proximity with the phone.^[7] Literature survey showed limited data regarding nomophobia although the disorder has been identified among smartphone users. Medical students form a large group claiming smartphone ownership. Having joined the professional medical course, usage of smartphones seems to be on the rise given the vast application of such devices.^[8] The social, situational, behavioral, and environmental antecedents of nomophobia have been the subjects of controversy. The present study was undertaken to estimate the prevalence of nomophobia among medical students, to evaluate the sociobehavioral determinants of nomophobia, and to explore the behavioral subdimensions of nomophobia along with attitude of medical students toward smartphone usage.

MATERIALS AND METHODS

Study Setting

The study was conducted at a private medical college in rural Bengaluru.

Study Population

The 1st year medical students aged >16 years of both genders who gained admission through competitive examinations were invited to participate in the study.

Study Period

The study period was from December 2017 to April 2018 (5 months).

Type of Study

This was a cross-sectional study.

Inclusion Criteria

All the 1st year medical students >16 years of age and using smartphones for a period of at least 12 months were included in the study.

Exclusion Criteria

Those who were not willing to give consent and those who were using smartphones for <12 months were excluded from the study.

All the 150 1st year medical students, in accordance with the annual intake of the college, were invited to participate in the study. 145 students fulfilling inclusion criteria constituted the study population. Informed written consent was obtained from the participants.

Study Tools

A pretested questionnaire was distributed among the students. It consisted of two segments. The first segment consisted of basic sociodemographic data such as age, gender, place of origin, relationship status, and perceived self-addiction to smartphones (operational definition: Usage >3 h/day). The second segment consisted of 19 questions based on studies conducted by Yildirim and Correia, in 2015, in Turkey^[9] and Ramudu *et al.*, in 2015, in India.^[10] The first 11 questions assessed nomophobia and the remaining eight evaluated the attitude of students toward smartphone usage. The questions assessed the following responses: (1) Frequency of usage while at work, (2) frequent smartphone checking for feeds during work, (3) anticipation of a timely reply, (4) anxiety over drainage of battery or loss of network signal, (5) anger over not being able to use the smartphone when desired, (6) restlessness for not being up to date with the latest in technology, (7) paying close attention to placement of phone, (8) panic about reaching data limit early, (9) urgency to attend phone calls, (10) feeling stressed out when separated from the phone for a long time, (11) spending long hours on phone calls, (12) having the insight of a poor academic performance with excessive smartphone usage, (13) sleep deprivation due to smartphone usage at night, (14) answering phone calls while studying or doing clinical work, (15) using smartphones as clinical or study aids, (16) hardly using mobile phones for academic material, (17) getting distracted during examinations, (18) knowing the fact that mobile phones encourage fraudulent practices during examinations, and (19) using smartphones to avert loneliness in public places. Each question was mandatory. The responses were graded on a 5 point Likert scale from strongly disagree (1) to strongly agree (5). The score >40 was categorized under nomophobia, 34–39 score - at risk of nomophobia, and <34 score - normal.

Ethical clearance for the study was granted by the Institutional Ethical Committee.

Statistical Analysis

Data were collected and analyzed using Microsoft Excel 2010 and SPSS software (Version 24). Descriptive statistics were used to tabulate baseline characteristics of the study population. Sociodemographic variables were presented using frequency table. The prevalence of nomophobia was described in percentage. Chi-square test was employed to analyze the association between two categorical variables and $P < 0.05$ was considered statistically significant.

RESULTS

The study consisted of 150 students, out of whom 145 satisfied inclusion criteria. Majority were under 20 years (98%). Females were in larger numbers (61.3%) compared to males (38.6%). Most of the students hailed from rural areas (62.7%). Majority of the students (84.1%) were not in a committed relationship. Large number of students had a perceived self-addiction to smartphones (71%) [Table 1].

In the current study, with respect to the prevalence of nomophobia, majority of the subjects came under the category of frank nomophobia (86.9%). About 13% were at risk of developing nomophobia and only 7.6% were normal. The prevalence of nomophobia among females was greater (64.2%) than that in males (35.7%) [Table 2].

There was a statistically significant association between gender and nomophobia ($P = 0.003$) and also between perceived smartphone addiction and nomophobia ($P = 0.0001$) [Table 1].

In the present study, 33.8% agreed having frequently used smartphone while at work. Majority (81.4%) disagreed that they checked for feeds while the classes were going on. Around 63.4% did not feel anticipation for a timely reply. Many students (45.5%) felt no anxiety over drainage of battery or loss of network signal. Majority (57.9%) expressed anger over not being able to use the smartphone when desired. Most of the students (63.4%) reported no restlessness for not being up to date with the latest in technology. Nearly 46% kept smartphone with them all the time. Only 21.4% expressed panic about reaching data limit early. As little as, 27.6% felt urgency in attending phone calls. As much as, 47.6% reported feeling stressed out when separated from the phone for a long time. Only 15.2% of students accepted spending long hours on phone calls. Majority (51%) agreed that academic performance was affected by excessive smartphone usage. About 40.7% of students complained of sleep deprivation due to smartphone usage at night. As much as, 42% were into the habit of answering phone calls

while studying or doing clinical work. Only 33% were using smartphones as clinical or study aids. Majority (51.7%) were using smartphones to download academic material. Some students (39.3%) reported getting distracted during examinations. Most of the students (51.7%) knew that mobile phones encourage fraudulent practices during examinations. Majority (75.2%) reported to have used smartphones to avert loneliness in public places [Table 3].

DISCUSSION

In the present study, the prevalence of nomophobia among medical students along with behavioral dimensions of nomophobia and attitude toward smartphone usage were evaluated. The results revealed that around 87% were nomophobic, 13% were at risk of nomophobia, and 7.6% were normal. Nomophobia was greater in females (64.28%) than males (35.71%). The present study showed a significant association between gender and nomophobia and also a correlation between perceived self-addiction to smartphones and nomophobia. The current study showed “annoyance for not being able to use the smartphone, clinging to phone all the time, feeling stressed if the phone was not used for a week, knowing the adverse impact on academic performance, sleep deprivation, and compulsiveness for taking calls while studying, knowledge of the fraudulent practices with smartphones and using smartphones to avert loneliness” as the most recurring responses in terms of psychological and behavioral attributes of nomophobia.

The prevalence of nomophobia in the present study was more compared to studies from different parts of the globe which were between 35% and 73%.^[11-13] The higher prevalence rate in the current study could be due to the affordability and easy access to internet packages, opening up the worldwide web throughout the day, making it irresistible for the students to give up smartphone usage. The prevalence in the present study is higher among females which is consistent with studies conducted by Gezgin and Cakir.^[14] However, there was no

Table 1: Sociodemographic characteristics of the study population and association with nomophobia

| Sociodemographic variables | Response | Frequency (%) | Chi-square test* |
|----------------------------|---------------|---------------|------------------|
| Age (in years) | ≤20 | 142 (98) | $P=0.224$ |
| | >20 | 3 (2) | |
| Gender | Male | 56 (38.6) | $P=0.003$ |
| | Female | 89 (61.3) | |
| Place of origin | Urban | 54 (37.2) | $P=0.584$ |
| | Rural | 91 (62.7) | |
| Perceived self-addiction | Yes | 103 (71.1) | $P=0.0001$ |
| | No | 42 (28.9) | |
| Relationship status | Committed | 23 (15.8) | $P=0.446$ |
| | Non-committed | 122 (84.1) | |

* $P<0.05$: Statistically significant

significant difference in terms of gender in a study conducted by Dixit *et al.*^[8] The current study does not generalize the prevalence of nomophobia among medical students. However, the results do indicate an increasing trend toward addiction to smartphone usage and the emergence of associated psychobehavioral problems.^[15] These findings are consistent with a study conducted among 475 adolescents in Turkey by Gezgin and Cakır which reported higher nomophobic scores with smartphone addiction.^[14] Yet, another study conducted by Kuss and Griffiths,^[16] supported the association between mobile phone addiction and the construct of nomophobia. Similar findings were reported by a study conducted in the United Kingdom on 2163 participants.^[17] Another study by Subba *et al.*^[18] reported that medical students suffered from ringxiety and would use their phones even at restricted times and places such as classrooms and practical laboratories. However, contrary to the current study, a negative association between mobile phone usage and academic performance was reported by several studies.^[19-21]

Table 2: Prevalence of nomophobia

| Gender | Score, n (%) | | |
|---------|---------------|------------------|-------------------|
| | Normal <34 | At risk 34–39 | Nomophobia >40 |
| Males | 4 (36.3) | 7 (87.5) | 45 (35.71) |
| Females | 7 (63.6) | 1 (12.5) | 81 (64.28) |
| Total | 11 (7.5) | 8 (5.5) | 126 (86.8) |

Strengths and Limitations

The present study has been substantial in creating awareness about nomophobia, its behavioral dimensions along with attitude toward smartphone usage. The awareness could motivate students, teachers, and family members alike to take up corrective strategies so that nomophobia does not make way for a potential psychological disorder which might jeopardize students' future.

As the study was conducted on a convenient sample of medical students, it may not serve as a proxy to general student community. Further, various applications of smartphones in academic, clinical, and social contexts and their influence on the psychobehavioral aspects of students should be considered for extended research. Apart from questionnaire studies, experimental studies can be taken up to understand the causality of various factors on nomophobia.

CONCLUSION

In the technology-driven modern society, medical students too have fallen prey to nomophobia and the current study supports the trend toward increased prevalence of nomophobia among medical students. In addition, nomophobia has shown a female preponderance. The present study also highlights the evolving psychological and behavioral dimensions among smartphone users such as compulsiveness, annoyance, stress,

Table 3: Behavioral dimensions of nomophobia and attitude toward smartphone usage

| Study variables | Q. No. | Behavioral dimensions | Response, n (%) | | |
|----------------------------------|--------|--|----------------------------|-----------|----------------------|
| | | | Disagree/strongly disagree | Neutral | Agree/strongly agree |
| Nomophobia | 1 | Frequent usage | 50 (34.5) | 46 (31.7) | 49 (33.8) |
| | 2 | Frequent checking | 118 (81.4) | 17 (11.7) | 10 (6.9) |
| | 3 | Anticipation | 92 (63.4) | 25 (17.2) | 28 (19.3) |
| | 4 | Anxiety | 66 (45.5) | 32 (22.1) | 47 (32.4) |
| | 5 | Annoyance | 40 (27.6) | 27 (18.6) | 84 (57.9) |
| | 6 | Restlessness | 92 (63.4) | 30 (20.7) | 23 (15.9) |
| | 7 | Clinging to smartphone | 49 (33.8) | 28 (19.3) | 67 (46.2) |
| | 8 | Panic | 67 (46.2) | 47 (32.4) | 31 (21.4) |
| | 9 | Urgency | 77 (53.1) | 28 (19.3) | 40 (27.6) |
| | 10 | Feeling stressed out | 48 (33.1) | 28 (19.3) | 69 (47.6) |
| | 11 | Spending long hours on phone | 113 (7.9) | 10 (6.9) | 22 (15.2) |
| Attitude toward smartphone usage | 12 | Adverse impact on academic performance | 45 (31) | 33 (22.8) | 74 (51) |
| | 13 | Sleep deprivation | 64 (44.1) | 26 (17.9) | 59 (40.7) |
| | 14 | Answering phone calls while studying | 51 (35.2) | 35 (24.1) | 61 (42.1) |
| | 15 | Using smartphones as study aids | 74 (51) | 23 (15.9) | 48 (33.1) |
| | 16 | Hardly using smartphones for academic purposes | 75 (51.7) | 32 (22.1) | 38 (26.2) |
| | 17 | Getting distracted during examinations | 63 (43.4) | 25 (17.2) | 57 (39.3) |
| | 18 | Knowledge on smartphone malpractices | 43 (28.4) | 27 (18.6) | 75 (51.7) |
| | 19 | Using smartphones to avert loneliness | 20 (13.8) | 16 (11) | 109 (75.2) |

poor academic performance, and clinginess to smartphones. Creating awareness about nomophobia and its associated behavioral problems among students and educators will be helpful in implementing strategies to combat ill effects of smartphone usage like nomophobia and strengthen the means to put smartphones to effective use.

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