

Original Article**Nomophobia and Smartphone Usage Patterns among Medical Students at a Tertiary Care Medical College in Eastern Nepal****Alok Acharya¹, Rimu Mishra¹, Ava Pokhrel¹, Surya Raj Niraula², Kritika Shreewastav³**¹Department of Community Medicine, Nobel Medical College Teaching Hospital, Biratnagar, Nepal²College of Health and Human Sciences, Texas Tech University, Lubbock, USA³Patan Academy of Health Sciences, Lalitpur, NepalArticle Received: 16th April, 2026; Accepted: 20th June, 2026; Published: 30th June, 2026**DOI:** <https://doi.org/10.3126/jonmc.v15i1.96429>**Abstract****Background**

Nomophobia, the fear of being without a mobile phone, is increasingly common among university students. Medical students may be particularly vulnerable due to their reliance on smartphones for academic and personal purposes. This study assessed the prevalence and associated factors of nomophobia among MBBS students.

Materials and Methods

A cross-sectional study was conducted among 183 MBBS students selected through stratified random sampling. Data was collected using a structured questionnaire incorporating the Nomophobia Questionnaire (NMP-Q). Bivariate and multivariable logistic regression analyses were performed.

Results

Mild, moderate, and severe nomophobia were observed in 47%, 40%, and 10% of participants, respectively. Students aged 21–26 years and those in higher academic years were more likely to have moderate-to-severe nomophobia. Participants used mobile phones during idle periods, particularly when bored (92.9%), alone (85.2%), or waiting for someone (80.9%). Large number of participants (61.2%) reported using phones immediately after waking up. Lower daily smartphone use (≤ 3 hours), fewer daily messages (≤ 20), and fewer installed applications (< 25) were associated with lower odds of nomophobia.

Conclusion

Nomophobia was highly prevalent among undergraduate medical students and was associated with age and academic year. Lower daily smartphone use, fewer daily messages, and fewer installed applications were inversely associated with nomophobia. Smartphone usage pattern was primarily communication- and study-oriented, with frequent use during idle moments, particularly when bored, alone, waiting, or immediately after waking.

Keywords: *Logistic regression, Prevalent, Smartphone, Students, Undergraduate*

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Introduction

Nomophobia is defined as the fear or anxiety of being without a mobile phone [1]. A cross-sectional study was conducted to find out prevalence of nomophobia and smartphone usage patterns among medical students in different academic phase at a tertiary care medical college in Eastern Nepal.

Nomophobia is prevalent all over the world, mostly among young adults and college students [2]. Studies in India have reported increased prevalence and severity of nomophobia among undergraduate students that is showed by frequent smartphone use, messaging habits, and social media engagement [3-6]. Studies have highlighted that reliance on smartphones for educational purposes further increase vulnerability among medical students due to academic pressure and prolonged study hours [7]. Past study in India also emphasized that increased usage of smartphones leads to development of serious disorder among medical undergraduates that warrants attention [8]. Studies among health-care workers in Nepal show significant levels of nomophobia, suggesting that digital dependency extends beyond students [9]. Nomophobia is linked to a form of behavioral addiction, due to its compulsive use and anxiety when disconnected [10, 11]. However, studies in similar settings, particularly among MBBS undergraduate students, are lacking.

This study was conducted to determine the prevalence of nomophobia, assess smartphone usage patterns, and identify factors associated with nomophobia among undergraduate medical students at a tertiary care teaching institution in Eastern Nepal.

Materials and Methods

A cross-sectional study was conducted among undergraduate MBBS students at a tertiary care medical college in Eastern Nepal from 15 December 2025 to 15 March 2026. The study population consisted of 400 students, with 100 students in each academic year from first to fourth year. Ethical approval was obtained from the Institutional Review Committee (Ref No. IRC-NMCTH:73/2025). Written informed consent was obtained from all participants prior to data collection. Participant confidentiality was strictly maintained, and participation was entirely voluntary, with the option to withdraw at any stage without any consequences. The sample size was

calculated using the single population proportion formula ($n = Z^2pq/L^2$) at a 95% confidence level, assuming a prevalence of nomophobia of 83.6% (moderate and severe nomophobia) from a previous study [6]. Sample size was calculated using the single population proportion formula: $n = Z^2pq/L^2$, Where: $Z = 1.96$ at 95% confidence level, $p = 83.6\% = 0.836$, $q = 1 - p = 0.164$ and permissible error, $L = 5\%$ of prevalence (relative precision) $= 0.05 \times 0.836 = 0.0418$. The sample size calculated as $n = 301.43 \approx 301.4$. Based on the finite population ($N = 400$), the corrected sample size was calculated using $n_f = n / [1 + (n - 1)/N]$ which yielded 172.14. Adding 10% for anticipated non-response and incomplete questionnaires, the final sample size was $189.35 \approx 190$. To ensure equal allocation across the four academic years and facilitate stratified random sampling, the sample size was rounded up to 192 participants, resulting in 48 students from each academic year. The study variables included nomophobia score, demographic characteristics, academic year, duration and frequency of smartphone use, number of messages sent per day, and number of applications used. Students who were regular MBBS undergraduates, had used a smartphone for at least six months, were present during data collection, and provided written informed consent were included in the study. Data were collected in the MBBS lecture hall in four separate sessions using a structured self-administered questionnaire, including the Nomophobia Questionnaire (NMP-Q), a validated 20-item instrument scored on a seven-point Likert scale. The pooled internal consistency reliability of the NMP-Q has been reported as 0.93 (95% CI: 0.91–0.95) [7]. The questionnaire was reviewed by three experts (one psychiatrist and two epidemiologists) and pretested among a separate group of students who were not included in the study population. NMP-Q scores were categorized as no nomophobia (score 20), mild (21–59), moderate (60–99), and severe (100–140). Ethical approval was obtained from the Institutional Review Committee (Ref No. IRC-NMCTH:73/2025). Written informed consent was obtained from all participants before data collection. Participant confidentiality was strictly maintained, and participation was entirely voluntary, with the option to withdraw at any stage without any consequences.

Data was entered into Microsoft Excel and analysed using IBM SPSS Statistics version 27.0.



Overall, 5% of participants either did not respond or had incomplete questionnaire responses and were therefore excluded from the final analysis, resulting in a total of 183 participants. Descriptive and inferential statistical analyses were performed to determine associations between study variables and levels of nomophobia. Demographic characteristics and smartphone usage patterns were presented using tables and figures. Bivariate and multivariable logistic regression analyses were performed. The model fitness was assessed using the Hosmer–Lemeshow goodness-of-fit test and pseudo- R^2 measures. Statistical significance was set at $p < 0.05$. Scores were interpreted as no nomophobia (20), mild (21–59), moderate (60–99), and severe (100–140).

Results

A total of 183 participants (93 males, 90 females) were included. Females were predominantly aged 18–21 years (57.8%), while most males were aged 22–26 years (67.7%). Females were mainly in early undergraduate years (62.2%), whereas males were mostly in later years (59.1%). Most participants reported checking their mobile phones more than 10 times daily, with slightly higher frequency among males (75.3%) than females (67.8%). Mobile data access was commonly available among both males (62.4%) and females (68.9%) at the time of survey. Prevalence of nomophobia among the medical undergraduates was found as mostly mild nomophobia (47%), moderate nomophobia (40%) and severe nomophobia was observed only among 10% of participants, while only 3% had absence of nomophobia (Figure 1).

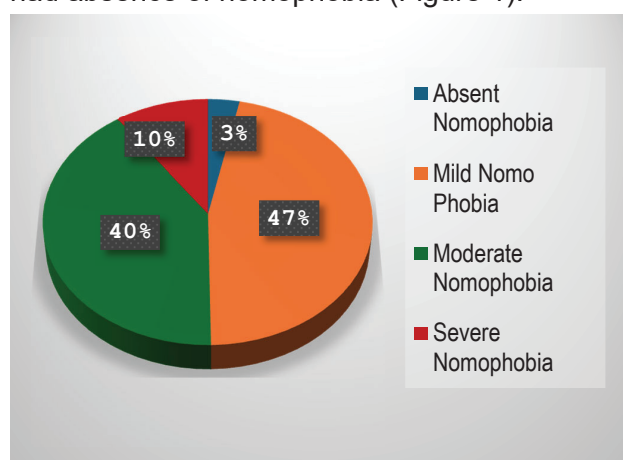


Figure 1: Prevalence of nomophobia among medical students (n=183)

Smartphone was primarily used for communication and social interaction. The majority used smartphones for communicating with family and friends (95.1%) and for social media engagement (94.5%). Academic and informational purpose usage were also prominent, including studying (91.3%) and internet searching (90.7%). Additional uses included listening to music (90.7%) and texting (86.9%), while fewer participants used phones for news (64.5%) or killing time (54.6%), suggesting functional rather than passive use. Participants used mobile phones during idle periods, particularly when bored (92.9%), alone (85.2%), or waiting for someone (80.9%). A substantial proportion (61.2%) reported using phones immediately after waking up.

Table 1. Shows the bi-variate analysis of factors associated with levels of nomophobia among the study participants. Participants aged 21–26 years had significantly higher odds of moderate to severe nomophobia compared to those aged 18–20 years (OR=3.76, 95% CI: 1.58–8.91, $p=0.002$). Similarly, students in the 3rd–4th academic years showed a significantly greater likelihood of experiencing moderate to severe nomophobia than those in the 1st–2nd years (OR=2.27, 95% CI: 1.25–4.11, $p=0.006$). Average daily smartphone usage hours (screen time) were also significantly associated with nomophobia. Participants who used smartphones for more than 3 hours daily were more likely to report moderate or severe nomophobia compared to those using smartphones for 3 hours or less (OR=4.19, 95% CI: 1.95–8.96, $p<0.001$). Likewise, students sending more than 20 messages per day had higher odds of moderate to severe nomophobia than those sending 20 or fewer messages daily (OR=2.81, 95% CI: 1.32–5.99, $p=0.006$).

The number of applications installed on smartphones was another significant factor. Participants having more than 25 applications were significantly more likely to experience moderate to severe nomophobia compared to those with 25 or fewer applications (OR=3.53, 95% CI: 1.82–6.82, $p<0.001$). However, gender was not significantly associated with nomophobia levels (OR=0.90, 95% CI: 0.50–1.60, $p=0.713$). Similarly, years of smartphone use did not show a statistically significant association with nomophobia (OR=0.63, 95% CI: 0.26–1.49, $p=0.295$).

Table 1: Bi-variate analysis of levels of Nomophobia among study Participants (n=183)

Characteristics	Absent or Mild Nomophobia	Moderate or Severe Nomophobia	Odds ratio (95% CI)	Significance
Age Group				
18-20 Years	24 (75.0%)	8 (25.0%)	3.76 (1.58-8.91)	$\chi^2=9.91$
21-26 Years	67(44.4%)	84(55.6%)	0.90 (0.50-1.60)	P=0.002
Gender				
Male	45 (48.4%)	48 (51.6%)	0.90 (0.50-1.60)	$\chi^2=0.14$
Female	46(51.1%)	44(48.9%)		P= 0.713
Academic Years				
1-2 Years	56(59.6%)	38(40.4%)	2.27 (1.25-4.11)	$\chi^2=7.50$
3-4 Years	35(39.3%)	54(60.7%)		P=0.006
Years of smartphone use				
< 3 Years	10(40.0%)	15(60.0%)	0.63 (0.26-1.49)	$\chi^2=1.10$
≥ 3 Years	81(51.3%)	77(48.7%)		P=0.295
Average hours spent on smartphone				
≤3 hours	33(75.0%)	11 (25.0%)	4.19 (1.95-8.96)	$\chi^2=14.80$
> 3 hours	58 (41.7%)	81(58.3%)		P <0.001
Number of messages sent per day				
≤ 20 messages	27 (69.2%)	12 (30.8%)	2.81 (1.32-5.99)	$\chi^2=7.54$
> 20 messages	64 (44.4%)	80(55.6%)		P=0.006
Number of Applications in Smartphone				
≤ 25	42(70.0%)	18 (30%)	3.53 (1.82-6.82)	$\chi^2=14.68$
>25	49 (39.8%)	74 (60.2)		P<0.001

Table 2. Shows the multivariable logistic regression analysis of factors independently associated with moderate to severe nomophobia among the study participants. After adjustment for potential confounding variables; age group, average daily smartphone use (screen time), number of messages sent per day, number of applications in smartphone remained significantly associated with nomophobia. Participants aged 18–20 years had significantly lower odds of moderate to severe nomophobia compared to those aged 21–26 years (AOR=0.33, 95% CI: 0.12–0.94, p=0.038), indicating that older students were more likely to experience higher levels of nomophobia. Similarly, participants who used smartphones for 3 hours or less per day had significantly lower odds of moderate to severe nomophobia compared to those using smartphones for more than 3 hours daily (AOR=0.27, 95% CI: 0.12–0.63, p=0.002). This suggests that prolonged hours of smartphone use are associated with nomophobia. However, years of MBBS study (1–2) vs (3–4) was not significantly associated with nomophobia after adjustment (AOR=0.56, 95% CI: 0.26–1.18, p=0.128). Likewise, sex (AOR=0.79, 95% CI: 0.39–1.59, p=0.499) and years of smartphone use (AOR=1.92, 95% CI: 0.67–5.44, p=0.222) did not show statistically significant as-

sociations with moderate to severe nomophobia in the multivariable model.

Table 2: Multivariable Logistic Regression Analysis of Factors Associated with Moderate to Severe Nomophobia (n = 183)

Variable	Catego-ry	Adjusted Odds Ratio (AOR)	95% Confidence Interval	p-value
Age group (years)	(18–20) vs (21–26)	0.33	0.12–0.94	0.038*
Years of MBBS study (years)	(1–2) vs (3–4)	0.56	0.26–1.18	0.128
Sex	Male vs Female	0.79	0.39–1.59	0.499
Years of smartphone use (years)	<3 vs ≥3	1.92	0.67–5.44	0.222
Average daily smartphone use (hours)	≤3 vs >3	0.27	0.12–0.63	0.002*
Messages sent per day	≤20 vs >20	0.38	0.15–0.95	0.038*
Number of apps installed	≤25 vs >25	0.25	0.12–0.53	<0.001*

-2 Log likelihood = 206.092,
Cox & Snell R²=0.229,
Nagelkerke R² = 0.305
Hosmer and Lemeshow χ^2
=9.454, P=0.305

*Statistically significant (p < 0.05)

Discussion

The undergraduate medical students in this study had mostly mild nomophobia among 47%, moderate nomophobia 40%, while only 10% were found to have severe nomophobia. The findings are consistent to global systematic evidence indicating that nomophobia is widespread among young adults and university students [2]. Studies in similar settings showed that moderate level of nomophobia was highly prevalent among medical students in India [3-6]. This study finds out that smartphone use was frequent and multifunctional, as participants primarily used them for messaging, social media, academic activities, and internet browsing. The study participants reported use of smartphones for messaging (95.1%) and social media use (94.5%), indicating that smartphone use was mostly for communication. Studies in India in similar settings also found that messaging and social networking were identified as major contributors to nomophobia among medical students, describing the central role of smartphones in maintaining social connectivity and academic engagement [4, 5]. Behavioral patterns of smartphone use observed in this study found that most participants used smartphones when bored, alone, or waiting, and a substantial proportion used them immediate-



ly after waking up. Studies in similar settings as reported by Alagesan et al., found that frequent checking and habitual engagement were predictors of nomophobia rather than functional usage of smartphones [6]. The present study found that students in earlier academic years (1st and 2nd year) were not associated with having moderate and severe nomophobia. Studies in similar settings reported higher levels of nomophobia among senior students were found when compared to juniors and they also described increased academic workload, clinical exposure, and greater dependence on smartphones for accessing learning resources, communication, and clinical decision-making as students' progress through their training in MBBS [12, 13]. However, Kuss and Griffiths have reported that there is no significant association between academic level and nomophobia, showing that related factors like information literacy, environment of the Institution, and patterns of smartphone use may influence this relationship [14].

In this study smartphone usage characteristics such as longer duration of smartphone use, higher messaging frequency, and a greater number of installed applications were significantly associated with moderate to severe nomophobia. These findings are similar with Khilnani et al., who found duration and frequency of smartphone use as significant predictors of nomophobia [15]. Similarly, study of Rodríguez García et al. highlighted that increased engagement with smartphones, particularly for communication and social networking was associated to dependency behaviors [10]. Findings in this study show demographic variables such as gender and duration of smartphone ownership were not significantly associated with nomophobia. The findings were similar with the systematic review by Al-Mamun et al., which reported no associations between demographic variables and nomophobia [2].

The psychological impact of smartphone use has been well documented in the literatures as Smartphone addiction has been associated with anxiety, depression, and stress among university students [16, 17]. Literatures also showed that social networking behaviors reinforce smartphone dependency; Salehan and Negahban also described the addictive nature of smartphone-based social networking [18]. Kuss and Griffiths similarly emphasized the addictive potential of social networking platforms [14].

Lepp et al. found that higher smartphone use is associated with increased anxiety and reduced academic performance, indicating functional impairment [19]. Huang and Mayer demonstrated that anxiety-related features in digital learning environments can influence user engagement and emotional responses [20]. Similarly, study of Samaha and Hawi reported that smartphone addiction is associated with stress and reduced life satisfaction among students [21]. Elhai et al. identified fear of missing out as a mediating factor linking smartphone use with anxiety and depressive symptoms, providing insight into the psychological mechanisms underlying nomophobia [22]. The study of Yildirim describes nomophobia as involving fear of being unable to communicate, loss of connectedness, and lack of access to information [11]. Literature on smartphone and internet-related behavioral addiction also supports the classification of nomophobia within the spectrum of addictive behaviors [13]. This study has several limitations. This cross-sectional study could not establish causal relationships, only associations. Participants' responses may have been affected by recall bias. However, the study used stratified random sampling with equal proportionate allocation, validated and reliable scales, and multivariable analysis after assessing interaction and multicollinearity, which strengthens the validity and generalizability of the findings.

Conclusion

Mild nomophobia was highly prevalent while severe nomophobia was observed in a smaller proportion. Older students and those in higher academic years were more likely to experience moderate to severe nomophobia. Increased smartphone engagement, including prolonged daily use, frequent messaging, and higher number of installed applications, showed statistically significant association with nomophobia. Smartphone usage pattern was primarily communication- and study-oriented, with frequent use during idle moments, particularly when bored, alone, waiting, or immediately after waking.

Recommendation

Awareness programs, digital well-being strategies, and stress management workshops should be promoted in medical colleges. Counseling support and balanced academic use of smartphones are essential. Further multi-center stud-



ies are recommended to explore long-term effects and proceed for targeted interventions.

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Conflict of interest

The authors declare that they have no conflict of interest.

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