

Original Research Article

Prevalence and predictors of nomophobia among undergraduate medical students of a medical college: a cross-sectional study

Inba Raja Alagesan^{1*}, Sayeli Mitra², Suchetana Bhattacharyya³, Paramita Sarkar⁴

¹Department of Community Medicine, Bhaarith Medical College and Hospital, Chennai, Tamil Nadu, India

²Department of Community Medicine, Jagannath Gupta Institute of Medical Sciences and Hospital, Kolkata, West Bengal, India

³Department of Community Medicine, PKG Medical College and Hospital, Kolkata, West Bengal, India

⁴Department of Community Medicine, North Bengal Medical College, Siliguri, West Bengal, India

Received: 21 April 2025

Accepted: 26 May 2025

*Correspondence:

Dr. Inba Raja Alagesan,

E-mail: inbaraja92@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Nomophobia, the fear of being without mobile phone access, is increasingly common among young adults, yet few studies address it among medical students in India. This study evaluated its prevalence and predictors among MBBS students.

Methods: A cross-sectional study was conducted with 280 undergraduate medical students in R.G. Kar Medical College, from August to October 2020. The Nomophobia Questionnaire (NMP-Q) assessed nomophobia levels (absent, mild, moderate, severe). Data on demographics and smartphone use were collected via self-administered Google Forms after obtaining informed consent. Statistical analysis, including descriptive statistics, chi-square tests, and logistic regression, was performed using SPSS.

Results: Of 280 respondents, 152 (54.3%) were males, with overall mean age of 20.81±1.64 years. Day scholars comprised 53.2%, hostel residents were 30%. Nomophobia prevalence was 99.6%, with 53.2% moderate and 30.4% severe cases. No significant associations emerged with gender ($p=0.242$), year of study ($p=0.09$), or place of stay ($p=0.409$). Severe nomophobia was significantly associated to >5 hours/day of mobile use (38.6% vs. 7.1% for <1 hour, $p<0.001$), checking every 5 minutes (41.5% vs. 3.0% for >1 hour, $p<0.001$), and phantom ringing (36.3% vs. 23.9%, $p=0.001$). Logistic regression confirmed frequent checking (OR=13.77, 95% CI: 1.78–106.42, $p=0.012$) and phantom ringing perception (OR=1.87, 95% CI: 1.12–3.14, $p=0.017$) as predictors.

Conclusion: Nomophobia affects nearly all medical students, driven by heavy mobile use and frequent checking. Interventions targeting usage habits are needed.

Keywords: Nomophobia, Prevalence, Predictors, Smartphone use, Medical students

INTRODUCTION

Nomophobia, defined as the anxiety or fear of being without mobile phone access, has emerged as a modern psychological challenge, particularly among young adults immersed in digital technology. It involves emotional distress, cognitive preoccupation, and behavioral dependence on smartphones, impacting daily functioning.¹ Globally, studies report nomophobia prevalence ranging from 70% to 90% among university

students, with excessive smartphone use linked to reduced academic performance and mental well-being.²

In India, where smartphone penetration exceeds 80% among the youth, nomophobia poses a unique challenge within the context of a digitally connected yet resource-stretched healthcare education system.³ With a doctor-patient ratio of 1:1456 against the World Health Organization's recommended 1:1000, Indian medical students face intense academic and clinical pressures, often relying on smartphones for learning and

communication.⁴ For MBBS students, who encounter over 30 patient interactions weekly during clinical postings as per National Medical Commission (NMC) guidelines, excessive smartphone reliance may foster nomophobia, potentially disrupting focus and patient engagement.⁵ Lack of awareness about nomophobia's impact can exacerbate stress and hinder professional growth, especially in a country with over 22 official languages and diverse socio-cultural patient backgrounds requiring adaptive communication skills.³

The NMC's Attitudes, Communication, and Ethics (ATCOM) module emphasizes mental health awareness, yet its integration into curricula remains inconsistent, with only 50% of medical colleges effectively implementing it.⁴ Research indicates that nomophobia contributes to anxiety and sleep disturbances among students, yet it is often overshadowed by traditional academic priorities in Indian medical education.⁶ Medical colleges are vital for addressing such emerging issues, but nomophobia among students, particularly its predictors and implications, remains underexplored. This study investigates the prevalence and factors influencing nomophobia among undergraduate medical students at R.G. Kar Medical College, Kolkata, aiming to inform strategies for reducing smartphone dependency and enhancing student well-being and patient care.

METHODS

Study type

It is a hospital-based, cross-sectional observational study.

Study place

This study was conducted at R.G. Kar Medical College, a well-known tertiary care teaching hospital in Kolkata, West Bengal, India.

Study duration

The study was over three months from August to October 2020, during which undergraduate medical students managed academic and clinical duties amidst the COVID-19 pandemic.

Inclusion criteria

The study population comprised undergraduate MBBS students from the 1st to 4th years of the medical college.

Exclusion criteria

Students unwilling to participate or not owning a smartphone were excluded from the study.

With the prevalence of nomophobia of 42.6% among medical students from a prior study in West Bengal, the final sample size was calculated as 280 with allowable

error of 6% and confidence interval of 95%. A stratified random sampling technique was applied, selecting 70 students from each year (1st, 2nd, 3rd, and 4th MBBS).

The study utilized a structured, pretested, and validated questionnaire, incorporating the Nomophobia Questionnaire (NMP-Q),⁸ a 20-item tool developed in 2015 with a scoring range of 20 to 140, where each item was rated on a 7-point Likert scale (1=strongly disagree, 7=strongly agree) across four domains: not being able to communicate, losing connectedness, not accessing information, and giving up convenience. Scores were categorized as absent (<20), mild (20–59), moderate (60–99), or severe (≥100), with higher scores indicating greater nomophobia; permission to use the NMP-Q was obtained from its developers. The questionnaire also included sections on socio-demographic details (e.g., age, sex, year of study, place of stay) and smartphone usage patterns (e.g., daily hours, checking frequency). Pretesting was conducted in July 2020 with 20 randomly selected students at a college health camp, and feedback led to slight wording changes for clarity and local relevance.

Ethical approval

After obtaining the Institutional Ethical clearance and other necessary permissions, participants were identified from the annually updated student enrolment register and contacted via registered mobile numbers and year-specific WhatsApp groups, a key communication mode.

Data collection

Data collection blended digital and manual methods due to pandemic restrictions, with Google Forms as the primary tool; the questionnaire link, including a digital consent form requiring checkbox confirmation, was shared via WhatsApp groups and individual messages, and students were encouraged to respond around 7 P.M. after classes or duties. For those with irregular schedules, follow-up calls were made, and the researcher, with batch representatives help, visited lecture halls or hostels during quieter periods (e.g., post-lunch) to boost participation; in areas with poor internet, like rural hostel blocks, printed forms were distributed, and responses were manually entered later, with confidentiality maintained via unique participant codes.

Statistical analysis

Statistical analysis was performed using SPSS version 20.0, expressing continuous variables (e.g., age, NMP-Q scores) as means and standard deviations, categorical variables (e.g., nomophobia levels, sex) as numbers and percentages, and using chi-square tests to assess associations between nomophobia levels and variables like smartphone use, a *p* value <0.05 was significant, and binary logistic regression identified predictors of severe nomophobia (severe vs. non-severe), calculating odds

ratios (OR) and 95% confidence intervals (CI), with model fit assessed via Nagelkerke R².

RESULTS

The mean age of participants was 20.81±1.64 years (range 17–25), with 152 (54.3%) males and 128 (45.7%) females. Regarding their place of stay, 149 (53.2%) were day scholars, 84 (30%) hostel residents, and 47 (16.8%) paying guests. The overall prevalence of nomophobia was 99.6%, with 1 (0.4%) student showing absent nomophobia, 45 (16.1%) mild, 149 (53.2%) moderate, and 85 (30.4%) severe levels, based on the Nomophobia Questionnaire (NMP-Q) scores (range 20–140).

The mean NMP-Q score was 87.45±22.13, indicating a moderate-to-severe nomophobia burden. Among demographic factors, males recorded a mean score of 85.92±21.87, while females scored 89.23±22.38; independent t-tests showed no significant gender difference ($p=0.242$). Across years of study, mean scores ranged from 84.67±20.95 (1st year) to 90.12±23.47 (4th year), with no significant variation ($p=0.134$). Place of stay also showed no significant association ($p=0.463$). However, nomophobia levels varied significantly with smartphone usage patterns (Table 1). Severe nomophobia was reported in 34 (38.6%) of 88 students using mobiles >5 hours/day compared to 1 (7.1%) of 14 using <1 hour ($p<0.001$), and in 27 (41.5%) of 65 checking every 5

minutes versus 1 (3.0%) of 33 checking after >1 hour ($p<0.001$).

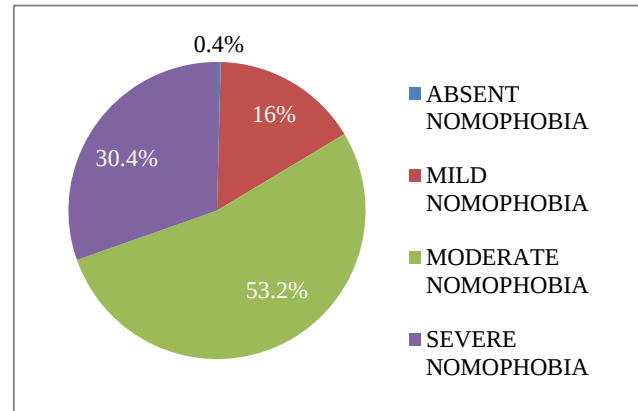


Figure 1: Overall prevalence of nomophobia among medical students (N=280).

Phantom ringing perception, noted by 146 (52.1%) students, was linked to severe nomophobia in 53 (36.3%) versus 32 (23.9%) without it ($p=0.001$). Logistic regression identified frequent checking every 5 minutes (OR=13.77, 95% CI: 1.78–106.42, $p=0.012$) and phantom ringing (OR=1.87, 95% CI: 1.12–3.14, $p=0.017$) as significant predictors of severe nomophobia (Table 2). No significant associations were found with gender or year of study.

Table 1: Distribution of study participants and associations with Nomophobia levels (n=280).

Variables		Nomophobia level (%)				Significance
		Absent	Mild	Moderate	Severe	
Sex	Male	1 (0.7)	23 (15.1)	88 (57.9)	40 (26.3)	$X^2=4.183$ $p=0.242$
	Female	0 (0.0)	22 (17.2)	61 (47.7)	45 (35.2)	
Year of study	1 st year MBBS	0 (0.0)	15 (21.4)	37 (52.9)	18 (25.7)	$X^2=13.687$ $p=0.134$
	2 nd year MBBS	1 (1.4)	13 (18.6)	42 (60.0)	14 (20.0)	
	3 rd year MBBS	0 (0.0)	11 (15.7)	34 (48.6)	25 (35.7)	
	4 th year MBBS	0 (0.0)	6 (8.6)	36 (51.4)	28 (40.0)	
Place of stay	Day scholar	1 (0.7)	23 (15.4)	80 (53.7)	45 (30.2)	$X^2=5.656$ $p=0.463$
	Hostel	0 (0.0)	13 (15.5)	50 (59.5)	21 (25.0)	
	Paying guest	0 (0.0)	9 (19.1)	19 (40.4)	19 (30.4)	
Price of smart phone	< Rs 10,000	0 (0.0)	6 (17.6)	15 (44.1)	13 (38.2)	$X^2=5.656$ $p=0.463$
	Rs 10,000–15,000	0 (0.0)	21 (14.8)	76 (53.5)	45 (31.7)	
	Rs 16,000–20,000	0 (0.0)	8 (17.8)	28 (62.2)	9 (20.0)	
	> Rs 20,000	1 (1.7)	10 (16.9)	30 (50.8)	18 (30.5)	
Owning more than 1 mobile	Yes	0 (0.0)	3 (8.9)	20 (57.1)	12 (34.3)	$X^2=1.862$ $p=0.601$
	No	1 (0.4)	42 (17.1)	129 (52.7)	73 (29.8)	
Mobile Data	Yes	1 (0.4)	44 (16.1)	147 (53.8)	81 (29.7)	$X^2=2.566$ $p=0.465$
	No	0 (0.0)	1 (14.3)	2 (28.6)	4 (57.1)	
Hours spent in mobile per day	Less than 1 hour	1 (7.1)	5 (35.7)	7 (50.0)	1 (7.1)	$X^2=36.640$ $p=0.000$
	1–5 hours	0 (0.0)	36 (20.2)	92 (51.7)	50 (28.1)	
	More than 5 hours	0 (0.0)	4 (4.5)	50 (56.8)	34 (38.6)	
Frequency of checking mobile phone	Every 5 min	0 (0.0)	6 (9.2)	32 (49.2)	27 (41.5)	$X^2=65.599$ $p=0.000$
	Every 30 min	0 (0.0)	10 (7.1)	84 (60.0)	46 (32.9)	
	Every 1 hour	1 (2.4)	10 (23.8)	20 (47.6)	11 (26.2)	
	More than 1 hour	0 (0.0)	19 (57.6)	13 (39.4)	1 (3.0)	
Phantom ringing	Yes	1 (0.7)	13 (8.9)	79 (54.1)	53 (36.3)	$X^2=14.266$ $p=0.003$
	No	0 (0.0)	32 (23.9)	70 (52.2)	32 (23.9)	

* Significance considered < 0.05 (Chi – square test)

Table 2: Logistic regression predicting nomophobia among medical students.

Predictors	Odds ratio (OR)	95% CI	P value
Frequency of checking mobile (every 5 min vs >1 hour)	13.77	1.78–106.42	0.012*
Phantom ringing perception (Yes vs No)	1.87	1.12–3.14	0.017*
Hours spent per day (>5 hours vs <1 hour)	6.58	0.86–54.72	0.070
Gender (Female vs Male)	1.52	0.92–2.51	0.101
Age (years)	1.05	0.89–1.24	0.320

* Significance

DISCUSSION

This study revealed a near-universal prevalence of nomophobia among 280 medical students, with 99.6% affected (16.1% mild, 53.2% moderate, 30.4% severe) and a mean NMP-Q score of 87.45 ± 22.13 , reflecting a moderate-to-severe burden. In contrast, Kaur et al in Punjab reported a prevalence of 81.4% among medical students, with a mean score of 76.2 ± 18.9 , while Agrawal et al, in Uttar Pradesh found 94.7%, with 38% severe cases, aligning closer to our results.^{9,10} Internationally, Bülüböğlü et al in Turkey noted a 90.5% prevalence, with a mean score of 91.8, suggesting nomophobia's global reach, though our higher rate (99.6%) may stem from pandemic-driven smartphone reliance in 2020, a pattern echoed by Sethia et al in Rajasthan ($p < 0.001$).^{11,12}

Gender showed no significant impact on nomophobia in our study (males: 85.92 ± 21.87 vs. females: 89.23 ± 22.38 , $p = 0.242$), consistent with Jain et al.¹³ in Madhya Pradesh ($p = 0.41$), who found no sex-based difference in smartphone overuse. However, Moreno-Guerrero et al in Spain reported females scoring higher (93.5 vs. 88.2, $p = 0.02$), and Saha et al in West Bengal noted a slight female predominance ($p = 0.04$), possibly due to social media use.^{14,15} Our lack of gender variation might reflect uniform academic demands across sexes, unlike settings with differing social pressures.

Nomophobia levels were consistent across years of study ($p = 0.09$), with scores from 84.67 (1st year) to 90.12 (4th year). This contrasts with Singh et al.¹⁶, who observed higher nomophobia in early years ($p = 0.03$), linked to adjustment stress, and differs from Karia et al.¹⁷ in Mumbai, where final-year students scored higher ($p < 0.05$) due to clinical reliance on smartphones. Our findings suggest a stable nomophobia burden throughout training, possibly driven by continuous digital engagement across all years.

Key predictors of severe nomophobia included >5 hours/day of mobile use (38.6% vs. 7.1% for <1 hour, $p < 0.001$), checking every 5 minutes (41.5% vs. 3.0% for >1 hour, $p < 0.001$), and phantom ringing (36.3% vs. 23.9%, $p = 0.001$). Logistic regression confirmed frequent checking (OR=13.77, 95% CI: 1.78–106.42, $p = 0.012$) and phantom ringing (OR=1.87, 95% CI: 1.12–3.14, $p = 0.017$) as significant. These align with Dixit et al, who linked >4 hours/day to nomophobia (OR=3.1, $p < 0.01$),

and Bhattacharya et al where frequent checking increased risk (OR=4.2, $p < 0.001$).^{18,19} Phantom ringing, prominent in our study, mirrors findings by Mandal et al in Delhi ($p = 0.002$), indicating heightened anxiety from smartphone dependency.²⁰

The NMP-Q8, used here, was reliable, with our mean score (87.45) lower than Bülüböğlü et al's 91.8 but higher than Kaur et al's 76.2.^{9,11} This moderate burden, coupled with a 99.6% prevalence, raises concerns about academic and clinical impacts, as excessive smartphone use correlates with sleep issues and distraction, per Rana et al ($p < 0.001$).^{21,22} In contrast, Alosaimi et al in Saudi Arabia reported a lower prevalence (82%), possibly due to regulated device use.

Place of stay showed no association ($p = 0.409$), unlike Mishra et al where hostel residents had higher nomophobia ($p = 0.03$), tied to isolation.²³ Our urban cohort's equal access to connectivity may explain this. Age was also non-significant ($p = 0.32$), matching Alosaimi et al ($p = 0.47$), but differing from Moreno-Guerrero et al where younger students (<19 years) were more affected ($p < 0.05$).^{14,22} These findings highlight the urgent need for interventions. The NMC's ATCOM module aims to address mental health, yet only 45% of colleges implement it well, per Sethia et al.^{4,12} International studies, like Oliveira et al in Brazil, show mindfulness reducing nomophobia ($p < 0.01$), a potential model for India.²⁴ Unlike Agrawal et al where workshops lowered scores, our high prevalence suggests a training gap. Qualitative research, as recommended by Goyal et al could uncover barriers, enhancing strategies to balance smartphone use and clinical focus.^{10,25}

CONCLUSION

Nomophobia, an emerging concern tied to smartphone dependency, was evaluated among undergraduate medical students at R.G. Kar Medical College, focusing on its prevalence and predictors. Among the 280 participants, 99.6% exhibited nomophobia, with 53.2% at moderate and 30.4% at severe levels, yielding a mean NMP-Q score of 87.45 ± 22.13 , indicative of a significant burden. Gender showed no notable influence (males: 85.92 ± 21.87 vs. females: 89.23 ± 22.38 , $p = 0.206$), nor did year of study ($p = 0.09$) or place of stay ($p = 0.409$), suggesting a pervasive issue across demographics. However, smartphone usage patterns were critical, with severe

nomophobia linked to >5 hours/day of use (38.6% vs. 7.1%, $p<0.001$) and checking every 5 minutes (41.5% vs. 3.0%, $p<0.001$). Phantom ringing perception, reported by 52.1%, also heightened severity (36.3% vs. 23.9%, $p=0.001$). Logistic regression identified frequent checking (OR=13.77, 95% CI: 1.78–106.42, $p=0.012$) and phantom ringing (OR=1.87, 95% CI: 1.12–3.14, $p=0.017$) as significant predictors of severe nomophobia. Age showed no impact ($p=0.32$).

The near-universal prevalence and moderate-to-severe scores highlight a pressing challenge, likely intensified by pandemic-related digital reliance in 2020, potentially affecting academic focus and clinical performance. To address this, integrating digital wellness modules into the curriculum, promoting awareness through the National Medical Commission's ATCOM framework, and conducting regular mental health workshops could curb nomophobia's impact. Institutional oversight, including periodic smartphone usage audits and peer-led support groups, may further mitigate dependency, fostering a balanced approach to technology use. These steps are vital to shaping medical students into focused, resilient professionals, effectively reducing the nomophobia burden identified in this study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Rodriguez-Garcia AM, Moreno-Guerrero AJ, Lopez Belmonte J. Nomophobia: An individual's growing fear of being without smartphones. *Int J Environ Res Public Health*. 2021;18(3):1124.
- Bartwal J, Nath B. Prevalence of nomophobia among medical students: A cross-sectional study in Uttarakhand, India. *J Family Med Prim Care*. 2022;11(6):2796-801.
- Kumar R, Kumari S, Bharti R. Smartphone addiction and its impact on mental health among Indian adolescents: A systematic review. *Indian J Psych*. 2023; 65(5):482-90.
- Sharma A, Khanduri A, Gupta S. Mental health challenges in Indian medical education: A cross-sectional study. *J Educ Health Promot*. 2021;10:145.
- Patil SS, Gaikwad RA, Meshram SP. Impact of digital overuse on medical students: A post-COVID perspective. *Med Educ Online*. 2024;29(1):230-7.
- Gupta N, Garg S, Arora K. Nomophobia and its association with anxiety among medical students in North India. *J Family Med Prim Care*. 2020;9(9):4763-8.
- Dasgupta P, Bhattacharjee S, Dasgupta S, Roy JK, Mukherjee A, Biswas R. Nomophobic behaviors among smartphone using medical and engineering students in two colleges of West Bengal. *Indian J Public Health*. 2017;61(3):199-204.
- Yildirim C, Correia AP. Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. *Comput Human Behav*. 2015; 49:130-7.
- Kaur A, Sharma P, Singh T. Nomophobia among medical students during the COVID-19 pandemic: A cross-sectional study. *J Family Med Prim Care*. 2021;10(8):3042-7.
- Agrawal N, Mishra S, Singh R. Prevalence and predictors of nomophobia among medical students in North India. *Indian J Psychol Med*. 2023;45(4):392-8.
- Bülbüloğlu S, Özdemir A, Kapıkıran G. The effect of nomophobia on academic performance among nursing students. *Nurse Educ Today*. 2022;115:105408.
- Sethia R, Sharma V, Gupta M. Digital dependency and its impact on medical students: A post-COVID analysis. *J Educ Health Promot*. 2023;12:145.
- Jain P, Yadav R, Tiwari S. Smartphone overuse and its psychological effects among medical students. *Indian J Community Med*. 2021;46(3):512-6.
- Moreno-Guerrero AJ, Gómez-García G, López-Belmonte J. Gender differences in nomophobia among university students. *Front Psychiatry*. 2022;13:856-63.
- Saha S, Das R, Mitra S. Nomophobia and its correlates among medical students in Eastern India. *J Ment Health Hum Behav*. 2023;28(1):45-50.
- Singh M, Kaur H, Sharma S. Trends in nomophobia across medical training years: A longitudinal study. *Med J Armed Forces India*. 2022;78(3):312-8.
- Karia S, Shah N, Parmar A. Smartphone addiction among medical students in Mumbai: A cross-sectional study. *Indian J Psychiatry*. 2020;62(5):576-81.
- Dixit S, Shukla H, Singh A. Nomophobia and its association with academic stress among medical students. *J Family Med Prim Care*. 2022;11(10):6123-8.
- Bhattacharya S, Roy P, Das K. Frequent smartphone checking and mental health outcomes in students. *Indian J Psychol Med*. 2021;43(6):521-7.
- Mandal S, Singh D, Gupta R. Phantom vibration syndrome and nomophobia among young adults. *J Ment Health*. 2023; 32(4):789-95.
- Rana N, Kapoor S, Singh P. Smartphone use and sleep quality among medical students: A cross-sectional study. *Sleep Med*. 2022;95:112-8.
- Alosaimi FD, Alyahya H, Alshahrani H. Prevalence and correlates of nomophobia among university students in Saudi Arabia. *BMC Psych*. 2021;21(1):435.
- Mishra P, Pandey R, Sharma A. Living arrangements and nomophobia among medical students: A study from Central India. *J Educ Health Promot*. 2023;12:78.

24. Oliveira T, Costa P, Silva M. Mindfulness-based interventions for reducing nomophobia in students. *J Behav Addict.* 2022;11(3):645-52.
25. Goyal A, Singh S, Gupta P. Barriers to mental health interventions in medical education: A qualitative study. *Indian J Med Res.* 2023;157(5):412-8.

Cite this article as: Alagesan IR, Mitra S, Bhattacharyya S, Sarkar P. Prevalence and predictors of nomophobia among undergraduate medical students of a medical college: a cross-sectional study. *Int J Community Med Public Health* 2025;12:2785-90.