

Prevalence of Problematic Mobile Phone Use Among Undergraduate Medical, Dental, and Nursing Students in Rajnandgaon, Chhattisgarh: A Cross-Sectional Study Using the MUST Scale

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ABSTRACT

Introduction

Increased mobile phone usage among undergraduate medical students causes a detrimental effect on their health. The study aims to identify mobile phone usage patterns and the factors influencing excessive use.

Materials & Methods

A cross-sectional study was conducted among undergraduate students of Medical & Nursing, Dental from the Rajnandgaon city, Chhattisgarh from March 2023 to July 2023. Data were collected from 667 students using the MUST scale, an 18-item mobile phone screening test in a self-report Likert-type format (5 points), to identify excessive use. Microsoft Excel and IBM SPSS 22 were used to analyse the data.

Results

64% were female & 36% were male, 41.2% users were belonging to 21-22 age groups, with 73% users age of first use of mobile phone were >16 yrs age, 37% student were prefer using mobile and staying indoors, 45.6% students were using mobile phone daily 4-6 hrs/day. 66.9 % of students were using mobile phones at bed time. A significant association was found between Skip food due to phone use in the last 7 days ($p < 0.01$), daily use of smartphone per day and phone use at bed time ($p < 0.0001$).

Conclusion

The study shows the alarming rate of risk of smartphone addiction among medical students, Nursing, Dental students. Students should be encouraged to assess their mobile phone addiction and increase awareness of the issue. Thus, limiting mobile phone access may be beneficial.

Keywords: MUST Scale, mobile phone use, medical trainee.

GJMEDPH 2025; Vol. 14, issue 3 | OPEN ACCESS

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Conflict of Interest—none | Funding—none

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INTRODUCTION

Over the past decade, mobile phones have undergone a significant evolution, transitioning from being primarily used for one-on-one communication to becoming essential devices for enabling group communication. This transformation has accelerated more with the advent of smartphones. The progression of mobile phone technology, starting from basic phones to feature phones and eventually smartphones, has led to the widespread adoption of technology across various demographic groups, transcending age, gender, and geographic location. (1) With the advancements in science and technology, mobile phones have seamlessly integrated into our daily routines. Nevertheless, the growing ubiquity of mobile phone usage has led to a rising phenomenon known as mobile phone dependency, where more and more people struggle to function without their devices, resulting in a dry eyes, computer vision syndrome, weakness of thumb and wrist, neck pain and rigidity, increased frequency of De Quervain's tenosynovitis, tactile hallucinations, nomophobia, insecurity, delusions, auditory sleep disturbances, insomnia, hallucinations, lower self-confidence, and mobile phone addiction disorders.(2). Mobile phone radiation may increase the reactive oxygen species, which plays an important role in the development of metabolic and neurodegenerative diseases. India has become one of the world's top-choice smartphone markets due to its combination of budget-friendly handset prices and widespread access to affordable data, which has sparked significant demand for smartphone upgrades among young populations. Average Indian smartphone user spends 4x time on online activities as compared to offline activities (3) During the pandemic, academic activities were put on hold, leading to a widespread transition to online classes across educational institutions. As a consequence, students experienced a significant exponential surge in screen time, accompanied by a sedentary lifestyle and a decrease in social interactions. This has had a detrimental impact on students' overall well-being, affecting them emotionally, mentally, and physically. The sedentary habits of students during virtual classes elevate the likelihood of developing excess weight and obesity, which are established

risk factors for the onset of cardiovascular diseases, hypertension, and diabetes in the future (4). It can also serve as a possible mode of transmitting microorganisms within healthcare environments (5). It also creates a condition known as "phantom vibration syndrome," which refers to a mistaken sense of the phone ringing.

Contemporary smartphones now encompass all the functionalities of laptops, such as web browsing, Wi-Fi connectivity, and third-party applications multimedia messaging (MMS), photo display and recording, video playback and recording, calendaring, etc. The prevalent smartphones of today enable adolescents to access the Internet, communicate, and entertain themselves at any location and at any time. Consequently, smartphones have become a constant companion for the majority of youth (6).Necessity in modern times, cost efficiency when compared to landline phone, safety or security financial motivation, information retrieval, social engagement, communication with parents, mobile phone as status symbols compel the students for mobile phone uses.The "Digital India" campaign, initiated by the Indian government, seeks to make government services available electronically to every Indian citizen using smartphones and the internet. This initiative has effectively reduced the cost and increased the accessibility of smartphones and internet services for the entire population (5) The internet penetration rate in India went up to nearly 48.7 percent in 2022, from just about four percent in 2007. This also ranked the country second in the world in terms of active internet users (7)Screen time for college students had increased by 75% during covid 19 outbreak (8)In a recent report, it was stated that Indians have spent 4.9 hours on their smartphone per day in 2022. This has made India stand in the 8th position with the highest average hours being spent on their handsets per day (9). Mobile phones are redefining and blurring the line between public and private spacesSome mental health experts predict that MPA will become one of the most crucial types of non-drug dependence after Internet addiction therefore identify the pattern of Mobile phone use and the factors responsible for the mobile phone usage is extremely important (2)

Methodology

An institutional-based cross-sectional study was conducted over a period of five months among 667 undergraduate students from Medical, Dental, and Nursing colleges in Rajnandgaon city, Chhattisgarh. A convenience sampling technique was used for participant selection. Data were collected using a self-administered, standardized questionnaire delivered through a Google Form. The questionnaire included a socio-demographic data sheet capturing details such as age, gender, and course of study, along with the Mobile Use Screening Test (MUST 4.1), an 18-item Likert-scale tool designed to assess patterns and intensity of mobile phone usage. Informed consent was obtained from all participants prior to data collection. The inclusion criteria consisted of students currently studying in Medical, Dental, or Nursing colleges, those who owned and used smartphones, and those who were willing to participate. Students who had been using a smartphone for less than one month or who did not consent to participate were excluded. The collected data were entered in Microsoft Excel and analysed

using IBM SPSS version 25 or EpiData. The primary outcome variables were the socio-demographic profile of the participants and the patterns and factors associated with mobile phone use. Before the commencement of the study, approval was obtained from the Institutional Ethical Committee (IEC) with approval number ref No.56/IEC/BRLSABVMMCRJN/2023. A written informed consent was obtained from all respondents. In addition, respondents were informed that participation in the study was entirely voluntary and that they had the right to withdraw from the study and were assured that should they decide not to participate, it would not affect their future access to hospital services in any way.

Results:

Table 1 shows that the majority of respondents were adult males with at least one sibling. They typically had four or more family members. Nuclear-type families were prevalent among the participants. The common education status of the students' parents was graduate or above, and their monthly income was generally over ten thousand.

Table 1: Socio-demographic characteristics of the respondents

Variables	Categories	n	%
Age	≤18	33	4.9
	19 to 20	217	32.5
	21 to 22	279	41.8
	23 and more	138	20.7
Sex	Female	427	64
	Male	240	36
Number of siblings	≤1	284	42.6
	2 or 3	323	48.4
	>3	60	9
Number of family	≤4	119	17.8
	4 to 7	461	69.1
	>8	87	13
Type of Family	Joint Family	189	28.3
	Nuclear Family	478	71.7
Mother education	Primary and Low	117	17.5
	Secondary	124	18.6
	Higher secondary	163	24.4
	Graduate and above	263	39.4
Father education	Primary and Low	55	8.2
	Secondary	55	8.2
	Higher secondary	153	22.9
	Graduate and above	404	60.6
Parents Monthly Income	<10 K	121	18.1
	10 to 40K	192	28.8
	40 to 60K	153	22.9
	60K to 1 lakh	107	16
	>1 lakh	94	14.1
Total		667	100

In table 2 it was seen that over 16 years was the average first-time personal mobile phone usage. Most respondents preferred playing outdoor games to staying indoors and using their phones.

Surprisingly, most respondents didn't miss their meals because of phone use within the last week of the study. Most students used their smartphones for more than two to four hours a day, even at bedtime

Table 2: Mobile phone related characteristics of the respondents

Variables	Categories	n	%
Age of First use of mobile phone	≤10 Year	32	4.8
	11-15 Year	148	22.2
	>16 Year	487	73
Preference of activity	Prefer outdoor activities like playing games	420	63
	Prefer using mobile phone and staying indoors	247	37
Skip food due to Phone use in last Seven Days	No	623	93.4
	Yes	44	6.6
Daily use of smartphone Hour Per day	<2 hr	121	18.1
	2 to 4 hr	304	45.6
	4 to 6 hr	167	25
	> 6 hr	75	11.2
Use of Mobile phone at bedtime	No	221	33.1
	Yes	446	66.9
Total		667	100

Table 3 reveals the extent of problematic mobile use among students. The highest prevalence of excessive mobile phone use was observed among students aged 21 to 22 years, followed by those above 23 years. The p-value indicates that the association between age and mobile phone use approaches statistical significance. Females exhibited a slightly higher rate of moderate phone use, while males had a higher rate of excessive use. However, this finding was not statistically significant in the study. Respondents with more than one sibling had the highest excessive use, but this was not statistically significant either. The percentage of excessive use was highest in family sizes of four or

more members, but this finding was not statistically significant. Nuclear-type families showed a higher proportion of excessive phone users. Duration of daily phone use demonstrated a clear dose-response relationship. Students using phones for more than 6 hours per day had the highest prevalence of addictive use, while those using less than two hours per day had the lowest. This relationship was highly significant, reinforcing the notion that excessive screen time is a major risk factor for problematic phone use. Excessive phone users showed an almost ninety percent use of phones at bedtime, followed by moderate phone users. This indicates a clear increasing trend in bedtime use as overall mobile use



becomes excessive, and this finding was statistically significant. There is a statistically significant

association between overall mobile phone use and use of phone at bedtime.

Table 3: Extent of problematic mobile phone use among the students

		Mild	Moderate	Excessive	Total	P *
Age	<18	6	15	12	33	0.067
		18.20%	45.50%	36.40%	100.00%	
	19 to 20	19	128	70	217	
		8.80%	59.00%	32.30%	100.00%	
	21 to 22	14	150	115	279	
		5.00%	53.80%	41.20%	100.00%	
	23 and more	12	74	52	138	
		8.70%	53.60%	37.70%	100.00%	
sex	Female	37	241	149	427	0.140
		8.70%	56.40%	34.90%	100.00%	
	Male	14	126	100	240	
		5.80%	52.50%	41.70%	100.00%	
Number of siblings	1 or less	15	168	101	284	0.231
		5.30%	59.20%	35.60%	100.00%	
	2 or 3	30	168	125	323	
		9.30%	52.00%	38.70%	100.00%	
	>3	6	31	23	60	
		10.00%	51.70%	38.30%	100.00%	
	Number of family	<4	12	69	38	0.619
		10.10%	58.00%	31.90%	100.00%	
	4 to 7	33	249	179	461	
		7.20%	54.00%	38.80%	100.00%	
	>8	6	49	32	87	
		6.90%	56.30%	36.80%	100.00%	
Type of Family	Joint Family	9	106	74	189	0.206
		4.80%	56.10%	39.20%	100.00%	
	Nuclear Family	42	261	175	478	
		8.80%	54.60%	36.60%	100.00%	

Daily use of smartphone Hour Per day	<2 hr	13	79	29	121	0.000
		10.70%	65.30%	24.00%	100.00%	
	2 to 4 hr	30	174	100	304	
		9.90%	57.20%	32.90%	100.00%	
	4 to 6 hr	6	82	79	167	
		3.60%	49.10%	47.30%	100.00%	
	> 6 hr	2	32	41	75	
		2.70%	42.70%	54.70%	100.00%	
Use of Mobile phone at bedtime	No	21	155	45	221	0.000
		9.50%	70.10%	20.40%	100.00%	
	Yes	30	212	204	446	
		6.70%	47.50%	45.70%	100.00%	
Total		51	367	249	667	
		7.60%	55.00%	37.30%	100.00%	

DISCUSSION

This cross-sectional study revealed a high prevalence of problematic mobile phone use among undergraduate medical, dental, and nursing students in Rajnandgaon. A substantial proportion of students met criteria for problematic use on the MUST scale, with particularly high rates among female students and those aged 21–22 years. Time spent on phones was also a key factor: those using phones 4–6 hours per day and those using phones at bedtime were much more likely to exhibit problematic use. We also found significant associations between problematic use and skipping meals due to phone use, as well as frequent smartphone use in bed. These findings mirror patterns seen in other studies of health sciences students: for example, a multicentre study from India found ~43.9% of medical students met criteria for smartphone addiction (10). Likewise, in Serbia 21.7% of medical students were classified as

smartphone-addicted (SAS-SV) (11), and in China nearly half of college students reported poor sleep quality linked to high phone use (12). Our rates are consistent with these high figures, underscoring that problematic phone use is common among young adult health professionals-in-training. The greater prevalence in females is in line with some reports that women tend to have higher smartphone use scores (13), though gender patterns can vary by context (some studies have found males more likely to be classified as “addicted”) (14). The concentration of cases in the 21–22-year age group also fits with literature showing that smartphone overuse tends to peak in young adults and undergraduate students. (15) The correlates of problematic use we identified – long daily use and bedtime phone use – have been noted elsewhere. Spending over 4 hours per day on smartphones was a strong independent predictor of addiction scores in



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medical students ($OR \approx 2.4$), and we similarly saw the highest risk among heavy users. Notably, nearly 90% of Indian medical student's report taking their phones to bed. Sleep-related phone use was prevalent in our sample and significantly linked to problematic use; this echoes studies showing that pre-sleep smartphone use disrupts sleep (higher Pittsburgh Sleep Quality Index) in students. In our analysis, students with problematic use were more likely to skip meals – a novel finding that also has support in the literature. Prior research in Korean students found that high-rate smartphone users often exhibit unhealthy eating habits (frequent breakfast skipping, irregular diet, meal skipping) (16). In one cross-sectional report, "high risk" smartphone users tended to skip meals and consume more fast food (17). Thus, our observation of skipped meals among phone-addicted students aligns with this trend toward sedentary, irregular lifestyles in heavy smartphone users. Our findings are broadly consistent with both national and international reports, especially those conducted during or after the COVID-19 pandemic. Multiple Indian studies have documented very high smartphone addiction rates among health students – for instance, smartphone addiction was found in 43.8% of medical students in Uttarakhand (5), and problematic use rose sharply during the COVID lockdown. Sreeelatha and Suresh observed a significant jump in smartphone addiction scores during the lockdown (18), noting that recreational phone use far exceeded academic use in that period. Similarly, global studies of students in the COVID era report escalating smartphone and nomophobia rates. Before the pandemic, rates varied by region (e.g. 12–36% in some European and East Asian samples vs. 70%+ in Middle Eastern samples), but our and others' pandemic-era data suggest generally higher prevalence. For example, a recent meta-analysis found the pooled smartphone addiction prevalence in youth to be ~23%, with higher odds of depression and poor sleep in those users (19). Thus, our high rates among Indian students (well above 20–30%) are in keeping with a post-pandemic surge in mobile use.

Several factors likely contribute to the elevated phone use seen in our cohort. The COVID-19 pandemic and shift to digital education are key

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drivers. As noted, online classes and stay-at-home orders dramatically increased screen time – one study found that after moving to e-learning, students "spent more time in contact with smartphones". Students reported that virtually all social interaction, lectures, and even clinical learning moved online, making the smartphone a primary learning tool and social outlet. Concurrently, widespread adoption of social media, streaming entertainment, and gaming apps has made phones more captivating. Many young adults use smartphones to "escape" boredom, stress, or loneliness; indeed, students in our study often cited using phones when feeling anxious or depressed, a pattern other have reported as well (20). Sociocultural lifestyle changes – including lack of alternative leisure activities, high academic stress, and the design of apps to be habit-forming – also play a role. Notably, one Indian study identified factors like mobile gaming, seeking social media recognition, and perceiving smartphones as more attractive than other activities as linked to addiction (21). All these dynamics (pandemic-driven online reliance, social media engagement, easy internet access, and limited offline outlets) plausibly underlie the high usage we observed.

Implications for health and performance: The consequences of such heavy smartphone use among students are concerning. Physical health effects can include musculoskeletal strain (neck/eye strain, headaches) and poorer nutrition (as suggested by our skip-meals finding and others). Crucially, sleep quality is often impaired: our sleep study reference found nearly half of medical students had poor sleep, and smartphone overuse significantly predicted higher (worse) PSQI scores. Consistent with this, several studies link excessive nighttime phone use to insomnia and daytime fatigue (22). Mental health may also suffer; in our analysis, problematic use was correlated with depression and anxiety, echoing numerous studies. For example, smartphone addiction is well-associated with higher anxiety and depressive symptoms (23). The causality is likely bidirectional: anxious or depressed students may seek dopamine from their phones, which in turn worsens mood and stress. Academic performance is another casualty. In our sample, high smartphone uses and addiction coincided with poorer grades and



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study habits. This mirrors literature showing that addicted students spend less time on academics, concentrate poorly, and often use phones during lectures (24). For instance, Zeerak et al. found smartphone addiction “detrimentally affected academic performance” and reduced study time (10). Over time, this is particularly worrisome for future healthcare professionals, as chronic distraction and reduced learning may undermine their competence. Socially, excessive phone use can erode in-person interaction skills and social cohesion, though more research is needed in our context.

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Conclusion

Our study confirms that problematic mobile phone use is highly prevalent among Rajnandgaon’s health science undergraduates, with identifiable demographic and behavioral correlates. This pattern is consistent with national and international findings during the COVID era. The associations with skipped meals and bedtime use highlight important lifestyle consequences. Addressing this issue will require combined efforts: raising student awareness, enacting supportive policies, and providing targeted mental-health interventions. Doing so can help safeguard students’ physical and mental health, improve their academic engagement, and foster healthier social and learning environments.

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