Smartphone Addiction among Students of Medical College in Kathmandu

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ABSTRACT

Background

Smartphones have become an important device in current day living. With the advent of technology, smartphones have become a necessity of life. However, every technological invention has brought both comfort and problems.

Objective

To explore the prevalence of smartphone addiction among medical students and the associated factors.

Method

A cross sectional study was conducted with the sample size of 358. Convenient sampling method was used among medical students. Smartphone addiction scale short version was used to find participants those having an addiction and not having an addiction. The Perceived Stress Scale, and Loneliness Scale was used to assess perceived stress, personality, and loneliness. The analysis featured both descriptive and inferential statistics, utilizing the Chi-square test and Pearson correlation, conducted with SPSS. In all statistical tests, $p < 0.05$ was considered statistically significant.

Result

Smartphone addiction among medical students was 117 (32.6%) with 95% CI (0.275, 0.377). Self-reported addiction was found to be the biggest predictor of smartphone addiction. There was a significant association between smart phone addiction and psychological factors such as perceived stress ($p < 0.001$), loneliness ($p < 0.001$), and various personality traits, including conscientiousness ($p < 0.022$), emotional stability ($p < 0.045$), and openness to experiences ($p < 0.001$).

Conclusion

Smartphone addiction was common among the medical college students investigated. There was an increased level of stress and loneliness who were addicted to their smartphones. Therefore, it is essential to implement awareness programs that educate students about the risks associated with excessive smartphone use.

KEY WORDS

Addiction, Medical students, Mental health, Smartphones

INTRODUCTION

Smartphones have become essential in modern life, evolving into necessities with the advent of technology.[1] However, this has brought both benefits and challenges.[2] Many individuals now spend excessive time on their smartphones, often neglecting other important areas of life.[3]

Terms like "smartphone addiction" and "mobile phone addiction" describe this trend. Lin et al. classified smartphone addiction as a form of technological addiction, while Griffith viewed it as a subset of behavioral addictions.[4,5] These addictions share traits such as an inability to resist impulses and similar neurobiological pathways.[6]

Research by Perez et al. shows that the prevalence of smartphone addiction ranges from 0% to 38%, with higher rates observed among younger adolescents compared to young adults aged 19 and older.[7,8] Students also exhibit particularly high rates of addiction.[9]

While smartphones offer advantages like enhanced social networking and increased productivity, excessive use can disrupt daily life and health.[10] Issues such as blurred vision and wrist or neck pain are common among heavy users. Moreover, overuse may lead to mental and behavioral problems, including negative attitudes toward school or work and reduced real-life social interactions.[11]

Undergraduate students are particularly vulnerable to smartphone addiction, as they have grown up in the smartphone era.[12] Despite their integration into daily life, little is known about the factors contributing to problematic smartphone use. This study aims to explore the prevalence of smartphone addiction among medical students and the associated factors.

METHODS

This is a cross-sectional study carried out at a medical college in Kathmandu. Data was collected from October 1st 2024 to January 15th 2025, after receiving ethical approval from the Institutional Review Committee (Reference number: 241024/01). The study was conducted among Undergraduate Medical students. Smartphone addiction among medical students is significant due to their high academic pressure, extensive use of technology, and the potential effects of smartphone habits on their learning, mental health, and future professional practices. A convenient sampling method was used. The sample size was calculated using the following formula:

Sample size (n)=Z^2pq/d^2

n = sample size

z = 1.96 (z score for the 95% confidence level)

p = prevalence of SMA= 36.8%[13] = 0.368

d = tolerated margin of error = 5% = 0.05

n = $(1.96)^2$ X 0.368(0.632)/(0.0025) = 357.38~358

Semi-structured pro forma comprised questions related to sociodemographic variables and patterns of smartphone use. Smartphone addiction scale short version (SAS SV) was used.[14] It is a self-report scale consisting of 10 items, and each item is rated on a 6-point Likert scale ranging from 1 to 6 (1=strongly disagree; 6=strongly agree). The total score is derived by adding the 10 items together. The overall SAS-SV score ranges from 10 to 60, and a higher SAS-SV score indicates a greater level of smartphone addiction. In this study, a cut-off point was set at 31 for males and 33 for females to classify smartphone addiction.

Perceived stress scale 10 item is a self-administered ten-item 5-point Likert scale with good convergent validity and reliability (Cronbach's alpha 0.89).[15] It assesses participants' subjective perception of stress during the previous month. The score ranges from 0 to 40, with higher scores indicating higher stress. Loneliness Scale was used with a six-item, 4-point Likert scale with a Cronbach alpha of 0.82.[16] Scoring as 20-34: low degree of loneliness, 35-49: moderate, 50-64: moderately high and 65-80: high degree of loneliness. The Ten Item Personality Inventory (TIPI) is a brief assessment tool designed to measure the Big Five personality traits. Respondents typically rate each item on a scale from 1 (disagree strongly) to 7 (agree strongly). The scores for each pair of items are summed to give a score for each of the five traits. Higher scores indicate a stronger presence of that trait.

Data was collected using the Google forms. The link for Google Forms was shared on the What's App/Viber group of Viber group of MBBS I, II and III year students. Google forms comprised separate sections for analyzing each variable. The data was entered into a spreadsheet and later was exported to SPSS version 20 and coded for analysis. The analysis included both descriptive and inferential statistics. Descriptive statistics (frequencies, means, and standard deviations) were used to describe the variables of interest. Univariate analysis was used to obtain the frequency of sociodemographic characteristics and other discrete variables of the study population. The chi-squared (χ^2) tests were used to assess the bivariate relationships between these factors as well as for differences in proportions and for other categorical variables. Other descriptive statistics such as the frequency, mean, standard deviation (SD), and median was also computed. In all statistical tests, p = 0:05 or less was considered statistically significant.

The objectives and purpose of the study were explained clearly to respondents. Information was taken for necessary purposes. Written Consent was taken. No information was taken and published, which could break the anonymity of participants. Privacy and confidentiality of information about the individual was strictly maintained. In all respects autonomy of the research participants was fully respected and ensured.

RESULTS

In this study, out of a total of 358 participants, the majority, 224 (62.6%), were male. Most participants, 169 (47.2%), were second-year MBBS students. The mean age of participants was 21.04 ± 1.60. Most of the participants, 315 (88%), attended private or boarding schools before joining medical school and 269 (75.1%) of the participants currently resided in hostel. Most students, 175 (48.9%), reported using smartphones for 4-6 hours a day, while 13 (3.6%) reported using smartphones for more than 9 hours a day. Smartphone was commonly found to be used for communication, social networking and gaming and study purposes 234 (65.4%). Out of the total participants 165 (46.1%) self-rated themselves as addicted to smartphones (Table 1).

Table 1. Sociodemographic characteristics of the participants (N=358)

Variables	n (%)
Sex	
Male	224 (62.6)
Female	134 (37.4)
Year	
First	116 (32.4)
Second	169 (47.2)
Third	73 (20.4)
Past Educational Institute	
Private/ Boarding School	315 (88.0)
Government/ Public School	43 (12.0)
Place of residence	
Hostel	269 (75.1)
Day-scholar	89 (24.9)
Reasons for using Smartphone	
Communication, social networking and gaming and study purposes	234 (65.4)
Social networking, gaming and study purposes	23 (6.4)
Communication and study	70 (19.6)
Communication, social networking and gaming	13 (3.6)
Communication	15 (4.2)
Social networking and gaming	3 (0.8)
Self-Perception of Smartphone addiction	
Yes	165 (46.1)
No	114 (31.8)
Don't Know	79 (22.1)
Duration of Smartphone use (in hrs)	
< 1	4 (1.2)
1-3	114 (31.8)
4-6	175 (48.9)
7-9	52 (14.5)
> 9	13 (3.6)

The prevalence of smartphone addiction (SMA) was 117 (32.6%). SMA was more prevalent in males 81 (69.2%) than in females 36 (30.8%).

A statistically significant positive correlation was found between smartphone addiction (SMA) and perceived stress and loneliness. However, a negative correlation was found between SMA and personality domains of extraversion, agreeableness, conscientiousness, emotional stability and openness to experiences, although this correlation was statistically significant for all except extraversion and agreeableness (Table 2).

Table 2. Pearson correlation between smartphone addiction and mental health

Variables	Smartphone addiction (r)	p-value
Loneliness	0.276	< 0.001
Perceived stress	0.349	< 0.001
Extraversion	-0.008	0.881
Agreeableness	-0.041	0.439
Conscientiousness	-0.129	0.014
Emotional stability	-0.158	0.003
Open to experiences	-0.137	0.010

There was a significant association found with self-perception of smartphone addiction, loneliness, PSS scores, conscientiousness, emotional stability, and openness to experiences with high risk of smartphone addiction. No significant differences were observed for gender, past educational institute, place of residence, and agreeableness.

Individuals in the high-risk group for smartphone addiction (SMA) were more likely to perceive themselves as addicted, experience higher levels of loneliness, and report greater perceived stress ($p < 0.001$). Additionally, lower conscientiousness and emotional stability were linked to increased risk for SMA, as well as lower openness ($p < 0.022$ and $p < 0.045$ respectively) (Table 3).

DISCUSSIONS

The findings of this study provide valuable insights into the prevalence and correlates of smartphone addiction (SMA) among medical students.

The prevalence of SMA was found to be 32.6%, with a significant disparity between genders; males exhibited a higher incidence (69.2%) compared to females (30.8%). This aligns with existing literature suggesting that male students may be more prone to excessive smartphone use due to greater engagement in activities such as gaming and social networking.[13,17,18]

Table 3. Association between smartphone addiction and participants' characteristics

Variable	SAS		p-value
	High risk	Low risk	
Gender			
Male	81(36.2)	143(63.8)	0.07
Female	36(26.9)	98(73.1)	
Past educational institute			
Private/ Boarding School	105(89.7)	31(12.9)	0.47
Government/Public School	12(10.3)	210(87.1)	
Place of residence			
Hostel	90(76.9)	27(23.1)	0.58
Day-scholar	179(74.3)	62(25.7)	
Self-perception of smart phone addiction			
Yes	83(70.9)	82(34.0)	0.001
No	34(29.1)	159(66.0)	
Loneliness scale			
Low	9(7.7)	48(19.9)	0.003
Moderate	92(78.6)	176(73.0)	
High	16(13.7)	17(7.1)	
PSS score			
Low	4(3.4)	45(18.7)	0.001
Moderate	99(84.6)	184(76.3)	
High	14(12.0)	12(5.0)	0.66
Agreeableness			
Low	12(10.3)	35(14.5)	0.11
Moderate	76(65.0)	129(53.5)	
high	29(24.8)	77(32.0)	
Conscientiousness			
Low	35(29.9)	43(17.9)	0.022
Moderate	55(47.0)	119(49.6)	
High	27(23.1)	78(32.5)	
Emotional stability			
Low	39(33.3)	51(21.2)	0.045
Moderate	49(41.9)	121(50.2)	
High	29(24.8)	69(28.6)	
Open to experiences			
Low	28(23.9)	24(10.0)	0.001
Moderate	53(45.3)	110(45.6)	
High	36(30.8)	107(44.4)	

Our results indicated a statistically significant positive correlation between SMA and both perceived stress and loneliness ($p < 0.001$). Similar findings were seen in other research done in Indian medical college.[17,19] This suggests that students experiencing higher levels of stress and loneliness may resort to smartphone use as a coping mechanism, which could inadvertently lead to addiction. The detrimental effects of excessive smartphone use on mental health, particularly in high-pressure environments like medical school, warrant further investigation.

Conversely, a negative correlation was identified between SMA and various personality traits, specifically conscientiousness, emotional stability, and openness to experiences. While the correlation was statistically significant for all traits except extraversion and agreeableness, these findings suggest that students with lower conscientiousness may struggle with self-regulation regarding smartphone use. This is especially concerning, as lower emotional stability is linked to higher susceptibility to stress and addiction. Similar results have been reported by Verma et al.[17]

The significant associations were identified in this study self-perception of smartphone addiction, loneliness, perceived stress scale (PSS) scores, conscientiousness, emotional stability, and openness to experiences highlight critical psychological factors contributing to the risk of SMA. These findings emphasize the need for targeted interventions focusing on stress management and emotional resilience, particularly for students at higher risk.

Interestingly, in this study no significant differences were observed concerning gender, past educational institute, place of residence, or agreeableness, suggesting that these factors may not play a critical role in the development of SMA among this population. This emphasizes the complexity of addiction, which may be more influenced by psychological factors than demographic variables.

The limited sample size could affect the generalizability of the findings to all medical students. The research is focused on students in Kathmandu, limiting the applicability of results to other regions. This study is cross-sectional; it may not capture changes in smartphone addiction over time or causal relationships.

CONCLUSION

This study emphasizes the notable prevalence of smartphone addiction (SMA) among medical students, with a particularly higher incidence in males. The findings indicate that students who experience increased levels of stress and loneliness are more likely to view themselves as addicted to their smartphones.

It is essential to implement awareness programs that educate students about the risks associated with excessive smartphone use. Workshops focused on stress management and social engagement activities can help reduce feelings of loneliness. Additionally, providing access to counseling services and encouraging limits on smartphone usage will support healthier habits and improve overall well-being.

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