

## Original Research Article

# PREVALENCE OF SMARTPHONE ADDICTION AND ITS EFFECTS ON MENTAL HEALTH AND SLEEP QUALITY AMONG COLLEGE STUDENTS - A CROSS-SECTIONAL STUDY

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### ABSTRACT

**Background:** Smartphone addiction is increasingly prevalent among college students. Academic demands, social networking, and entertainment-oriented smartphone use make this population particularly vulnerable. Excessive smartphone use has been associated with adverse effects on mental health and sleep quality. **Objectives:** To estimate the prevalence of smartphone addiction and examine its association with mental health status and sleep quality among college students.

**Materials and Methods:** A cross-sectional study was conducted among 150 undergraduate college students using stratified random sampling. The Smartphone Addiction Scale–Short Version (SAS-SV), Depression Anxiety Stress Scale-21 (DASS-21), and Pittsburgh Sleep Quality Index (PSQI) were administered. Data were analyzed using descriptive statistics, chi-square tests, and logistic regression.

**Results:** The prevalence of smartphone addiction was 46.7% (n=70). Students with smartphone addiction had significantly higher odds of depression (OR=2.4, 95% CI: 1.2–4.9), anxiety (OR=2.1, 95% CI: 1.1–3.9), and poor sleep quality (OR=3.0, 95% CI: 1.5–5.9) compared to non-addicted peers. Mean PSQI score was significantly higher among addicted students (7.2±2.9) than non-addicted students (4.8±2.2; p<0.001).

**Conclusion:** Nearly half of the college students were found to be addicted to smartphones. Smartphone addiction was significantly associated with poor mental health and impaired sleep quality. Early interventions such as digital literacy programs, counseling services, and promotion of healthy sleep practices are recommended in college settings.

**Keywords:** Smartphone addiction, College students, Mental health, Sleep quality, Cross-sectional study.

## INTRODUCTION

The widespread use of smartphones has transformed communication, education, and social interaction among young adults. However, excessive smartphone use has led to the emergence of smartphone addiction, a behavioral condition characterized by compulsive use, tolerance, withdrawal symptoms, and functional

impairment.<sup>[1,3]</sup> College students represent a particularly vulnerable group due to increased academic workload, independence from parental supervision, and extensive engagement in social media and online entertainment.<sup>[2,4]</sup>

Previous studies among college and university students have reported high prevalence rates of smartphone addiction, ranging from 30% to 50%, with significant associations with anxiety,

depression, stress, and poor sleep quality.<sup>[1,5,9,10]</sup> Sleep disturbances and mental health problems are already common among college students and may be further aggravated by excessive smartphone use, particularly during night-time hours.<sup>[3,7]</sup> Several studies have demonstrated that problematic smartphone use negatively affects academic performance, interpersonal relationships, and overall life satisfaction among college students.<sup>[2,11]</sup> Night-time smartphone use has been strongly linked to delayed sleep onset, reduced sleep duration, and impaired sleep quality due to blue light exposure and cognitive arousal.<sup>[7,12]</sup> Despite growing concern, data on smartphone addiction among Indian college students remain limited. Understanding the magnitude of the problem and its psychological and behavioral correlates is essential for designing effective preventive strategies. This study aimed to assess the prevalence of smartphone addiction among college students and examine its association with mental health and sleep quality.

## MATERIALS AND METHODS

**Study design and setting:** A cross-sectional study was conducted from January to March 2025 among

undergraduate students enrolled in arts, science, and professional colleges in Tamil Nadu, India.

**Sample size and sampling:** Based on an assumed prevalence of smartphone addiction of 45% from previous studies among college students, a sample size of 150 was calculated with 95% confidence level and 8% absolute precision. Stratified random sampling was used to ensure representation from different years of study and academic streams.

**Inclusion criteria:** College students aged 18–25 years, owning a smartphone, and willing to participate.

**Exclusion criteria:** Students with a known psychiatric illness currently under treatment.

**Data collection tools:**

- Smartphone Addiction Scale–Short Version (SAS-SV)
- Depression Anxiety Stress Scale-21 (DASS-21)
- Pittsburgh Sleep Quality Index (PSQI)

**Statistical analysis:** Data were analysed using SPSS version 25. Descriptive statistics, chi-square tests, and logistic regression were applied. A p-value <0.05 was considered statistically significant.

**Ethical considerations:** Institutional Ethics Committee approval was obtained. Written informed consent was collected from all participants.

## RESULTS

**Table 1: Demographic characteristics of study participants (n=150)**

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	62	41.3
	Female	88	58.7
Age group (years)	18–20	68	45.3
	21–23	70	46.7
	≥24	12	8.0
Year of study	First year	32	21.3
	Second year	38	25.3
	Third year	40	26.7
	Final year	40	26.7

Out of 150 participants, the majority were female (58.7%) with a mean age of 20.8±1.6 years. Most students (46.7%) belonged to the 21–23-year age group. The distribution across years of study was nearly equal.

**Table 2: Reasons for owning a smartphone among participants (n=150, multiple responses possible)**

Reason	Frequency (n)	Percentage (%)
Academics	85	56.7
Because everyone I know has one	20	13.3
Entertainment	90	60.0
To keep in touch	70	46.7
To pass information	65	43.3

Entertainment (60%) and academics (56.7%) were the most common reasons for smartphone ownership. Peer influence was the least reported (13.3%).

**Table 3: Maximum hours spent on smartphone use during the day (n=150)**

Time of use	Frequency (n)	Percentage (%)
Daytime	60	40.0
Night	90	60.0

Majority (60%) reported using smartphones predominantly at night, suggesting a higher likelihood of sleep disturbance.

**Table 4: Mobile applications used by participants (n=150, multiple responses possible)**

Application	Frequency (n)	Percentage (%)
WhatsApp	120	80.0
YouTube	105	70.0
Google	95	63.3
Facebook	85	56.7
Mobile games	75	50.0
Twitter	40	26.7

WhatsApp (80%) and YouTube (70%) were the most commonly used applications, highlighting the role of social networking and video streaming.

**Table 5: Applications most frequently used by participants (n=150)**

Application	Frequency (n)	Percentage (%)
WhatsApp	65	43.3
YouTube	50	33.3
Google	20	13.3
Facebook	10	6.7
Mobile games	3	2.0
Twitter	2	1.3

Nearly half (43.3%) identified WhatsApp as their most frequently used app, followed by YouTube (33.3%).

**Table 6: Phone notification mode during lectures (n=150)**

Mode	Frequency (n)	Percentage (%)
Not brought to class	20	13.3
Switch off	15	10.0
Ring	25	16.7
Silent	45	30.0
Vibrate	45	30.0

Most students (60%) kept their phones on silent or vibrate during lectures, though 16.7% admitted to using ring mode.

**Table 7: Phone notification mode during sleep (n=150)**

Mode	Frequency (n)	Percentage (%)
Switch off	20	13.3
Ring	15	10.0
Silent	55	36.7
Vibrate	60	40.0

Most students kept phones on vibrate (40%) or silent (36.7%) during sleep, with only 13.3% switching them off.

**Table 8: Prevalence of smartphone addiction among medical students**

Group	n	Prevalence (%)
Total (n=150)	70	46.7
Male (n=62)	25	40.3
Female (n=88)	45	51.1

The prevalence of smartphone addiction was 46.7% in the study population. Addiction was higher among females (51.1%) than males (40.3%), though the difference was not statistically significant.

**Table 9: Association of smartphone addiction with mental health and sleep quality**

Variable	Addicted (n=70)	Non-addicted (n=80)	p-value
Depression (DASS-21)	27 (38.6%)	15 (19.0%)	0.01*
Anxiety (DASS-21)	30 (42.9%)	20 (25.0%)	0.02*
Stress (DASS-21)	22 (31.4%)	16 (20.0%)	0.07
Poor sleep (PSQI>5)	45 (64.3%)	26 (32.5%)	<0.001*
Mean PSQI score (±SD)	7.2 ± 2.9	4.8 ± 2.2	<0.001*

Students with smartphone addiction reported significantly higher rates of depression (38.6% vs. 19.0%) and anxiety (42.9% vs. 25.0%). Poor sleep quality was much more common among addicted students (64.3% vs. 32.5%, p<0.001).

## DISCUSSION

The present study demonstrated a high prevalence of smartphone addiction (46.7%) among college students, which is comparable with findings from previous studies conducted among university populations in India and other countries.<sup>[1,2,5]</sup>

Davey and Davey reported smartphone addiction in nearly 45% of Indian college students, while Samaha and Hawi observed similar prevalence rates among university students in the Middle East.<sup>[1,2]</sup> Entertainment, social networking, and academic activities were the primary reasons for smartphone use in this study, consistent with earlier research among college students.<sup>[5,6]</sup> The predominance of

night-time smartphone use observed in the present study supports earlier findings that late-night phone usage is common in young adults and is a major contributor to sleep disturbances.<sup>[7,12]</sup>

The significant association between smartphone addiction and poor sleep quality observed in this study is consistent with findings by Demirci et al. and Exelmans and Van den Bulck, who reported that problematic smartphone use is associated with higher PSQI scores, delayed sleep onset, and increased daytime dysfunction.<sup>[3,7]</sup> Blue light exposure and cognitive stimulation from social media and video content are believed to disrupt melatonin secretion and circadian rhythm.<sup>[12]</sup>

Smartphone addiction was also significantly associated with higher levels of depression and anxiety among college students. Similar associations have been reported in multiple studies, suggesting that excessive smartphone use may contribute to psychological distress by increasing social comparison, reducing face-to-face interactions, and impairing coping mechanisms.<sup>[3,9,10]</sup> Elhai et al. highlighted that problematic smartphone use is closely linked with anxiety and depressive symptoms among young adults.<sup>[9]</sup>

Although stress levels were higher among addicted students, the association was not statistically significant. This finding is consistent with some earlier studies and may be attributed to under-reporting of stress or the cross-sectional design of the study, which limits causal inference.<sup>[2,10]</sup> Longitudinal studies are needed to better understand the temporal relationship between smartphone addiction and stress among college students.

Overall, the findings of this study reinforce existing evidence that smartphone addiction among college students is an emerging public health concern with significant implications for mental health and sleep quality. Institutional-level interventions such as digital well-being education, counseling services, and promotion of healthy smartphone use habits are strongly recommended.

## CONCLUSION

Smartphone addiction was prevalent among nearly half of the college students studied and was significantly associated with poor mental health and sleep quality. Targeted interventions such as

awareness programs, counselling services, and promotion of responsible smartphone use are essential to mitigate its negative impact on college students' well-being and academic performance.

**Conflicts of interest:** The authors declare that there are no conflicts of interest related to this study.

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## REFERENCES

1. Davey S, Davey A. Assessment of smartphone addiction among college students in India. *Int J Prev Med.* 2014;5(12):1500–1511.
2. Samaha M, Hawi NS. Relationships among smartphone addiction, stress, academic performance, and satisfaction with life in university students. *J Behav Addict.* 2016;5(2):321–331.
3. Demirci K, Akgönül M, Akpınar A. Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *J Behav Addict.* 2015;4(2):85–92.
4. Lee J, Cho B, Kim Y, Noh J. Smartphone addiction in university students and its association with learning and mental health. *Psychiatry Res.* 2017; 251:311–318.
5. Karki S, Singh JP, Paudel P, Khatiwada S. Prevalence and factors associated with smartphone addiction among undergraduate students. *BMC Psychiatry.* 2020;20:421.
6. Chen B, Liu F, Ding S, Ying X, Wang L, Wen Y. Gender differences in factors associated with smartphone addiction among college students. *PLoS One.* 2017;12(11):e0187659.
7. Exelmans L, Van den Bulck J. Bedtime mobile phone use and sleep quality among young adults. *Sleep.* 2016;39(3):481–488.
8. Alhassan AA, Alqadhib EM, Taha NW, Alahmari RA, Salam M, Almutairi AF. Smartphone addiction and its relationship with psychological distress among university students. *J Fam Med Prim Care.* 2018;7(5):1002–1007.
9. Elhai JD, Levine JC, Dvorak RD, Hall BJ. Problematic smartphone use and mental health problems: A systematic review and meta-analysis. *Comput Human Behav.* 2017;75:364–373.
10. Sohn S, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes among university students: A systematic review. *BMC Psychiatry.* 2019;19:356.
11. Hawi NS, Samaha M. The relations among social media addiction, self-esteem, and life satisfaction in university students. *Soc Sci Comput Rev.* 2017;35(5):576–586.
12. Thomée S. Mobile phone use and mental health: A review of the research among children and young adults. *Curr Opin Psychiatry.* 2018;31(4):273–277.