Digital Wellness Among College Students: Problematic Smartphone Use, Night-Time Checking, and Sleep-Related Problems

Dr Mohammed Fazil L

Principal, Jamia Nadawiyya Arts and Science College, Edavanna, Malappuram, Kerala

DOI: https://doi.org/10.47772/IJRISS.2026.102000062

Received: 25 October 2026; Accepted: 30 October 2026; Published: 20 November 2026

ABSTRACT

Smartphones now occupy a central place in college life, supporting learning, communication and leisure. Their usefulness, however, does not rule out patterns of engagement that may interfere with rest and recovery. This study investigated smartphone-use behaviour and sleep-related difficulties among 52 college students. Using a quantitative cross-sectional design and a structured online questionnaire, the study examined general smartphone use, problematic-use tendencies and selected sleep-related behaviours. Descriptive statistics, Cronbach's alpha and Spearman's rank-order correlation were used for analysis. The 10-item problematic smartphone-use measure showed good internal consistency ($\alpha = 0.798$), while the nine-item sleep-related problems measure showed acceptable internal consistency after reverse-coding its two positively worded items ($\alpha = 0.710$). Most respondents reported at least four hours of smartphone use per day, and 88.5% reported using a smartphone within one hour before sleep at least sometimes. Higher problematic smartphone-use scores were associated with greater sleep-related difficulties ($\rho = 0.315$, $p = 0.023$). Daily-use category was not significantly associated with sleep-related difficulties ($\rho = 0.126$, $p = 0.372$), whereas night-time phone checking showed the strongest observed association ($\rho = 0.578$, $p < .001$). The findings indicate that the timing and pattern of smartphone engagement may matter for sleep-related difficulties, although the cross-sectional design does not establish causation. The study highlights self-regulation and healthier night-time digital routines as relevant areas for student digital-wellness initiatives.

Keywords: Digital wellness; problematic smartphone use; sleep quality; college students; smartphone behaviour; night-time smartphone use.

INTRODUCTION

Smartphones have become an integral part of everyday life, particularly for young adults and college students. They are used for academic activities, communication, entertainment, information seeking and social interaction. This constant accessibility has made smartphones highly useful in student life, while also raising concerns about patterns of use that may interfere with everyday functioning and well-being.

The issue is therefore not simply whether students use smartphones, but how they use them and whether their use becomes problematic. Problematic smartphone use may involve difficulty controlling use, excessive preoccupation with the device, continued use despite negative consequences and interference with normal activities. Such patterns are particularly relevant in college settings, where smartphones are deeply integrated into academic, social and recreational routines.

This concern can be understood within the broader concept of digital wellness. Digital wellness involves maintaining a healthy and balanced relationship with digital technologies so that technology contributes to, rather than undermines, physical, psychological and social well-being. For college students, achieving such balance can be challenging because academic requirements and social interactions often encourage continuous connectivity.

Sleep is an important component of student well-being. Adequate and restorative sleep supports concentration, daytime functioning, emotional regulation and general health. Sleep can also be influenced by behavioural and environmental factors, including the use of electronic devices, particularly during periods intended for rest.

The relationship between problematic smartphone use and sleep has received increasing research attention. Existing studies and meta-analyses have reported associations between problematic smartphone or mobile-phone use and poorer sleep outcomes among students and young adults. However, smartphone-use duration alone may not fully explain this relationship because students also rely on smartphones for legitimate academic and communication purposes.

Against this background, the present study examines smartphone-usage patterns among college students and assesses problematic smartphone use and sleep-related problems among the participants. It further examines the relationship between problematic smartphone use and sleep-related problems. The study adopts a quantitative cross-sectional approach and contributes to the growing discussion on digital wellness and student well-being.

REVIEW OF LITERATURE

Research on smartphone use and sleep increasingly distinguishes between ordinary technology use and patterns that become difficult to regulate. This distinction is particularly relevant for college students because the same device may be used for coursework, communication, entertainment and social participation. Consequently, time spent on a phone does not automatically indicate problematic use; the context, timing and degree of control over use also matter.

Evidence synthesized across college populations points to a recurring association between problematic mobile-phone use and poorer sleep. Li et al. (2020), in a meta-analysis involving college students, reported a positive relationship between mobile-phone addiction and poor sleep quality. Their findings suggest that problematic engagement is linked with sleep difficulties, although the strength of the relationship varies across studies.

A similar pattern has been observed in higher-education subgroups. Reviewing studies involving medical students, Leow et al. (2023) found a positive association between smartphone-addiction scores and poorer sleep quality. Taken together with the broader college-student evidence, this suggests that the relationship is not limited to a single educational discipline.

The wider evidence also draws attention to sleep-related behaviour rather than screen time alone. Chu et al. (2023), synthesizing observational studies, reported associations between smartphone overuse and several self-reported sleep outcomes, including poorer sleep quality and sleep-related disruption. These findings provide a useful basis for examining when and how smartphones are used, especially around bedtime.

Across this literature, one practical implication is that a simple count of daily hours may miss important behavioural differences. Two students may spend a similar amount of time on smartphones but differ substantially in their ability to disengage, their tendency to check the device repeatedly, or their use of the phone during periods intended for sleep.

The present study builds on this perspective by examining problematic smartphone-use tendencies alongside specific behaviours such as use before sleep, checking after waking and night-time checking. Rather than treating all smartphone exposure as equivalent, the study explores which observable patterns are most closely associated with sleep-related difficulties in the participating student group.

3. Research Gap

Although previous research has consistently reported an association between problematic smartphone use and poor sleep quality, several gaps remain. A considerable proportion of the available evidence has focused on specific populations, such as medical students, or has combined findings from diverse cultural and educational settings. Consequently, context-specific evidence from different college populations remains valuable.

In addition, smartphone use is sometimes considered mainly in terms of duration. However, the behavioural pattern of use may be more informative than the number of hours spent on the device. Behaviours such as smartphone use before sleep, repeated checking, checking the phone after waking and night-time smartphone engagement may be particularly relevant from a digital-wellness perspective.

The present study addresses these issues by examining smartphone usage patterns, problematic smartphone use and sleep-related problems among college students in the study setting. It also examines the relationship between problematic smartphone use and sleep-related problems and considers specific behaviours surrounding smartphone engagement and sleep.

4. Objectives of the Study

1. To examine the smartphone usage patterns of college students.
2. To assess problematic smartphone use and sleep quality among college students.
3. To examine the relationship between problematic smartphone use and sleep quality among college students.

5. Research Questions

4. What are the smartphone usage patterns among college students?
5. What are the levels and patterns of problematic smartphone use and sleep-related problems among college students?
6. Is there a significant relationship between problematic smartphone use and sleep-related problems among college students?

6. Hypotheses

H_0: There is no statistically significant relationship between problematic smartphone use and sleep-related problems among college students.

H_1: There is a statistically significant relationship between problematic smartphone use and sleep-related problems among college students.

7. Conceptual Framework

Problematic Smartphone Use → Sleep-Related Problems

Supporting behavioural factors: Daily smartphone use | Pre-sleep use | Checking after waking | Night-time checking

8. Methodology

8.1 Research Design

The present study adopted a quantitative cross-sectional research design to examine smartphone usage patterns, problematic smartphone use and sleep-related problems among college students. Data were collected at a single point in time and analysed to examine associations between the study variables. The design permits the identification of statistical associations but does not establish temporal order or causality.

8.2 Study Participants and Sampling

The original analysis dataset comprised the first 52 completed submissions available at the time of the initial analysis. All 52 respondents indicated informed consent and current smartphone use, and no item-level missing values were present among these cases. Two additional submissions were received on 19 and 20 August 2026, after the original 52-response analysis had been conducted. To maintain consistency with the dataset used for the submitted manuscript and the sample size evaluated by the reviewer, the present revised analysis retains the

original 52 cases. The two later submissions were not included in the analysis. A non-probability convenience sampling approach was used. Participants were recruited through academic and student communication channels. The sample should not be considered representative of all college students.

8.3 Research Instrument

Data were collected through a structured, self-administered online questionnaire created in Google Forms. The instrument was prepared by combining researcher-developed items with items adapted from relevant published literature. It comprised sections on informed consent, demographic information, smartphone-use patterns, 10 statements concerning problematic smartphone-use behaviours and nine statements concerning sleep-related problems, together with questions on sleep duration and overall perceived sleep quality. The problematic-use statements used a five-point agreement response format (Strongly Disagree to Strongly Agree); the sleep-related statements used a five-point frequency format (Never to Always). The original questionnaire supplied for this reanalysis does not identify the source publication(s) or map individual adapted items to their sources. Consequently, item-level attribution cannot be verified retrospectively, and the measures are not presented as named standardised or clinically validated scales. The complete questionnaire and the scoring approach used in the reanalysis are provided in Appendix A.

8.4 Data Collection Procedure

The questionnaire link was circulated among eligible students through academic and student communication channels. The first section presented participant information and sought voluntary consent before participation. The original analysis dataset comprised 52 submissions, all of which recorded consent and current smartphone use. Two later submissions, received after the original analysis, were not included in the present analysis. No personally identifying fields were included in the dataset supplied for reanalysis.

8.5 Variables and Measurement

The primary explanatory variable was problematic smartphone use, measured by 10 statements rated on a five-point agreement scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Higher scores indicate stronger problematic-use tendencies. The outcome variable was sleep-related problems, measured by nine statements rated from 1 (Never) to 5 (Always). The two positively worded statements—"I wake up feeling refreshed" and "Overall, I am satisfied with my sleep quality"—were reverse-coded (6 minus the original response) so that higher values consistently represented greater sleep-related difficulties. For the reanalysis, composite scores were calculated as the mean of the relevant item scores. These are study-specific self-report measures and do not establish a clinical diagnosis. Additional descriptive variables included daily smartphone-use duration, use within one hour before sleep, checking immediately after waking, night-time checking, sleep duration and overall perceived sleep quality.

8.6 Data Analysis

Data were exported from Google Forms and analysed using the original 52 complete responses included in the initial analysis. Two additional responses submitted on 19 and 20 August 2026 were received after that analysis and were excluded to preserve consistency with the original analytical sample. Frequencies and percentages were used to describe categorical variables, and mean and standard deviation were calculated for age. Internal consistency was assessed using Cronbach's alpha. The 10-item problematic smartphone-use measure yielded $\alpha = 0.798$. The nine-item sleep-related problems measure yielded $\alpha = 0.710$ after reverse-coding the two positively worded items. Item responses were coded from 1 to 5, and mean composite scores were calculated for the two measures. Spearman's rank-order correlation was used to examine associations between the composite scores and selected smartphone-use behaviours. Daily-use categories were ordered from less than two hours to more than eight hours; frequency responses were ordered from Never to Always. Statistical significance was assessed at $p < .05$. These analyses are correlational and do not support causal conclusions.

8.7 Ethical Considerations

Participation was voluntary. Participants were informed about the purpose of the study and provided consent before participation. Responses were used for academic and research purposes, and confidentiality and anonymity were maintained in the analysis and reporting of the findings.

9. RESULTS

A total of 52 completed responses were included in the analysis. All respondents had provided consent and reported current smartphone use. Descriptive statistics summarised participant characteristics, smartphone-use patterns and sleep-related characteristics. Internal consistency was examined using Cronbach's alpha, and Spearman's rank-order correlation was used to examine associations between selected smartphone-use variables and sleep-related problems.

Table 1. Participant Characteristics (N = 52)

Characteristic	Category	n	%
Age	Mean age (years)	19.81	—
Gender	Male	39	75.0
	Female	13	25.0
Programme	B.Com	36	69.2
	BCA	8	15.4
	BBA	7	13.5
	B.Sc. Computer Science	1	1.9
Year of study	First year	2	3.8
	Second year	22	42.3
	Third year	28	53.8

Most participants were male (75.0%) and enrolled in B.Com programmes (69.2%). More than half of the respondents (53.8%) were third-year students. The mean age was 19.81 years (SD = 0.97).

Table 2. Smartphone-Use Patterns (N = 52)

Variable	Category	n	%
Daily smartphone use	2–4 hours	12	23.1
	4–6 hours	21	40.4
	6–8 hours	13	25.0
	>8 hours	6	11.5
Use within one hour before sleep	At least sometimes	46	88.5
	Rarely/Never	6	11.5

Overall, 76.9% of participants reported using smartphones for at least four hours per day. Smartphone use close to bedtime was common, with 88.5% reporting use within one hour before sleep at least sometimes.

Table 3. Sleep Characteristics (N = 52)

Variable	Category	n	%
Sleep duration	<5 hours	2	3.8
	5–6 hours	9	17.3
	6–7 hours	28	53.8
	7–8 hours	10	19.2

	>8 hours	3	5.8
Perceived sleep quality	Very good	7	13.5
	Good	31	59.6
	Fair	6	11.5
	Poor	4	7.7
	Very poor	4	7.7

The largest proportion of participants (53.8%) reported sleeping for 6–7 hours per night. Overall, 75.0% reported sleeping for fewer than seven hours, while 73.1% rated their overall sleep quality as good or very good.

Table 4. Internal Consistency of the Study Scales

Scale	Items	Cronbach's α	Interpretation
Problematic smartphone-use scale	10	0.798	Good preliminary internal consistency
Sleep-problem scale	9	0.710	Acceptable preliminary internal consistency

Table 5. Associations Between Smartphone-Use Variables and Sleep-Related Problems

Variable	Spearman's ρ	p-value	Interpretation
Problematic smartphone use	0.315	0.023	Significant positive association
Daily smartphone-use category	0.126	0.372	Not statistically significant
Checking phone after waking	0.321	0.020	Significant positive association
Night-time phone checking	0.578	<0.001	Strong significant positive association

Note. Higher scores indicate greater sleep-related difficulties. The two positively worded sleep items were reverse-coded before calculating the composite score. Statistical significance was assessed at $p < .05$.

Spearman's rank-order correlations indicated a statistically significant positive association between problematic smartphone use and sleep-related problems ($\rho = 0.315$, $p = 0.023$). Daily smartphone-use category was not significantly associated with sleep-related problems ($\rho = 0.126$, $p = 0.372$). Checking the smartphone immediately after waking was positively associated with sleep-related problems ($\rho = 0.321$, $p = 0.020$). The strongest observed association was between night-time smartphone checking and sleep-related problems ($\rho = 0.578$, $p < .001$).

DISCUSSION

The findings point to a distinction between smartphone exposure and problematic engagement. In this sample, higher problematic smartphone-use scores were associated with greater sleep-related difficulties, whereas the daily-use category was not significantly related to sleep problems. This pattern is broadly consistent with earlier syntheses linking problematic smartphone or mobile-phone use with poorer sleep outcomes (Leow et al., 2023; Li et al., 2020). The present associations should be interpreted in light of the small convenience sample and cross-sectional design.

The absence of a significant association for daily-use duration is particularly relevant in a student population. A smartphone can be used for lectures, assignments, communication and leisure, so duration alone combines activities that may have very different consequences. The present findings therefore suggest that the quality, timing and controllability of use deserve attention alongside total hours.

Night-time checking produced the strongest association observed in the analysis ($\rho = 0.578$, $p < .001$). This result does not establish that checking a phone at night causes sleep difficulties; the reverse direction is also plausible,

with students who are already awake or experiencing disturbed sleep being more likely to use their phones. Nevertheless, the association makes night-time engagement a useful target for further investigation and is compatible with broader evidence connecting smartphone overuse with adverse sleep outcomes (Chu et al., 2023).

Checking the smartphone immediately after waking was also positively associated with sleep-related difficulties ($\rho = 0.321$, $p = 0.020$). Considered together with the night-time result, this may indicate a routine in which the phone is closely embedded at the boundaries of the sleep period. Such a pattern may be more informative for digital-wellness work than an undifferentiated focus on reducing all screen time.

The descriptive results add further context. Smartphone use within an hour of bedtime was common, and most respondents reported sleeping for fewer than seven hours. At the same time, 72.2% rated their overall sleep quality as good or very good. This contrast suggests that self-perceived sleep quality and sleep duration capture related but different aspects of the sleep experience.

Overall, the study supports a more behaviourally focused approach to digital wellness. Rather than assuming that every additional hour of smartphone use has the same significance, student-support initiatives may be better served by addressing self-regulation, repeated checking and the place of the smartphone in night-time routines.

These findings also connect with the broader challenge of learning in an interconnected world. As smartphones increasingly support access to information, communication, and learning, digital wellness becomes part of the conditions that enable sustainable student participation. The present findings suggest that supporting purposeful technology use should include attention to healthy boundaries around rest and recovery.

CONCLUSION

This study examined smartphone-use behaviour and sleep-related difficulties among 52 college students. The results showed a significant positive association between problematic smartphone use and sleep-related problems ($\rho = 0.315$, $p = 0.023$). Night-time phone checking was the variable most strongly associated with sleep difficulties ($\rho = 0.578$, $p < .001$), while daily-use category did not show a statistically significant association.

The findings suggest that the pattern of smartphone engagement may provide more useful information than total duration alone. In particular, difficulty regulating use and engagement during the sleep period appear to deserve greater attention within student digital-wellness programmes.

The results should be interpreted cautiously because the study used a small convenience sample and a cross-sectional design. They cannot establish cause and effect or be generalised to all college students. The questionnaire combined researcher-developed items with items adapted from relevant literature; however, the original form did not preserve the item-level source mapping or full bibliographic attribution. The measures therefore cannot be represented as established standardised scales. Although internal consistency was acceptable in this sample, Cronbach's alpha alone does not establish content, construct or criterion validity. Larger studies should use fully documented and validated measures, retain item-level source records and examine the findings longitudinally.

12. Practical Implications and Recommendations

7. Organize digital-wellness awareness programmes for college students.
8. Incorporate sleep hygiene education into student well-being programmes.
9. Encourage students to develop healthy night-time smartphone boundaries and reduce unnecessary checking.
10. Conduct workshops on digital self-regulation, notification management and compulsive checking behaviours.
11. Include digital habits and sleep in broader student-support and well-being initiatives.
12. Conduct future studies with larger and more diverse samples and, where possible, longitudinal designs.

13. LIMITATIONS

The study was based on a relatively small sample of 52 participants and used convenience sampling; therefore, the findings may not represent the wider college-student population.

The cross-sectional design does not establish the direction or causality of the observed associations.

The study relied on self-reported responses, which may be influenced by recall and reporting bias.

The questionnaire combined researcher-developed and literature-adapted items, but the original form did not document the source reference for each adapted item. The measures were therefore treated as study-specific self-report item sets. The observed Cronbach's alpha values indicate internal consistency in this sample only; they should not be interpreted as proof of validity or as establishing a clinical diagnosis of smartphone addiction or a clinical sleep disorder.

REFERENCES

1. Chu, Y., Oh, Y., Gwon, M., et al. (2023). Dose-response analysis of smartphone usage and self-reported sleep quality: A systematic review and meta-analysis of observational studies. Journal of Clinical Sleep Medicine, 19(3), 621–630. https://doi.org/10.5664/jcsm.10392
2. Leow, M. Q. H., Chiang, J., Chua, T. J. X., Wang, S., & Tan, N. C. (2023). The relationship between smartphone addiction and sleep among medical students: A systematic review and meta-analysis. PLOS ONE, 18(9), e0290724. https://doi.org/10.1371/journal.pone.0290724
3. Li, Y., Li, G., Liu, L., & Wu, H. (2020). Correlations between mobile phone addiction and anxiety, depression, impulsivity, and poor sleep quality among college students: A systematic review and meta-analysis. Journal of Behavioral Addictions, 9(3), 551–571. https://doi.org/10.1556/2006.2020.00057

APPENDIX A

Research Questionnaire

Digital Wellness Among College Students: Problematic Smartphone Use, Night-Time Checking, and Sleep-Related Problems

Note on reproduction

This appendix reproduces the questionnaire wording recorded in the original Google Forms response export. Response categories listed for closed-ended questions are the categories evidenced in that export. The export does not preserve the original form's full display logic or a separate item-by-item source map for literature-adapted items. The questionnaire is reproduced for transparency and replication; it is not represented as a standardised or clinically validated instrument.

Section 1. Informed Consent

Section 2. Demographic Information

Section 3. Smartphone-Use Patterns

Section 4. Problematic Smartphone Use

Section 5. Sleep Duration, Sleep-Related Problems and Perceived Sleep Quality

1. I have read and understood the participant information provided above. I voluntarily agree to participate in this research study.

- Recorded response: Yes, I agree to participate.

2. Do you currently use a smartphone?

Response format: Yes

3. What is your age?

Response format: Open numerical response (age in years)

4. What is your gender?

Response format: Female; Male

5. Which programme are you currently enrolled in?

Response format: B.Com; BCA; B.Sc. Computer Science; BBA

6. Which year of study are you currently in?

Response format: First Year; Second Year; Third Year

7. On average, how many hours do you use your smartphone per day?

Response options: 2–4 hours; 4–6 hours; 6–8 hours; More than 8 hours

8. For which of the following purposes do you usually use your smartphone? (Select all that apply.)

Response options: Academic/Learning; Social Media; Entertainment (YouTube, OTT, etc.); Gaming; Communication (Calls/Messaging); Online Shopping; Reading News; Others

9. How often do you use your smartphone within one hour before going to sleep?

Response options: Never; Rarely; Sometimes; Often; Always

10. How often do you check your smartphone immediately after waking up?

Response options: Never; Rarely; Sometimes; Often; Always

11. How often do you wake up during the night to check your smartphone?

Response options: Never; Rarely; Sometimes; Often; Always

12. Do you use "Night Mode" or a blue-light filter on your smartphone during the evening?

Response options: Never; Rarely; Sometimes; Often; Always; I don't know

Instruction: Please indicate your level of agreement with each statement.

Response options: Strongly Disagree (1); Disagree (2); Neutral (3); Agree (4); Strongly Agree (5).

13. I miss planned work because of smartphone use.
14. I have difficulty concentrating in class because of smartphone use.
15. I feel pain or discomfort in my wrists, neck, or back due to prolonged smartphone use.
16. I cannot imagine life without my smartphone.
17. I feel impatient or restless when I do not have my smartphone.

18. I constantly think about my smartphone even when I am not using it.
19. I use my smartphone longer than I intend to.
20. People around me tell me that I use my smartphone too much.
21. I find it difficult to control my smartphone usage.
22. I feel anxious if I cannot use my smartphone.

13. On average, how many hours do you sleep each night?

Response options: Less than 5 hours; 5–6 hours; 6–7 hours; 7–8 hours; More than 8 hours.

Instruction: Please indicate how often each of the following statements applies to you.

Response options: Never (1); Rarely (2); Sometimes (3); Often (4); Always (5).

23. I take more than 30 minutes to fall asleep.
24. I wake up during the night.
25. I wake up earlier than intended and cannot return to sleep.
26. I feel sleepy during classes.
27. I feel tired during the daytime.
28. I find it difficult to concentrate because of poor sleep.
29. My smartphone use affects my sleep quality.
30. I wake up feeling refreshed.
31. Overall, I am satisfied with my sleep quality.

14. Overall, how would you rate your sleep quality during the past one month?

Response options: Very Good; Good; Fair; Poor; Very Poor.

Scoring Procedure Used in the Analysis

Problematic smartphone use: The 10 statements were coded from 1 (Strongly Disagree) to 5 (Strongly Agree). The composite score was calculated as the mean of the 10 items. Higher mean scores indicate stronger problematic smartphone-use tendencies. The theoretical possible item-sum range is 10–50; the corresponding mean-score range is 1–5.

Sleep-related problems: The nine statements were coded from 1 (Never) to 5 (Always). The two positively worded statements—"I wake up feeling refreshed" and "Overall, I am satisfied with my sleep quality"—were reverse-coded using 6 minus the original response. The composite score was calculated as the mean of all nine items after reverse coding. Higher mean scores indicate greater sleep-related difficulties. The theoretical possible item-sum range is 9–45; the corresponding mean-score range is 1–5.

The separate questions on sleep duration and overall perceived sleep quality were analysed descriptively and were not included in the nine-item sleep-related problems composite.

Instrument Development and Source Documentation

The researcher has clarified that the questionnaire was developed through a mixed process: some items were researcher-developed and some were adapted from relevant literature. The original Google Forms response export does not preserve an item-by-item source map or full bibliographic details for the adapted items. Therefore, individual items cannot be retrospectively attributed to specific publications on the basis of the available source record. The measures are not presented as named standardised or formally validated scales. Internal-consistency estimates reported in the manuscript indicate preliminary reliability in this sample and do not, by themselves, establish validity.