e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(9); 375-381

Original Research Article

A Cross-Sectional Study of the Association Between Social Media Addiction and Sleep Quality Among Medical Students

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Received: 10-08-2026 / Revised: 25-08-2026 / Accepted: 04-09-2026

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Conflict of interest: Nil

Abstract:

Background: Social media use may affect sleep quality among young adults. This study assessed social media addiction, sleep quality and their association.

Methods: A cross-sectional study was conducted among 350 participants. Social media addiction and sleep quality were assessed using the BSMAS and PSQI, respectively. Participants were categorised according to BSMAS scores and sleep quality. Associations were analysed using the chi-square test.

Results: Overall, 24.9% met the criterion for social media addiction. Sleep quality was very good in 10.0%, fairly good in 16.9%, fairly bad in 39.7% and very bad in 33.4% of participants. Thus, 73.1% reported poor sleep quality. No significant association was observed between social media addiction and sleep quality ($\chi^2 = 3.043$, $p = 0.385$).

Conclusion: Poor sleep quality and social media addiction were common, but no significant association was identified. Further research should examine nighttime use, usage duration and psychological stress.

Keywords: Social Media Addiction; Sleep Quality; BSMAS; PSQI; Young Adults.

DOI: 10.25258/ijcpr.18.9.52

Introduction

Social media has become an integral part of communication, information exchange, education, and social interaction among young adults. University students increasingly use social networking platforms for both academic and recreational purposes, making them an important population for studying problematic social media use [1, 2]. Although these platforms offer opportunities for networking, peer support, and educational engagement, excessive or uncontrolled use has raised concerns regarding its potential effects on psychological well-being, academic functioning, and sleep [1, 3]. Medical students may be particularly vulnerable because of their demanding academic schedules, frequent examinations, and substantial psychological stress, with studies reporting associations between problematic digital use and sleep-related outcomes in this population [4, 5].

Social media addiction, also referred to as social networking addiction, is characterised by excessive preoccupation with social media, an increasing urge to use it, mood modification, unsuccessful attempts to reduce use, withdrawal-like symptoms, and negative consequences in daily functioning. The Bergen Social Media Addiction Scale (BSMAS), developed from the Bergen Facebook Addiction Scale, assesses these behavioural addiction components and has been used to evaluate problematic social media use among university students. The Bergen Facebook Addiction Scale was originally developed to assess addictive Facebook use [1], while subsequent research has supported the assessment of problematic social media use across different populations and cultural settings [2]. Previous research has reported problematic social media use among university students, although prevalence estimates vary according to the population, assessment instrument, and threshold applied [3].

Sleep is essential for physical restoration, emotional regulation, cognitive performance, and memory consolidation. Medical students require adequate sleep to sustain attention, learning, and clinical

decision-making. The Pittsburgh Sleep Quality Index (PSQI) is a widely used instrument for assessing subjective sleep quality and sleep disturbances across multiple dimensions [4]. However, smartphone and social media use, particularly during the evening and before bedtime, may delay sleep onset, reduce sleep duration, and contribute to sleep disturbances. Exposure to screen-based activities may also interfere with normal sleep–wake regulation, while psychological stimulation from online interactions may make it difficult to disengage and fall asleep. Studies among young adults have reported associations between social media use, bedtime use, and sleep disturbance [5, 6].

Evidence from medical student populations further suggests a relationship between problematic digital use and poorer sleep quality. Studies conducted among Indian medical students have reported associations between smartphone addiction, internet addiction, and sleep quality, with some also identifying relationships with depressive symptoms [7, 8]. A systematic review and meta-analysis of medical students found an association between smartphone addiction and sleep problems, although the strength of the relationship varied across studies and settings [9]. Furthermore, social media experiences may influence sleep differently depending on whether they are positive or negative, indicating that the nature and pattern of use may be relevant when examining sleep outcomes [10].

Despite the widespread use of social media among medical students, institution-specific evidence regarding its relationship with sleep quality remains limited. Understanding this association may help identify students who could benefit from sleep-health education, responsible digital-use practices, and preventive interventions. Therefore, the present study aimed to determine the association between social media addiction and sleep quality among undergraduate medical students and to estimate the prevalence of problematic social media use and poor sleep quality in this population. The study also examined differences in sleep quality across levels of social media addiction and explored demographic factors associated with these outcomes.

Methods

Study Design and Setting: A cross-sectional study was conducted to assess the association between social media addiction and sleep quality among undergraduate medical students at G.M.E.R.S. Medical College, Junagadh, Gujarat, India, from April 2026 to July 2026. The study population comprised undergraduate MBBS students from all academic years.

Sample Size: A total of 350 medical students participated in the study.

The sample size was calculated using the formula:

$$n = \frac{4pq}{d^2}$$

where p is the anticipated prevalence of poor sleep quality, $q = 100 - p$, and d is the allowable error.

Assuming a prevalence of 50% and an allowable error of 5.35%:

$$n = \frac{4 \times 50 \times 50}{(5.35)^2}$$

$$n = \frac{10000}{28.6225} = 349.37$$

Thus, the calculated minimum sample size was approximately 350 participants. Accordingly, 350 undergraduate medical students were included in the study.

Inclusion Criteria

- Undergraduate MBBS students aged 18 years or above.
- Students willing to participate in the study.
- Students who provided informed consent.

Exclusion Criteria

- Students with a diagnosed sleep disorder.
- Students taking medications known to affect sleep.
- Students absent during the data-collection period.
- Students submitting incomplete questionnaire responses.

Sampling and Recruitment: Students from different academic years were invited to participate through official class groups and institutional notice boards. Participation was voluntary and anonymous. The questionnaire was distributed online using Google Forms after providing participants with an information sheet and consent statement. Data collection continued until the required sample size was achieved.

Study Variables and Data Collection: The primary independent variable was social media addiction, and the primary dependent variable was sleep quality. Demographic and relevant behavioural information, including age, gender, academic year, residence, daily social media use, and screen time before sleep, was also collected.

Social media addiction was assessed using the Bergen Social Media Addiction Scale (BSMAS), a six-item instrument evaluating salience, tolerance, mood modification, relapse, withdrawal, and conflict. Each item was scored from 1 (very rarely) to 5 (very often), giving a total score ranging from 6

to 30. Higher scores indicated greater problematic social media use.

Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), which evaluates sleep quality over the preceding month. The standard PSQI comprises seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each component is scored from 0 to 3, producing a global score ranging from 0 to 21. A global score >5 was considered indicative of poor sleep quality, as specified in the study protocol.

Data Management and Statistical Analysis: The collected data were entered into Microsoft Excel, checked for completeness, and analysed using IBM SPSS Statistics version 26 or R software. Continuous variables were summarised using the mean and standard deviation, while categorical variables were presented as frequencies and percentages.

The prevalence of problematic social media use and poor sleep quality was estimated using proportions. The association between social media addiction categories and sleep quality categories was assessed using the chi-square test. Correlations between BSMAS and PSQI scores were examined using Pearson's or Spearman's correlation coefficient, as appropriate. Differences in sleep-quality scores across social media addiction groups were assessed using the independent-samples *t*-test or one-way ANOVA, depending on the number of groups and distribution of the data. Logistic regression was planned to identify factors associated with poor sleep quality, considering relevant demographic and behavioural variables. Statistical significance was set at $p < 0.05$.

Ethical Considerations: The study received approval from the Institutional Ethics Committee (IEC), G.M.E.R.S. Medical College, Junagadh, under approval number 64/2026. Participation was voluntary, and informed consent was obtained from all participants before completion of the questionnaire.

Results

The study included 350 undergraduate medical students. Most participants were aged 18–20 years (66.6%), followed by those aged 21–23 years (30.6%). Males constituted 61.7% of the sample, and 90.3% of participants resided in hostels. Psychiatric medication or counselling, chronic medical illness, and other addictions were reported by 1.1%, 3.1%, and 3.4% of participants, respectively (Table 1).

Table 1: Sociodemographic and selected clinical characteristics of the participants (N = 350)

Characteristic	Category	n (%)
Age (years)	18–20	233 (66.6)
	21–23	107 (30.6)
	≥24	10 (2.9)
Gender	Male	216 (61.7)
	Female	134 (38.3)
Type of residence	Hostel	316 (90.3)
	Home	34 (9.7)
Psychiatric medication/counselling	Yes	4 (1.1)
	No	346 (98.9)
Chronic medical illness	Yes	11 (3.1)
	No	339 (96.9)
Other addiction	Yes	12 (3.4)
	No	338 (96.6)

Among the 350 participants, 87 (24.9%) had a BSMAS score ≥19, indicating possible problematic social media use. Regarding self-rated sleep quality, 39.7% reported fairly bad sleep and 33.4% reported very bad sleep, while 10.0% and 16.9% reported very good and fairly good sleep, respectively. Sleep duration was 7 hours for 30.3% of participants, while 34.9% reported taking more than 30 minutes to fall asleep (Table 2).

Table 2: Social media addiction and selected sleep-quality indicators among the participants (N = 350)

Variable	Category	n (%)
BSMAS total score	<19	263 (75.1)
	≥19	87 (24.9)
Self-rated sleep quality	Very good	35 (10.0)
	Fairly good	59 (16.9)
	Fairly bad	139 (39.7)
	Very bad	117 (33.4)
Actual sleep duration	≤5 hours	27 (7.7)
	6 hours	43 (12.3)
	7 hours	106 (30.3)
	8 hours	60 (17.1)
	≥9 hours	20 (5.7)
	Other/range responses	94 (26.9)
Time taken to fall asleep	≤30 minutes	226 (64.6)
	>30 minutes	122 (34.9)
	Missing	2 (0.6)

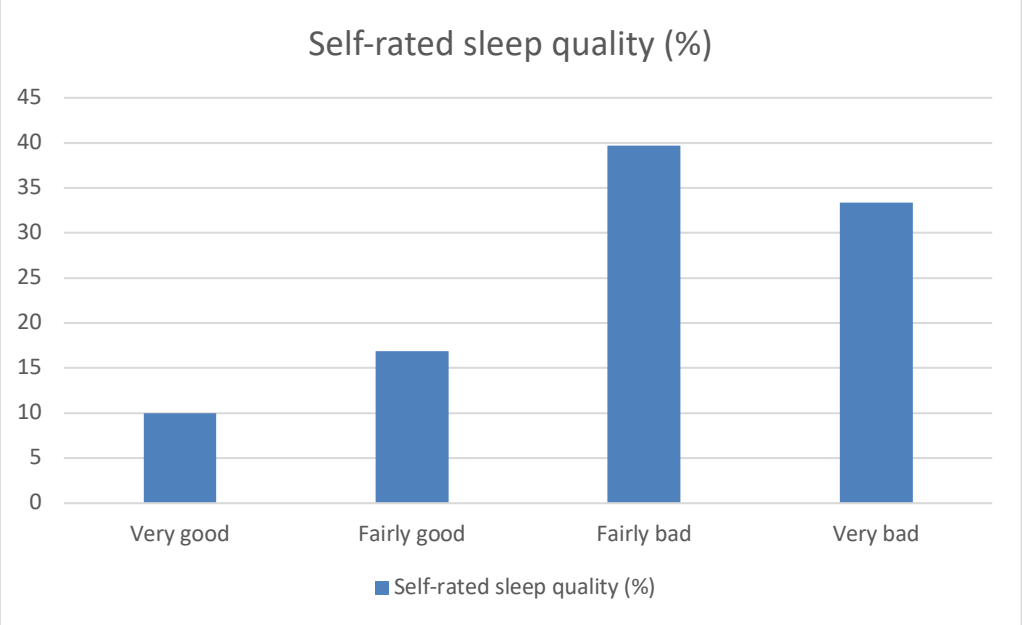

Figure 1: Distribution of self-rated sleep quality among the study participants

Among participants with BSMAS scores <19, 70.0% reported fairly bad or very bad sleep, compared with 82.8% of those with scores ≥19. However, the association between social media addiction category and self-rated sleep quality was not statistically significant ($\chi^2 = 3.043$, $df = 3$, $p = 0.385$) (Table 3).

Table 3. Association between social media addiction and self-rated sleep quality (N = 350)

BSMAS category	Very good, n (%)	Fairly good, n (%)	Fairly bad, n (%)	Very bad, n (%)	Total
<19	27 (10.3)	52 (19.8)	93 (35.4)	91 (34.6)	263
≥19	8 (9.2)	7 (8.0)	46 (52.9)	26 (29.9)	87
Total	**35 (10.0)**	**59 (16.9)**	**139 (39.7)**	**117 (33.4)**	**350**

Chi-square test: $\chi^2 = \mathbf{3.043}$, $df = 3$, $p = \mathbf{0.385}$.

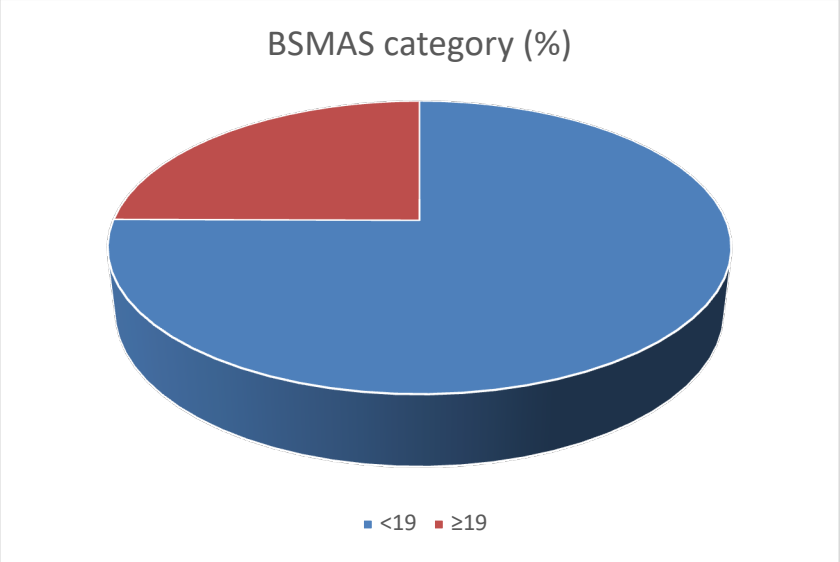

Figure 2: Distribution of participants according to BSMAS category.

Discussion

The present study demonstrated a high prevalence of poor sleep quality among participants. Only 26.9% reported very good or fairly good sleep, whereas 73.1% reported fairly bad or very bad sleep. This finding is consistent with previous research showing that sleep problems are common among adolescents and young adults. In a study of 467 Scottish adolescents, Woods and Scott reported that greater overall and nighttime social media use was associated with poorer sleep quality [11]. Similarly, Levenson et al., in a nationally representative sample of 1,788 young adults in the United States, found that both the frequency and duration of social media use were associated with sleep disturbance [5]. Levenson et al. further reported that social media use immediately before bedtime was particularly associated with disturbed sleep [6]. Schuuret al. also observed that the timing of Twitter use was related to sleep quality among undergraduate students, with nighttime use showing a stronger relationship than daytime use [12]. The high proportion of participants reporting poor sleep in the present study may therefore reflect the influence of late-night digital engagement, academic demands, irregular routines and psychological stress. However, the prevalence observed in the present study cannot be directly compared with all previous studies because different studies used different sleep instruments, cutoffs and population groups.

In the present study, 24.9% of participants met the criterion for social media addiction according to the Bergen Social Media Addiction Scale, while 75.1% did not meet the cutoff. This finding indicates that approximately one in four participants demonstrated problematic social media use. The prevalence was slightly higher than that reported by Bányai et al., who identified problematic social media use in a nationally representative sample of Hungarian adolescents using the Bergen Social Media Addiction Scale [13]. In contrast, Yerpude et al. reported a prevalence of 18.3% among 750 college students aged 18–25 years in Madhya Pradesh, India [14]. The prevalence in the present study was also lower than the levels reported in some university-based studies, where social media addiction may be influenced by intensive smartphone use, academic stress and urban lifestyles. Andreassen et al. developed the Bergen Social Media Addiction Scale based on the six core components of addiction-salience, mood modification, tolerance, withdrawal, conflict and relapse, and emphasised that problematic use should be distinguished from frequent but controlled use [15]. The present finding should therefore not be interpreted as indicating that all frequent social media users are addicted; rather, it identifies a subgroup whose use may be difficult to control or may interfere with daily functioning.

Although poor sleep and social media addiction were both common, the present study did not identify a statistically significant association between BSMAS category and self-rated sleep quality ($\chi^2 = 3.043$, $p = 0.385$). This finding contrasts with several previous studies. Zhu et al., in a cross-sectional study involving 2,744 university students, found that social media addiction was significantly associated with poorer sleep quality, with an odds ratio of 1.415 [16]. Similarly, Yerpude et al. reported a strong positive correlation between BSMAS scores and poor sleep quality ($r = 0.62$, $p < 0.001$) among young students in Madhya Pradesh [14]. A study among Hong Kong University students by Wong et al. also examined social media addiction, sleep quality and psychological distress using the BSMAS, PSQI and DASS-21, highlighting the relationship between problematic social media use and sleep-related outcomes [17]. In addition, a systematic review by Kokka et al. reported that

problematic social media use was associated with sleep disturbances among adolescents and young adults [18]. These findings suggest that problematic social media use may affect sleep through delayed bedtimes, prolonged mental stimulation, fear of missing out, emotional involvement and repeated checking of notifications. Nevertheless, the absence of a significant association in the present study may be explained by the use of broad BSMAS categories, the relatively small number of participants in the addiction group, the cross-sectional design, or the absence of information regarding the timing and duration of social media use.

The non-significant finding in the present study is nevertheless supported by research indicating that the relationship between social media use and sleep is not always consistent. A recent systematic review and meta-analysis by Han et al. found that general electronic-media use was associated with poorer sleep quality, but the strength of the association varied according to the type of media use, study population and cultural setting [19]. More specifically, problematic use showed a stronger relationship with sleep problems than ordinary social media use. Similarly, a systematic review with meta-analyses by Alonzo et al. found that general social media use was not consistently associated with sleep problems or sleep duration, whereas problematic social media use was associated with sleep problems [20]. This distinction may explain why the present study did not observe a significant association when participants were divided only into BSMAS categories. Sleep quality may depend more strongly on specific behaviours-such as using social media after going to bed, waking during the night to check notifications, or using multiple platforms simultaneously, than on addiction status alone. In addition, poor sleep may itself encourage greater social media use, indicating a possible bidirectional relationship. Therefore, longitudinal studies incorporating daily duration, nighttime use, psychological distress and objective sleep measures are needed to clarify the relationship between social media addiction and sleep quality.

Conclusion

The present study found that poor sleep quality was common among participants, with 73.1% reporting fairly bad or very bad sleep, while 24.9% met the criteria for social media addiction according to the Bergen Social Media Addiction Scale. However, no statistically significant association was observed between social media addiction and self-rated sleep quality ($\chi^2 = 3.043$, $p = 0.385$). These findings suggest that although poor sleep and problematic social media use are important concerns, their relationship may be influenced by other factors, such as nighttime usage, duration of use, psychological stress, academic workload and individual sleep habits. Further longitudinal studies using detailed assessments of social media behaviour and objective sleep measures are recommended to clarify the direction and strength of this association.

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