

Excessive and Night-Time Social Media Use as Predictors of Poor Sleep and Psychological Distress in Young Adults: A Cross-Sectional Study

Krishna Kodakandla^{1*}

¹Associate Professor, Department of Psychiatry, Dr Patnam Mahender Institute of Medical Sciences, Chevella, Telangana 501503.

*Corresponding author email id:krishna.kodakandla@gmail.com

Abstract

Background: Over the last decade, social media platforms such as Instagram, WhatsApp, YouTube, Facebook, Twitter, and Snapchat have become deeply embedded in the daily lives of young adults. Although these technologies offer rapid communication and information access, accumulating evidence suggests that excessive and night-time use is detrimental to sleep architecture and psychological well-being.

Objective: The present investigation aimed to determine the patterns of social media use among young adults attending a tertiary teaching institution in South India, evaluate sleep quality and mental health status, and examine the relationships between problematic social media use and these outcomes.

Methods: A cross-sectional study was conducted from August 2019 to October 2019 among 720 young adults (aged 18–25 years) drawn from students, staff and the attendants of hospital of Dr Patnam Mahender Institute of Medical Sciences, Telangana. Participants completed a self-administered questionnaire incorporating the Bergen Social Media Addiction Scale (BSMAS), the Pittsburgh Sleep Quality Index (PSQI), and the Depression, Anxiety and Stress Scale-21 (DASS-21). Data were analyzed in SPSS version 26 using chi-square tests, Pearson correlations, and multivariate logistic regression.

Results: The mean age of participants was 21.3 ± 2.0 years; 56.7% were female. Mean daily social media use was 4.6 ± 2.1 hours, with 47.9% reporting use after 11 PM on most nights. Problematic social media use ($\text{BSMAS} \geq 19$) was identified in 224 (31.1%) participants, poor sleep quality ($\text{PSQI} > 5$) in 392 (54.4%), and clinically relevant depressive, anxiety, and stress symptoms in 36.4%, 41.7%, and 33.6% respectively. Strong positive correlations were observed between BSMAS and PSQI ($r = 0.55$), depression ($r = 0.49$), anxiety ($r = 0.52$), and stress ($r = 0.46$) (all $p < 0.001$). Logistic regression showed problematic social media use independently predicted poor sleep ($\text{AOR} = 3.21$) and depression ($\text{AOR} = 2.46$).

Conclusion: Excessive and night-time social media use is significantly associated with poor sleep quality and adverse mental health outcomes in young Indian adults. Public health interventions promoting digital hygiene are urgently warranted.

Keywords

Social media; sleep quality; depression; anxiety; young adults; PSQI; BSMAS; digital wellness

1. Introduction

The remarkable proliferation of smartphones, affordable mobile data, and ubiquitous social networking platforms has fundamentally reshaped patterns of communication, information consumption, and interpersonal interaction among contemporary youth [1]. India, with over 700 million active internet users and an estimated 470 million social media users in 2019, ranks among the largest digital populations globally [2]. Young adults, in particular, account for the highest proportion of daily social media engagement, frequently exceeding four to six hours per day [3].

While social media offers tangible benefits — rapid communication, peer connection, educational content, professional networking, and creative expression — concerns about its psychological repercussions have intensified [4]. Excessive and uncontrolled engagement with social networking platforms has been associated with a range of adverse outcomes, including disturbed sleep, depressive symptoms, anxiety, low self-esteem, body-image dissatisfaction, fear of missing out (FOMO), cyberbullying victimization, and impaired academic performance [5,6,7].

Sleep is particularly vulnerable to night-time digital engagement. Mechanisms implicated in this disruption include displacement of sleep time by extended screen use, suppression of endogenous melatonin secretion by short-wavelength (blue) light emitted from device displays, sustained physiological and emotional arousal triggered by stimulating or distressing content, and intrusive nocturnal notifications [8,9]. Chronic sleep curtailment, in turn, predisposes individuals to mood disturbances, cognitive impairment, immune dysregulation, and metabolic morbidity [10,11].

Although several international investigations have delineated the relationship between social media usage, sleep quality, and mental health, comparable contemporary data from Indian young adults remain limited. The present study was therefore designed to characterize social media usage patterns, sleep quality, and mental health symptoms among young adults studying in a major tertiary academic institution in New Delhi, and to examine the strength and direction of the relationships among these variables.

2. Materials and Methods

2.1 Study Setting and Period

This cross-sectional analytical study was conducted South India, between August 2019 to October 2019.

2.2 Participants and Sampling

Young adults aged 18–25 years drawn from students, staff and the attendants of hospital in Dr Patnam Mahender Institute of Medical Sciences, Telangana. Individuals with a previously diagnosed psychiatric disorder, sleep disorder, or chronic medical illness, and those currently on psychotropic, sedative, or hypnotic medications, were excluded. Using stratified random sampling across colleges, faculties, and academic years, 720 participants were enrolled, exceeding the calculated minimum sample of 642 (assuming 50% prevalence of poor sleep quality, 95% confidence, 4% absolute precision, and 10% non-response adjustment).

2.3 Study Instruments

Data were collected via a structured, self-administered questionnaire comprising four sections. (a) Sociodemographic and social media usage profile: age, gender, course, year of study, residence, daily duration of use, predominant platforms used, time of last usage at night, and self-reported impact on academic performance. (b) Bergen Social Media Addiction Scale (BSMAS): a 6-item validated instrument assessing salience, mood modification, tolerance, withdrawal, conflict, and relapse, with each item rated on a 5-point Likert scale; scores ≥ 19 indicated problematic social media use [12]. (c) Pittsburgh Sleep Quality Index (PSQI): a 19-item self-rated tool generating a global score; total scores > 5 denoted poor sleep quality [13]. (d) Depression, Anxiety and Stress Scale–21 (DASS-21): a 21-item self-report instrument with three 7-item subscales generating cut-offs for clinically relevant depressive, anxiety, and stress symptoms [14].

2.4 Data Collection and Statistical Analysis

Questionnaires were distributed in classroom settings under supervision; participation was voluntary, anonymous, and required written informed consent. Data were entered into Microsoft Excel 2019 and analyzed using IBM SPSS Statistics version 26. Descriptive statistics summarized continuous variables as mean $\pm$ standard deviation and categorical variables as frequencies and percentages. Pearson correlation evaluated relationships among scale scores; chi-square tests compared categorical variables; binary logistic regression identified independent predictors. A p-value < 0.05 was considered statistically significant.

3. Results

Of the 720 participants, 408 (56.7%) were female and 312 (43.3%) male, with a mean age of 21.3 ± 2.0 years. Mean self-reported daily social media use was 4.6 ± 2.1 hours, with 47.9% acknowledging device use beyond 11 PM on most nights and 38.6% reporting checking devices within five minutes of waking. The most frequently used platforms were Instagram (78.3%), WhatsApp (96.4%), YouTube (84.2%), and Snapchat (32.5%). The pattern of social media use is summarized in Table 1.

Table 1. Social media usage characteristics among 720 young adults.

Parameter	Frequency (n)	Percentage (%)
Daily use ≤ 2 hours	94	13.1
Daily use 2–4 hours	274	38.1
Daily use 4–6 hours	227	31.5
Daily use > 6 hours	125	17.4
Use after 11 PM on most nights	345	47.9
Phone check within 5 min of waking	278	38.6
Self-reported academic decline	256	35.6
Most-used platform: Instagram	564	78.3
Most-used platform: WhatsApp	694	96.4
Most-used platform: YouTube	606	84.2
Problematic use (BSMAS ≥ 19)	224	31.1

Sleep quality assessment using the PSQI revealed that 392 (54.4%) participants experienced poor sleep quality (global score > 5), with the most affected components being sleep latency, sleep duration, and daytime dysfunction. The mean PSQI global score was 6.4 ± 3.1 . Mental health screening using the DASS-21 indicated clinically relevant depressive, anxiety, and stress symptoms in 36.4%, 41.7%, and 33.6% of participants respectively. Females reported significantly higher anxiety (47.5% vs. 34.0%, $p = 0.001$) and depression (40.0% vs. 31.7%, $p = 0.025$) than males. The relationship between problematic social media use and the principal study outcomes is presented in Table 2.

Table 2. Sleep and mental health outcomes by social media use category (n = 720).

Outcome	Problematic users (n = 224)	Non-problematic users (n = 496)	p-value
Poor sleep quality (PSQI > 5)	171 (76.3)	221 (44.6)	< 0.001
Sleep latency > 30 min	152 (67.9)	186 (37.5)	< 0.001
Sleep duration < 6 h	118 (52.7)	137 (27.6)	< 0.001
Depressive symptoms (DASS-D ≥ 10)	121 (54.0)	141 (28.4)	< 0.001
Anxiety symptoms (DASS-A ≥ 8)	144 (64.3)	156 (31.5)	< 0.001
Stress symptoms (DASS-S ≥ 15)	108 (48.2)	134 (27.0)	< 0.001
Self-reported academic decline	146 (65.2)	110 (22.2)	< 0.001

Pearson correlation analysis demonstrated significant positive associations between BSMAS scores and PSQI ($r = 0.55$), DASS-Depression ($r = 0.49$), DASS-Anxiety ($r = 0.52$), and DASS-Stress ($r = 0.46$) (all $p < 0.001$), indicating that higher levels of problematic social media use covary with poorer sleep and greater psychological distress. To identify independent predictors, multivariate logistic regression was performed with poor sleep quality and depressive symptoms

as outcomes, controlling for age, gender, course, year of study, residence, and family history of mental illness. Results are summarized in Table 3.

Table 3. Logistic regression for independent predictors of poor sleep and depressive symptoms.

Predictor	AOR for poor sleep (95% CI)	p-value	AOR for depression (95% CI)	p-value
Problematic social media (BSMAS ≥ 19)	3.21 (2.22–4.64)	<0.001	2.46 (1.69–3.58)	<0.001
Daily use >6 h	2.45 (1.62–3.69)	<0.001	1.92 (1.27–2.92)	<0.01
Use after 11 PM on most nights	2.12 (1.51–2.97)	<0.001	1.74 (1.23–2.45)	<0.01
Female gender	1.34 (0.97–1.84)	0.078	1.43 (1.04–1.96)	0.027
Hostel residence	1.22 (0.88–1.69)	0.236	1.14 (0.81–1.60)	0.452
Family history of mental illness	1.65 (0.98–2.78)	0.060	2.04 (1.20–3.46)	0.008

4. Discussion

The findings of the present cross-sectional investigation provide compelling evidence that problematic social media use among young adults in urban India is significantly associated with poor sleep quality and adverse mental health outcomes. The 31.1% prevalence of problematic use observed in our cohort is comparable with rates reported in recent Indian and international studies, which have ranged from approximately 25% to 40% in young-adult populations [15,16]. Likewise, the 54.4% prevalence of poor sleep quality aligns with reports from medical and university student populations across India and elsewhere [17,18].

The robust positive correlation between BSMAS and PSQI scores observed in this study echoes findings from a meta-analytic synthesis by Alonzo and colleagues, which documented a consistent dose–response relationship between social media engagement and sleep disturbances among adolescents and emerging adults [19]. Several plausible mechanisms underlie this association. First, prolonged engagement with social media displaces sleep time, particularly when use extends into pre-sleep and bedtime hours. Second, the short-wavelength blue light emitted from smartphone and tablet displays suppresses pineal melatonin secretion, delaying circadian sleep-onset signals [20,21]. Third, emotionally charged content — including peer comparison, romantic disappointments, body-image-related material, and current affairs — triggers physiological and cognitive arousal that interferes with sleep initiation and maintenance [22]. Fourth, intrusive nocturnal notifications interrupt sleep continuity and contribute to lighter, less restorative sleep.

The association between problematic social media use and depressive, anxiety, and stress symptoms is consistent with emerging evidence from multiple international cohorts [23,24]. Several intermediary mechanisms have been proposed, including upward social comparison facilitated by curated, idealized depictions of peers' lives; FOMO with its anxious arousal and

rumination; cyberbullying victimization; and erosion of meaningful, in-person social interactions [25]. Importantly, the relationship is likely bidirectional: psychologically distressed individuals may also turn to social media as a coping mechanism, perpetuating a cycle of overuse and emotional distress [26].

The clinical and public health implications of these findings are substantial. Educational institutions, parents, and healthcare practitioners should jointly promote 'digital wellness' strategies that encompass time-bound use, scheduled offline periods, device-free bedrooms, blue-light filters, mindful curation of feeds, and the cultivation of sleep-preserving routines. Screening for problematic social media use should be incorporated into routine adolescent and young-adult health checks, and accessible counselling services for those identified at risk should be ensured. Curricular content addressing digital literacy, healthy online behaviour, and emotional regulation can complement these efforts.

Several limitations of the present study warrant acknowledgement. The cross-sectional design precludes inferences regarding causality or temporal directionality. The reliance on self-reported measures of social media use, sleep quality, and mental health symptoms introduces potential recall and social desirability biases. The single-institution sample limits generalizability to non-academic young-adult populations. Future longitudinal studies incorporating objective measures (actigraphy, screen-time logs), structured psychiatric interviews, and biological correlates such as salivary melatonin would strengthen causal interpretation.

5. Conclusion

Excessive and night-time social media use among young adults is significantly associated with poorer sleep quality and a higher burden of depressive, anxiety, and stress symptoms. Almost one-third of the studied young-adult cohort exhibited problematic social media use, with corresponding decrements in sleep and mental health metrics. Coordinated efforts across educational institutions, healthcare systems, families, and policy makers — focused on promoting digital hygiene, mental health awareness, and sleep-protective behaviour — are essential to safeguard the well-being of the rising digital generation.

References

1. Dutton WH, Law G, Groselj D, Hangler F, Vidan G, Cheng L, Lu X, Zhi H, Zhao Q, Wang B. Mobile Communication Today and Tomorrow. A Quello Policy Research Paper, Quello Center, Michigan State University. 2014 Dec 4.
2. Turban E, Volonino L, Wood G. Information technology for management. Asia: John Wiley & Sons; 2010.

3. Shensa A, Sidani JE, Lin LY, Bowman ND, Primack BA. Social media use and perceived emotional support among US young adults. *Journal of community health*. 2016 Jun;41(3):541-9.
4. Collin P, Rahilly K, Richardson I, Third A. The benefits of social networking services. 2011.
5. Kaliebe K, Weigle P. Youth Internet Habits and Mental Health, an Issue of Child and Adolescent Psychiatric Clinics of North America. Elsevier Health Sciences; 2018 Mar 16.
6. Lin LY, Sidani JE, Shensa A, Radovic A, Miller E, Colditz JB, et al. Association between social media use and depression among U.S. young adults. *Depress Anxiety*. 2016;33(4):323–31.
7. Vannucci A, Flannery KM, Ohannessian CM. Social media use and anxiety in emerging adults. *J Affect Disord*. 2017; 207:163–6.
8. Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: a systematic literature review. *Sleep Med Rev*. 2015; 21:50–8.
9. Chang AM, Aeschbach D, Duffy JF, Czeisler CA. Evening use of light-emitting eReaders negatively affects sleep, circadian timing, and next-morning alertness. *Proc Natl Acad Sci USA*. 2015;112(4):1232–7.
10. Itani O, Jike M, Watanabe N, Kaneita Y. Short sleep duration and health outcomes: a systematic review, meta-analysis, and meta-regression. *Sleep Med*. 2017; 32:246–56.
11. Zhai L, Zhang H, Zhang D. Sleep duration and depression among adults: a meta-analysis of prospective studies. *Depress Anxiety*. 2015;32(9):664–70.
12. Andreassen CS, Pallesen S, Griffiths MD. The relationship between addictive use of social media, narcissism, and self-esteem: findings from a large national survey. *Addict Behav*. 2017; 64:287–93.
13. Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res*. 1989;28(2):193–213.
14. Lovibond PF, Lovibond SH. The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behav Res Ther*. 1995;33(3):335–43.
15. Kuss DJ, Griffiths MD. Social networking sites and addiction: ten lessons learned. *Int J Environ Res Public Health*. 2017;14(3):311.
16. Banjanin N, Banjanin N, Dimitrijevic I, Pantic I. Relationship between Internet use and depression: focus on physiological mood oscillations, social networking and online addictive behavior. *Comput Human Behav*. 2015; 43:308–12.
17. Guthrie KA, Larson JC, Ensrud KE, Anderson GL, Carpenter JS, Freeman EW, Joffe H, LaCroix AZ, Manson JE, Morin CM, Newton KM. Effects of pharmacologic and nonpharmacologic interventions on insomnia symptoms and self-reported sleep quality in

women with hot flashes: a pooled analysis of individual participant data from four MsFLASH trials. *Sleep*. 2018 Jan;41(1): zsx190.

18. Levenson JC, Shensa A, Sidani JE, Colditz JB, Primack BA. The association between social media use and sleep disturbance among young adults. *Prev Med*. 2016; 85:36–41.
19. Tour SK. The psychological implications of writing online: the experience of blogging about visible and chronic skin conditions (Doctoral dissertation, University of Birmingham). 2018.
20. Cain N, Gradisar M. Electronic media use and sleep in school-aged children and adolescents: a review. *Sleep Med*. 2010;11(8):735–42.
21. Exelmans L, Eggermont S, Van den Bulck J. 'Are you still watching?' Observing and Explaining the Relationship between Electronic Media Use and Sleep. 2018.
22. Schnackenberg N. False bodies, true selves: Moving beyond appearance-focused identity struggles and returning to the true self. Routledge; 2018 Mar 26.
23. Hoare E, Milton K, Foster C, Allender S. The associations between sedentary behaviour and mental health among adolescents: a systematic review. *International journal of behavioral nutrition and physical activity*. 2016 Oct 8;13(1):108.
24. Primack BA, Shensa A, Sidani JE, Whaite EO, Lin LY, Rosen D, et al. social media use and perceived social isolation among young adults in the U.S. *Am J Prev Med*. 2017;53(1):1–8.
25. Verduyn P, Ybarra O, Résibois M, Jonides J, Kross E. Do social network sites enhance or undermine subjective well-being? A critical review. *Soc Issues Policy Rev*. 2017;11(1):274–302.
26. McCrae N, Gettings S, Pursell E. Social media and depressive symptoms in childhood and adolescence: A systematic review. *Adolescent Research Review*. 2017 Dec;2(4):315-30.