Social Media Addiction and Sleep Quality in Adolescents: A Systematic Literature Review

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Abstract

Problematic social media use (social media addiction) has become a dominant mental health and behavioral issue among adolescents worldwide, and one of its most significant consequences is the degradation of sleep quality. This study aims to systematically investigate the relationship between social media addiction and sleep quality in adolescents on the basis of scientific literature published over the last five years. The review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines; literature was searched across electronic databases (Google Scholar, PubMed, and ScienceDirect) for articles published between 2021 and 2025, and from an initial pool of records, 20 studies meeting the inclusion criteria were comprehensively analyzed. The synthesis demonstrates a consistent and significant negative association between social media addiction and adolescent sleep quality. Three primary mechanisms link the two variables: (1) sleep displacement, (2) cognitive and emotional arousal triggered by content exposure and the Fear of Missing Out (FoMO), and (3) blue-light exposure before bedtime, which disrupts melatonin secretion. Parental mediation of bedtime internet-use rules emerged as a key protective factor. Social media addiction consistently worsens adolescent sleep quality; interventions centered on sleep-hygiene education and the restriction of night-time screen time are therefore strongly needed.

Keywords: *social media addiction; sleep quality; adolescents; systematic literature review; PRISMA*

1. INTRODUCTION

Adolescence is a critical transitional phase marked by rapid physical, cognitive, and socio-emotional change, during which the brain's reward and social-cognitive systems are especially sensitive to digital social feedback (Crone & Konijn, 2018). In today's digital era, social media has become an inseparable part of adolescents' daily interaction, with problematic or intense use now documented across dozens of countries (Boniel-Nissim et al., 2023; Khan et al., 2024). Although it offers connectivity and social support, uncontrolled social media use can develop into addictive behavior, or problematic social media use (PSMU). Social media addiction is characterized by an inability to control the urge to access social media, salience, withdrawal, and continued use despite adverse consequences, resulting in disruption to everyday functioning, including physical and mental health (Andreassen et al., 2016). One of the health domains most vulnerable to this disruption is the quality and pattern of sleep (Pagano et al., 2023; Yu et al., 2024). This is particularly concerning because sufficient, good-quality sleep 8 to 10 hours for teenagers is essential for brain development, emotion regulation, and the academic performance of adolescents (Paruthi et al., 2016).

Despite growing scholarly attention to digital media use and adolescent sleep, the existing evidence requires a more focused synthesis that distinguishes problematic social media use from general screen exposure and examines the pathways through which these behaviors may be associated with sleep outcomes (Khan et al., 2024; Ndubisi et al., 2025). These forms of digital engagement are not interchangeable: the frequency and duration of use alone may not adequately capture compulsive checking, difficulty disengaging from online interactions, or continued engagement despite negative consequences (Andreassen et al., 2016). Furthermore, the association between problematic social media use and sleep quality may involve interconnected behavioral, psychological, and biological processes, including bedtime procrastination and cognitive-emotional arousal (Jiang & Yoo, 2024; MacKenzie et al., 2022), the fear of missing out (FoMO) that compels continual device checking (Przybylski et al., 2013; Zhu et al., 2023), and circadian disruption arising from pre-sleep exposure to screen-emitted blue light, which suppresses melatonin secretion (Chang et al., 2015; Lund et al., 2021). Individual and contextual factors, particularly parental mediation of nighttime device use, may also shape the strength of this association (Van Den Eijnden et al., 2021). Synthesizing these dimensions is important for moving beyond a general account of screen exposure toward a more differentiated understanding of how problematic social media engagement relates to adolescent sleep health.

Against this background, the present study conducts a systematic literature review of research published between 2021 and 2025 to examine the association between social media addiction, or problematic social media use, and sleep quality among

adolescents. Specifically, the review aims to (1) characterize the direction and consistency of the reported association, (2) synthesize the behavioral, psychological, and biological mechanisms proposed to explain this relationship, and (3) identify moderating or protective factors that may influence the association, with particular attention to parental mediation. By integrating findings across different study designs and research contexts, this review seeks to clarify the current state of evidence, identify areas of convergence and uncertainty, and establish priorities for future research. The findings may also inform the development of evidence-based approaches to adolescent sleep-health promotion that address not only nighttime screen exposure but also the behavioral and psychosocial dimensions of problematic social media use.

2. METHOD

Design and Protocol

This study was designed as a Systematic Literature Review (SLR) following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. A literature search was conducted across electronic databases Google Scholar, PubMed, and ScienceDirect for peer-reviewed articles published between 2021 and 2025. The study selection process is summarized in the PRISMA flow diagram (Figure 1): from 250 records identified, 120 remained after title/abstract screening and duplicate removal, 45 full-text articles were assessed for eligibility, and 20 studies were ultimately included in the synthesis.

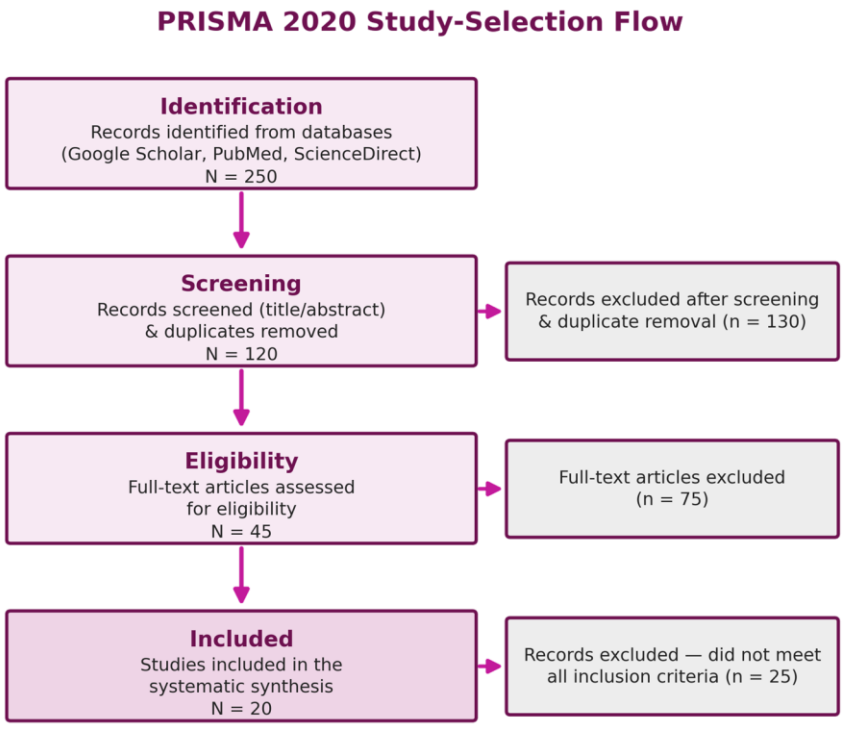


Figure 1. *PRISMA 2020 flow of study identification, screening, eligibility, and inclusion.*

Inclusion and Exclusion Criteria

Study-selection criteria were as follows.

1. **Inclusion:** (a) peer-reviewed scientific articles published between 2021 and 2025; (b) addressing the main variables of *social media addiction* (X) and *sleep quality/disturbance* (Y); (c) focused on adolescent populations (aged 10–24 years); and (d) employing quantitative, qualitative, systematic-review, or meta-analytic methodology.
2. **Exclusion:** (a) non-peer-reviewed articles or opinion pieces; (b) studies focused solely on older-adult populations without an adolescent sample; and (c) articles without full-text availability.

Data Extraction and Analysis

Data were extracted according to the following fields: author name, year of publication, study design, sample size/characteristics, measurement instruments, and key findings regarding the relationship between social media addiction and sleep quality. The extracted evidence was synthesized narratively and thematically to identify recurrent mechanisms and moderators.

3. RESULTS

The systematic search yielded 20 reputable articles that specifically examined the relationship between social media addiction and adolescent sleep quality. Table 1 summarizes the 20 primary studies analyzed.

Table 1

Summary of the 20 Studies Included in the Systematic Synthesis

No	Author & year	Study design	Main focus / variables	Key finding
1	Ahmed et al. (2024)	Systematic review & meta-analysis	Social media use, mental health, sleep	High-volatility social media use is directly linked to anxiety and reduced sleep duration.
2	Azhari et al. (2022)	Empirical (quantitative)	Social media, anxiety, loneliness, sleep (female adolescents)	Interactive social media use among adolescent girls significantly raises anxiety and sleep disturbance.
3	Boniel-Nissim et al. (2023)	Cross-national study (18 countries)	Sleep patterns, adolescent social media use	Social media addiction delays sleep onset and shortens sleep duration across countries.
4	Brautsch et al. (2022)	Systematic review	Digital media & sleep (late adolescence)	Night-time media use is strongly associated with sleep fragmentation and daytime sleepiness.
5	Cal-Herrera et al. (2025)	Systematic review & meta-analysis	Eating & sleeping habits of adolescents	Social media use adversely affects sleep patterns and triggers unhealthy eating habits.

6	Dibben et al. (2023)	Systematic review (prospective)	Interactive devices, sleep & mental health	A prospective link exists between night-time interactive-device duration and declining sleep quality.
7	Jiang & Yoo (2024)	Quantitative (mediation)	Short-form video addiction, social anxiety, sleep	Short-form video addiction worsens sleep quality directly and indirectly via social anxiety.
8	Khan et al. (2024)	Cross-national (40 countries)	Problematic social media use, sleep	Intense, problematic social media use correlates highly with insomnia in adolescents.
9	Lafontaine-Poissant et al. (2024)	Observational study	Sleep health of Canadian adolescents	Adolescents with high pre-sleep screen time are twice as likely to sleep below recommended duration.
10	Lee et al. (2023)	Pandemic-acceleration study	Smartphone, social media, sleep	A post-pandemic surge in social media addiction increased acute sleep deficit in adolescents.
11	Lund et al. (2021)	Systematic review	Electronic media & sleep	Night-time screen exposure disrupts circadian rhythm and lowers sleep efficiency.
12	MacKenzie et al. (2022)	Qualitative systematic review	Adolescent perspectives on bedtime media	Adolescents report emotional dependence on bedtime social media despite awareness of its harm.
13	Nagata et al. (2023)	Cohort study (ABCD Study)	Bedtime screen behaviors	In-bed social media activity is directly associated with prolonged sleep-onset latency.
14	Nagata et al. (2024)	Prospective cohort study	Pre-sleep screen behavior	Pre-sleep social media use longitudinally predicts poor long-term sleep quality.
15	Ndubisi et al. (2025)	Scoping review of reviews	Social media & sleep quality	A comprehensive synthesis confirms a bidirectional interaction between social media addiction and sleep.
16	Pagano et al. (2023)	Meta-analysis	Digital use & unhealthy sleep	Confirms a moderate-to-high effect size between social media duration and poor sleep quality.
17	Pirdehghan et al. (2021)	Cross-sectional	Sleep disturbance & social media	Adolescents with high addiction levels have a threefold risk of sleep disturbance.
18	Van Den Eijnden et al. (2021)	Longitudinal study	Parental rules, social media, sleep	Parental rules on pre-sleep internet use are an effective protective factor against sleep disturbance.
19	Yu et al. (2024)	Scoping review	Social media, sleep & mental health	Social-media-related sleep disturbance is closely tied to elevated depression and anxiety.
20	Zhu et al. (2023)	Cross-sectional	Addiction, fatigue, FoMO, sleep quality	Social media addiction and FoMO contribute significantly to social-media fatigue and sleep degradation.

Note. FoMO = Fear of Missing Out. Findings are summarized from the included peer-reviewed studies (2021–2025).

Across the 20 studies, the association between social media addiction and poorer adolescent sleep quality is consistent and significant, spanning cross-sectional, longitudinal/cohort, cross-national, meta analytic, and qualitative designs. The meta analytic evidence indicates a moderate to high effect size (Pagano et al., 2023), and a scoping review of reviews suggests the relationship is *bidirectional* (Ndubisi et al., 2025).

4. DISCUSSION

Synthesizing the 20 studies, four interrelated patterns explain the link between social media addiction and reduced adolescent sleep quality. The three causal mechanisms and the key protective moderator are integrated in Figure 2.

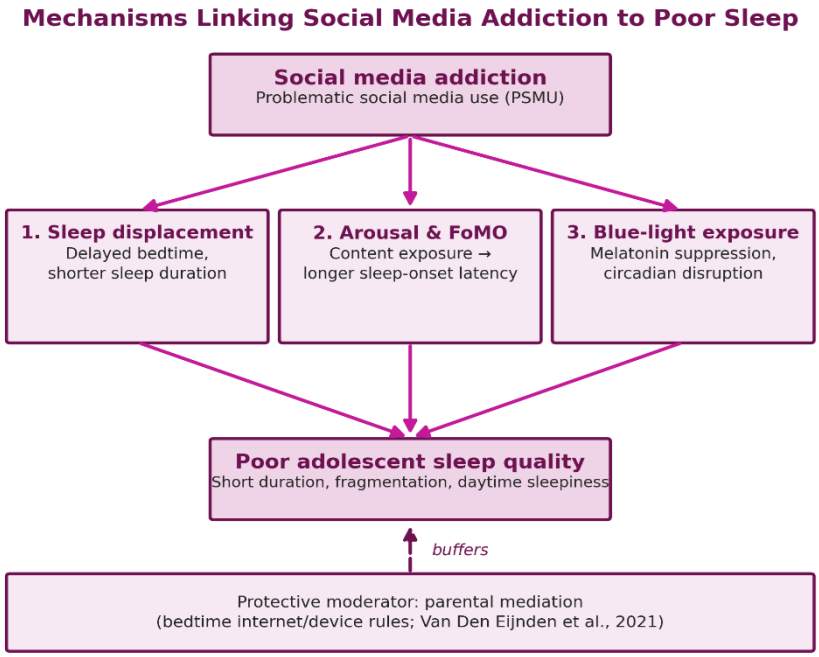


Figure 2. *Mechanisms linking social media addiction to poor adolescent sleep quality (sleep displacement, cognitive/emotional arousal and FoMO, and blue light exposure), with parental mediation as a protective moderator.*

Sleep Displacement

The majority of studies (e.g., Boniel-Nissim et al., 2023; Pagano et al., 2023) confirm that addictive social media use contributes directly to *sleep displacement*. Adolescents, deliberately or inadvertently, postpone bedtime in order to keep interacting with digital platforms or consuming content, so that daily sleep duration falls sharply below the recommended range. Observational evidence reinforces this: adolescents with high pre-sleep screen time are roughly twice as likely to sleep below recommended duration (Lafontaine-Poissant et al., 2024).

Cognitive-Emotional Arousal and FoMO

Social media content is designed to be interactive and dynamic. Jiang and Yoo (2024) and Zhu et al. (2023) show that exposure to short-form video and social interaction triggers *cognitive and emotional arousal*, while the *Fear of Missing Out* (FoMO) drives adolescents to check their devices continually. This state of mental arousal impedes the relaxation needed to initiate sleep, lengthening sleep-onset latency; Jiang and Yoo (2024) further identify social anxiety as a mediating pathway from short-form video addiction to poorer sleep.

Biological Mechanism: Blue-Light Exposure

Longitudinal work by Nagata et al. (2023, 2024) and the systematic review by Lund et al. (2021) highlight the effect of *blue-light* exposure from devices. Night-time exposure suppresses pineal secretion of melatonin, disrupting the adolescent's natural circadian rhythm and lowering sleep efficiency an effect compounded when in-bed device use prolongs sleep-onset latency (Nagata et al., 2023).

Moderation: Parental Mediation

A crucial finding from Van Den Eijnden et al. (2021) underscores the role of a moderating variable: firm parental rules restricting pre-sleep internet/device use effectively mitigate the negative impact of social media addiction on adolescent sleep quality. Qualitative evidence nuances this picture-adolescents report emotional dependence on bedtime social media even when aware of its harm (MacKenzie et al., 2022) implying that external structure (parental mediation) complements individual awareness.

Integration and Implications

Taken together, the evidence positions social media addiction as a consistent risk factor for poor adolescent sleep, operating through behavioral (displacement), psychological (arousal/FoMO), and biological (blue-light) pathways, with downstream ties to depression and anxiety (Yu et al., 2024). Because the relationship appears bidirectional (Ndubisi et al., 2025), poor sleep may in turn intensify problematic use, suggesting intervention at both ends. Practically, the findings support sleep-hygiene education, structured limits on night-time screen time, and the active involvement of parents in setting bedtime device rules.

Limitations and Future Research

Several limitations qualify these conclusions. First, this review synthesized findings narratively and thematically rather than pooling effects meta-analytically, and it did not report formal risk-of-bias or quality-appraisal ratings; adding these would strengthen the evidence grade. Second, the search was bounded by three databases, the 2021–2025 window, and language/indexing, which may introduce selection and publication bias. Third, many included studies are cross-sectional, limiting causal inference, and measures of "addiction" and "sleep quality" varied

across studies. Future research should employ longitudinal and experimental designs with harmonized measures, test the bidirectional model directly, and evaluate the comparative efficacy of sleep-hygiene and parental-mediation interventions.

5. CONCLUSION

This systematic literature review confirms a strong and consistent negative relationship between social media addiction and adolescent sleep quality. Social media addiction impairs sleep through the mechanisms of sleep displacement, FoMO driven emotional and cognitive arousal, and circadian disruption from device blue light exposure. The practical implication is clear: sleep-hygiene education and the active role of parents in setting limits on in-bed device use are essential to protecting adolescents' physical and psychological health.

Declarations

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Data Availability. *This review synthesized previously published literature; all sources are listed in the references.*

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