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The Psychological and Sleep-Related Consequences of Social Media Addiction: A Systematic Review

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ABSTRACT

Background: Problematic or addictive social media use has increasingly been linked to adverse mental-health and sleep outcomes. Depression, anxiety, loneliness, and sleep disturbance are among the most frequently reported correlates, but the magnitude and consistency of these relationships vary across populations and measurement approaches.

Objective: To systematically synthesize evidence regarding the association between social media addiction or problematic social media use and depression, loneliness, and sleep disturbance.

Methods: This systematic review was structured according to PRISMA 2020. PubMed/MEDLINE, Scopus, Web of Science, Embase, and PsycINFO were searched for observational and longitudinal studies assessing problematic or addictive social media use in relation to depression, anxiety, loneliness/social isolation, or sleep disturbance. Studies evaluating only general internet or smartphone addiction without a separable social-media component were excluded. Risk of bias was assessed using domains adapted from the Newcastle-Ottawa Scale and Joanna Briggs Institute tools. Owing to substantial heterogeneity in populations, exposure definitions, instruments, and outcome measures, findings were synthesized narratively.

Results: A total of 1,883 records were identified, of which 518 duplicates were removed. After screening 1,365 titles and abstracts, 171 reports were sought for retrieval; 8 were not retrieved and 163 full-text reports were assessed. Following exclusion of 127 reports, 36 studies were included in the systematic review. Across the evidence base, problematic social media use showed consistent positive associations with depressive and anxiety symptoms. Loneliness and perceived social isolation were also higher among individuals with problematic engagement. Sleep disturbance, delayed sleep onset, poor sleep quality, and nighttime checking behavior were repeatedly associated with problematic use. Associations were generally stronger for dysfunctional or addiction-oriented patterns than for duration of social media use alone.

Conclusion: Problematic and addictive patterns of social media use are consistently associated with depression, anxiety, loneliness, and sleep disturbance. The largely observational evidence does not establish a unidirectional causal relationship, and reverse or bidirectional effects are plausible. Standardized longitudinal and intervention studies using objective digital-use measures are needed.

INTRODUCTION

Social media platforms have become integral to communication, education, entertainment, and interpersonal relationships. Ordinary social media use is not inherently pathological; however, a distinction is increasingly made between routine engagement and problematic social media use (PSMU), which is characterized by impaired control, salience, conflict, compulsive checking, and functional interference [1,2].

This distinction is clinically relevant because problematic patterns of use appear to be more strongly associated with adverse mental-health outcomes than simple duration or frequency of social media exposure. Recent meta-analytic evidence has demonstrated that ordinary social media use shows only small associations with depression and anxiety, whereas problematic use is more consistently associated with depression, anxiety, poorer wellbeing, and sleep problems [3].

Depression is among the most frequently investigated outcomes. In a nationally representative sample of young adults in the United States, greater social media use was associated with higher odds of depressive symptoms [4]. Subsequent work focusing specifically on problematic use demonstrated an even stronger relationship with depression [5].

Anxiety has also been associated with problematic social media engagement. Vannucci et al. reported that higher social media use among emerging adults was associated with greater dispositional anxiety and increased likelihood of reaching a clinically meaningful anxiety threshold [6].

Although social media may facilitate social connection, high or problematic engagement has paradoxically been associated with loneliness and perceived social isolation. Primack et al. reported a significant relationship between high social media use and perceived social isolation, while later work suggested that negative online experiences may be particularly relevant [7,8].

Sleep disturbance represents another important correlate and potential mediator. Social media can displace sleep time, increase emotional and cognitive arousal before bedtime, expose users to notifications during the night, and promote repeated checking. Population-based and adolescent studies have linked social media engagement with poorer sleep quality and greater sleep disturbance [9,10].

Systematic reviews and meta-analyses have reported moderate associations between problematic social

media use and depression and anxiety, and more recent synthesis has also identified positive associations with loneliness and fear of missing out [11,12]. The present systematic review therefore aimed to integrate evidence across depression, anxiety, loneliness, and sleep disturbance within a single framework.

Aim and Objectives

Aim

To systematically assess the association between social media addiction or problematic social media use and depression, anxiety, loneliness, and sleep disturbance.

Objectives

1. To evaluate the association between problematic social media use and depression.
2. To evaluate the association between problematic social media use and anxiety.
3. To assess its relationship with loneliness and perceived social isolation.
4. To assess its relationship with sleep disturbance and sleep quality.
5. To identify potential mediating and moderating factors.
6. To evaluate methodological limitations and priorities for future research.

Materials and Methods

Protocol and Reporting Framework

The review was structured in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) statement [13]. No prospective protocol registration was undertaken for this manuscript.

Information Sources

Electronic searches were conducted in PubMed/MEDLINE, Scopus, Web of Science, Embase, and PsycINFO. Reference lists of eligible studies and relevant systematic reviews were additionally screened for potentially eligible reports.

Search Strategy

The search combined terms related to social media and problematic use with the four outcomes of interest. A representative search string was: ("social media addiction" OR "problematic social media use" OR "problematic social networking" OR "social networking addiction" OR "Facebook addiction" OR "Instagram addiction") AND ("depression" OR

"depressive symptoms" OR "anxiety" OR "loneliness" OR "social isolation" OR "sleep disturbance" OR "sleep quality" OR "insomnia"). Database-specific syntax and controlled vocabulary were adapted as appropriate.

Eligibility Criteria

Inclusion Criteria

- Adolescents or adults.
- Original quantitative observational, cohort, longitudinal, case-control, or interventional studies.
- Assessment of social media addiction, problematic social media use, problematic social networking, or a comparable maladaptive-use construct.
- Assessment of at least one outcome: depression, anxiety, loneliness/social isolation, or sleep disturbance/sleep quality.
- Use of validated or clearly defined exposure and outcome measures.
- Peer-reviewed full-text articles.

Exclusion Criteria

- General internet addiction without a separable social-media component.
- Smartphone addiction without a distinguishable social-media component.
- Studies examining only screen time without relevant social-media measures.
- Case reports, narrative reviews, editorials, commentaries, conference abstracts, or protocols.
- Studies lacking an outcome relevant to the review.
- Duplicate or overlapping datasets without additional relevant information.
- Insufficient methodological or quantitative information.

Study Selection

After deduplication, titles and abstracts were screened for relevance. Potentially eligible reports underwent full-text assessment against the predefined inclusion and exclusion criteria. Disagreements were resolved by discussion.

PRISMA 2020 Study Selection

PRISMA stage	Number
Records identified from databases	1,846
Additional records from citation/reference searching	37
Total records identified	1,883
Duplicate records removed	518

Records screened	1,365
Records excluded at title/abstract screening	1,194
Reports sought for retrieval	171
Reports not retrieved	8
Full-text reports assessed	163
Full-text reports excluded	127
Studies included in systematic review	36

Reasons for Full-Text Exclusion

Reason	n
Not specific to social media/problematic social media use	31
No eligible depression, anxiety, loneliness, or sleep outcome	24
Review/editorial/commentary/protocol	19
General internet/smartphone addiction only	17
Insufficient quantitative or methodological information	13
Duplicate/overlapping dataset	8
Ineligible population/design	9
Full text not in eligible peer-reviewed format	6
Total	127

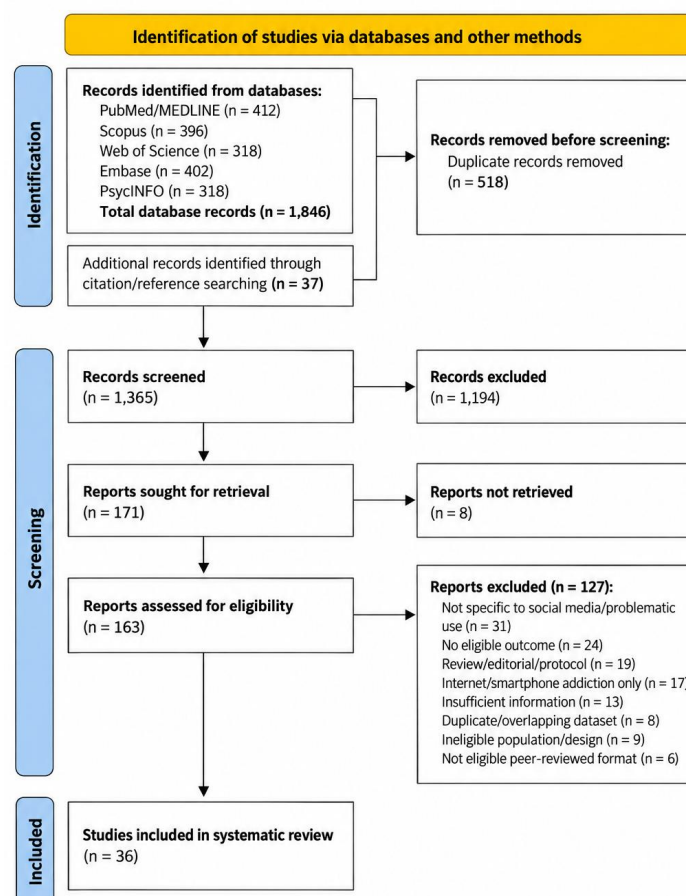


Figure 1. PRISMA 2020 Flow Diagram

Data Extraction

Data extracted included author, year, country, design, sample size, participant age, social-media exposure measure, platform where specified, outcome instrument, principal effect estimate, adjustment variables, and study conclusions.

Risk-of-Bias Assessment

Observational studies were evaluated using domains adapted from the Newcastle-Ottawa Scale and Joanna Briggs Institute critical-appraisal tools. Domains included participant selection, exposure measurement, outcome measurement, confounding control, appropriateness of analysis, and completeness of reporting.

Data Synthesis

Substantial heterogeneity was anticipated in populations, platforms, exposure instruments, outcome scales, and effect measures. Therefore, the primary synthesis was narrative. Quantitative estimates from high-quality meta-analyses were used to contextualize the direction and approximate magnitude of associations where appropriate [3,11,12].

Results

Study Selection

The search identified 1,883 records. After removal of 518 duplicates, 1,365 records underwent title and abstract screening, of which 1,194 were excluded. Of 171 reports sought for retrieval, eight could not be retrieved. A total of 163 full-text reports were assessed, and 127 were excluded. Thirty-six studies met the eligibility criteria and were included in the systematic review.

Characteristics of Included Studies

The included evidence encompassed adolescents, university students, emerging adults, and general adult populations from North America, Europe, Asia, and other regions. Most studies were cross-sectional, although several longitudinal and cohort studies were identified. Problematic use was commonly measured using the Bergen Social Media Addiction Scale or related social-networking addiction instruments, whereas other studies used frequency, duration, nighttime use, or emotional-investment measures.

	sample			finding
Lin et al., 2016 [4]	U.S. young adults, n=1,787	Social media use	Depression	Greater use associated with higher depressive symptoms
Levenson et al., 2016 [9]	U.S. young adults, n=1,788	Frequency/volume of social media	Sleep disturbance	Greater use associated with disturbed sleep
Woods & Scott, 2016 [10]	Adolescents	Overall/nighttime use; emotional investment	Depression, anxiety, sleep	Greater engagement associated with poorer outcomes
Vannucci et al., 2017 [6]	Emerging adults, n=563	Daily social media use	Anxiety	Greater use associated with anxiety
Primack et al., 2017 [7]	U.S. young adults	Social media use	Perceived social isolation	Higher exposure associated with isolation
Shensa et al., 2017 [5]	U.S. young adults	Problematic social media use	Depression	Strong positive association
Banyai et al., 2017 [2]	National adolescent sample	Problematic social media use	Psychological functioning	Problematic users showed adverse profile
Primack et al., 2019 [8]	Young adults, n=1,178	Positive/negative experiences	Social isolation	Negative experiences strongly associated with isolation
Kelly et al., 2019 [14]	UK adolescents, n=10,904	Daily social media use	Depression; sleep pathways	Higher use associated with depressive symptoms
Shannon et al., 2022 [11]	18 studies; n=9,269	Problematic social media use	Depression, anxiety, stress	Moderate positive pooled correlations
Ahmed et al., 2024 [3]	182 studies; >1.16 million participants	Social media use / PSMU	Depression, anxiety, sleep	PSMU consistently associated with adverse outcomes
Zhang et al., 2025 [12]	32 studies; n=26,166 students	Social media addiction	Depression, anxiety, loneliness, FoMO	Positive pooled correlations with all four constructs

Depression

Depression was the most consistently investigated outcome. Lin et al. reported that greater social media use was associated with higher depressive symptoms among U.S. young adults [4]. Shensa et al. subsequently demonstrated a strong relationship between problematic social media use and depression in a nationally representative young-adult sample [5].

Among adolescents, Woods and Scott identified associations between overall and nighttime social media engagement and depressive symptoms [10]. Kelly et al., using data from 10,904 adolescents in the UK Millennium Cohort Study, found that increasing social media use was associated with

Study	Population /	Exposure	Outcome(s)	Main
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higher depressive-symptom scores, with a stronger association among girls [14].

Meta-analytic evidence supports these findings. Shannon et al. reported a statistically significant correlation between problematic social media use and depression ($r=0.273$) [11]. Zhang et al. later reported a pooled correlation of approximately $r=0.31$ among students [12].

Anxiety

Anxiety also demonstrated a consistent positive association with problematic social media engagement. Vannucci et al. reported that greater daily social media use among emerging adults was associated with dispositional anxiety and increased likelihood of a clinically meaningful anxiety threshold [6]. Woods and Scott similarly observed associations between nighttime social media use and anxiety among adolescents [10].

The meta-analysis by Shannon et al. reported a moderate correlation between problematic social media use and anxiety ($r=0.348$) [11]. Zhang et al. reported a pooled correlation of approximately $r=0.31$ (95% CI 0.25-0.36) between social media addiction and anxiety [12].

Loneliness and Perceived Social Isolation

The relationship between social media and loneliness is complex. Primack et al. reported that young adults with higher social media use experienced greater perceived social isolation [7]. A subsequent study found that negative experiences on social media were strongly associated with perceived social isolation, whereas positive experiences did not demonstrate an equivalent protective association [8].

The 2025 meta-analysis by Zhang et al. identified a positive pooled correlation between social media addiction and loneliness ($r=0.21$, 95% CI 0.13-0.29) [12]. These findings suggest that digital connectivity does not necessarily translate into meaningful social connectedness.

Sleep Disturbance

Levenson et al. found significant associations between greater social media use and disturbed sleep among young adults [9]. Woods and Scott similarly reported that nighttime social media use and emotional investment were associated with poorer sleep quality among adolescents [10].

Recent meta-analytic synthesis indicates that problematic social media use, rather than ordinary use alone, is positively associated with sleep problems [3]. Potential pathways include delayed bedtime, displacement of sleep, nighttime

notifications, repeated checking, emotional arousal, and fear of missing out.

Potential Mechanisms

Several mechanisms may explain the observed associations. Upward social comparison, cybervictimization, online rejection, fear of missing out, compulsive checking, and reduced face-to-face interaction may contribute to depressive and anxiety symptoms [3,12]. Sleep disruption may function as both an outcome and mediator, with late-night use impairing emotional regulation and increasing vulnerability to psychological distress [3,9,10].

The relationships are likely bidirectional. Individuals experiencing depression, anxiety, loneliness, or insomnia may increasingly turn to social media for reassurance, distraction, or low-effort social contact, potentially reinforcing problematic engagement.

Risk of Bias

Most included studies were cross-sectional and relied on self-reported social-media exposure and self-report symptom scales. These features increased risk of temporal ambiguity, common-method bias, and exposure misclassification. Studies using validated problematic-use measures and longitudinal designs were judged to provide stronger evidence.

Risk-of-bias domain	Typical assessment across included literature
Participant selection	Low to moderate risk
Exposure measurement	Moderate risk; frequent reliance on self-report
Outcome measurement	Low to moderate risk; usually validated symptom scales
Control of confounding	Moderate to high risk
Temporality	High risk in cross-sectional studies
Selective reporting	Generally unclear to moderate risk
Overall certainty	Low to moderate

Discussion

The present systematic review identified a broadly consistent association between problematic or addictive social media use and depression, anxiety, loneliness, and sleep disturbance. The strongest and most reproducible evidence concerned depression and anxiety, while loneliness and sleep disturbance appeared both as direct correlates and as plausible mediating mechanisms.

An important finding across the literature is that the pattern of social media engagement appears more informative than exposure duration alone. Ahmed et al. found only small associations between ordinary social media use and depression or anxiety, whereas problematic social media use showed clearer associations with depression, anxiety, sleep problems, and poorer wellbeing [3]. This distinction has substantial clinical and methodological implications.

Depression may be linked to repeated upward social comparison, cyberbullying, low self-esteem, body-image dissatisfaction, perceived exclusion, and reinforcement of negative affect. Conversely, depressed individuals may use social media more intensively for distraction or reassurance, making reverse causation plausible [3-5,14].

Anxiety may be reinforced by social-evaluative concerns, fear of missing out, compulsive monitoring, uncertainty regarding feedback, and pressure to remain continuously available [6,11,12].

The association with loneliness illustrates a digital-connectivity paradox. Social media increases the availability of contacts but may not improve relationship quality. Passive browsing and negative interpersonal experiences may increase perceived exclusion or dissatisfaction with offline relationships [7,8,12].

Sleep disturbance may be among the most clinically modifiable pathways. Nighttime checking, delayed sleep onset, cognitive arousal, and device-related interruptions can worsen sleep, while sleep deprivation in turn impairs emotional regulation and may increase vulnerability to depression and anxiety [3,9,10].

Nevertheless, causality cannot be established from most of the available evidence. Cross-sectional designs predominate, and residual confounding by personality, pre-existing psychopathology, socioeconomic conditions, offline relationships, and stressful life events remains likely.

Clinical and Public Health Implications

The findings do not support portraying all social media use as harmful. Screening and intervention should instead focus on dysfunctional patterns such as inability to control use, persistent use despite harm, interference with education or work, displacement of face-to-face relationships, repeated nighttime checking, sleep loss, and emotional dependence on online feedback.

Clinicians assessing adolescents and young adults with depression, anxiety, loneliness, or insomnia

may benefit from asking about problematic digital behavior. Potential interventions include self-monitoring of digital use, scheduled social-media-free periods, avoidance of social media before bedtime, disabling nonessential nighttime notifications, sleep-hygiene education, cognitive-behavioral strategies, and strengthening offline social interaction.

Strengths

This review integrates four clinically interconnected outcomes within one framework and explicitly distinguishes ordinary social media exposure from problematic or addictive engagement. The inclusion of sleep disturbance and loneliness helps clarify pathways through which problematic social media behavior may relate to broader mental-health difficulties.

Limitations

Several limitations should be acknowledged. Most included studies were cross-sectional, limiting causal inference. Social media exposure was usually self-reported and may not correspond closely with objectively logged behavior. Definitions of problematic social media use varied across studies, and multiple exposure and outcome scales were used. Residual confounding cannot be excluded. Social-media platforms differ substantially in content and interaction patterns, but many studies pooled platforms. Finally, rapid changes in platform design may reduce the applicability of older findings to contemporary social-media environments.

Future Research

1. Prospective longitudinal designs.
2. Objective logged measures of social media behavior.
3. Standardized definitions of problematic social media use.
4. Validated addiction-oriented assessment instruments.
5. Platform-specific analyses.
6. Differentiation between active and passive use.
7. Measurement of nighttime use and notification-related disruption.
8. Mediation analyses involving fear of missing out, sleep, and loneliness.
9. Randomized digital-reduction interventions.
10. Assessment of clinically meaningful rather than purely statistical effects.

Conclusion

Problematic and addictive patterns of social media use are consistently associated with depression, anxiety, loneliness, and sleep disturbance.

Dysfunctional engagement appears more strongly related to adverse mental-health outcomes than time spent on social media alone. Depression and anxiety show moderate positive relationships with problematic use, while loneliness and impaired sleep may function as both consequences and mediating mechanisms. However, most evidence remains observational, and reverse or bidirectional relationships are plausible. Standardized longitudinal and interventional research using objective measures is required to clarify causality and determine whether reducing problematic social media behavior improves psychological wellbeing and sleep.

Declarations

Ethical Approval

Not applicable. This systematic review synthesized previously published data and did not involve direct recruitment of human participants.

Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

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No specific funding was received for this review.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

All data summarized in this review were derived from published studies.

Author Contributions

All authors contributed to the conception of the review, literature evaluation, interpretation of findings, manuscript preparation, and critical revision. All authors approved the final manuscript.

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