

SLEEP AND MENTAL HEALTH IN ADOLESCENTS: A REVIEW OF RECENT SYSTEMATIC REVIEWS

Andrea Lukács

Faculty of Health Sciences, University of Miskolc
E-mail: andrea.lukacs@uni-miskolc.hu

Summary: Sleep plays a vital role in adolescent development, influencing mental, emotional, and cognitive health. Increasing evidence suggests a strong association between sleep disturbances and mental health problems in adolescents, including anxiety, depression, and suicidality. This review aims to synthesize systematic reviews and meta-analyses published between 2020 and 2025 that examine the relationship between sleep and mental health outcomes in healthy adolescent populations. A comprehensive literature search was conducted in PubMed using the keywords healthy AND adolescents AND sleep AND “mental health”, limited to systematic reviews published from 2020 to 2025. Sixteen records were identified, and after screening and eligibility assessment based on predefined inclusion criteria, seven studies were included in the final synthesis. PRISMA 2020 guidelines were followed for study selection and reporting. The included studies consistently reported that insufficient sleep duration, poor sleep quality, and irregular sleep patterns were associated with elevated risks of anxiety, depression, emotional dysregulation, and suicidal ideation in adolescents. Some reviews also identified potential moderators such as parental influence, sleep hygiene behaviors, and circadian misalignment. Sleep significantly influences adolescent mental health, and addressing sleep-related factors may be a key avenue for early intervention and prevention strategies.

Keywords: *adolescents, sleep, mental health, systematic review, meta-analysis, sleep disturbance*

1. INTRODUCTION

Adolescence is a critical developmental stage characterized by rapid physical, psychological, and social transformations. During this period, sleep plays an essential role in emotional regulation, cognitive performance, and overall mental health. However, a substantial proportion of adolescents fail to meet the recommended amount of sleep, with estimates suggesting that over 70% of high school students sleep less than 8 hours per night on school days [1]. This widespread sleep deprivation has raised growing concerns about its implications for adolescent mental well-being. A growing body of empirical evidence indicates that insufficient or poor-quality sleep is linked to a heightened risk of mental health issues such as depression, anxiety, and suicidal ideation among adolescents [2, 3]. Longitudinal studies have further shown that sleep disturbances can precede the onset of affective disorders, suggesting a potentially causal or bidirectional relationship [4]. These

findings underscore the importance of sleep as a modifiable risk factor in adolescent mental health prevention and intervention strategies.

In recent years, systematic reviews and meta-analyses have synthesized findings from individual studies, offering a higher-level understanding of the relationship between sleep and mental health. However, the scope, methods, and target populations of these reviews vary, limiting the comparability of their conclusions. Moreover, existing syntheses often include clinical or mixed-age populations, leaving a gap in our understanding of sleep–mental health associations specifically among healthy adolescents.

The current review aims to address this gap by synthesizing findings from systematic reviews and meta-analyses published between 2020 and 2025 that focus on sleep and mental health outcomes in healthy adolescent populations. By identifying consistent patterns, potential moderators, and methodological strengths and weaknesses across the literature, this study aims to inform future research directions and public health efforts focused on adolescent well-being.

2. METHODS

2.1. Search strategy and eligibility criteria

A systematic search was conducted in PubMed to identify relevant meta-analyses and systematic reviews published between January 1, 2020, and July 1, 2025. The search terms included: “healthy AND adolescents AND sleep AND mental health”. Filters were applied to retrieve only systematic reviews and/or meta-analyses, in English, focusing on human participants. The inclusion criteria were as follows:

- The study population primarily consisted of adolescents (typically aged 12–19 years),
- The review investigated sleep (duration, quality, disturbances, or timing) as a central variable,
- Mental health outcomes were explicitly examined (e.g., depression, anxiety, suicidality, emotional regulation),
- The article was a systematic review and/or meta-analysis.

Studies were excluded if they focused on adult populations, specific clinical subgroups unrelated to general adolescent health (e.g., transplant recipients, epilepsy, narcolepsy), or if sleep or mental health were not a central focus of the review.

2.2. Study Selection

A total of 16 articles were retrieved from the PubMed database. Following full-text screening and assessment for eligibility, seven studies were included in the final synthesis. The excluded studies either did not focus specifically on adolescents, did not have sleep or mental health as a primary focus, or examined unrelated clinical populations. The study selection process is summarized in the PRISMA flow diagram. (*Figure 1*)

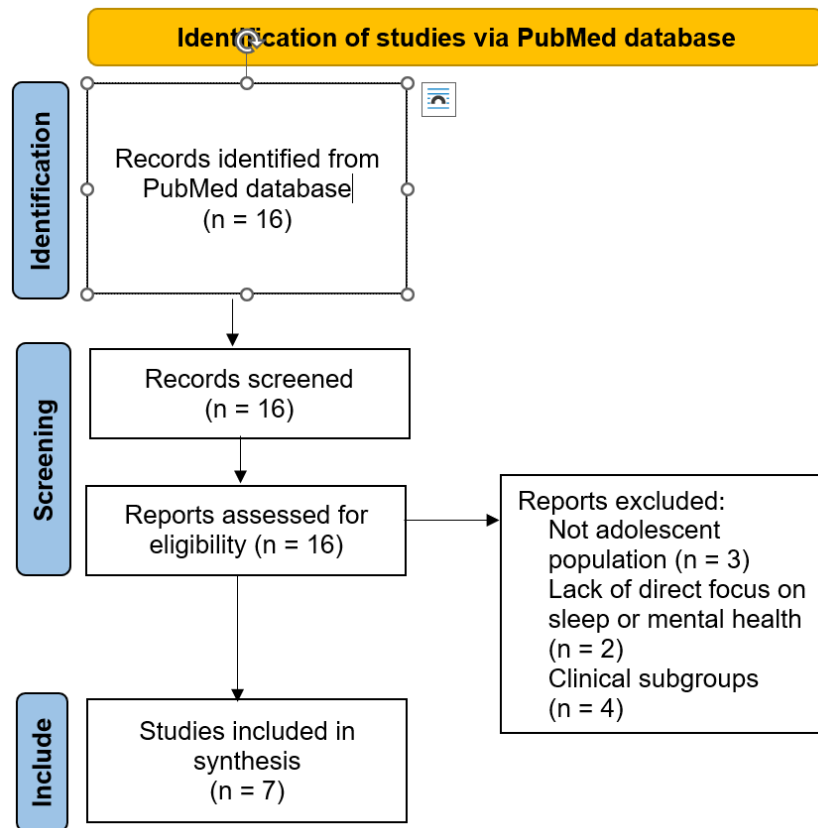


Figure 1. Identification of studies

3. RESULTS

A total of seven systematic reviews and/or meta-analyses met the inclusion criteria for this review. These studies examined the association between various sleep characteristics such as duration, quality, disturbances, hygiene, and circadian rhythms, and mental health outcomes in adolescents. The mental health domains explored included depression, anxiety, emotional regulation, suicidal ideation, and general psychological well-being.

Sample sizes across the included reviews varied considerably, with most incorporating both cross-sectional and longitudinal studies. Despite heterogeneity in methodologies and measurement tools, the majority of reviews reported that poorer sleep was associated with more adverse mental health outcomes. Baldini et al. synthesized data on sleep disturbances and suicidality, finding consistent associations between insomnia symptoms and increased risk of suicidal ideation and behavior [5]. Palmer et al. conducted a meta-analysis of experimental studies, demonstrating that acute sleep deprivation was linked to impaired emotional regulation in adolescents [6]. Khor et al. identified associations between modifiable

parental behaviors such as inconsistent monitoring and permissive bedtime routines, and poor sleep hygiene, depression, and anxiety [7]. Brinsley et al. reviewed the effectiveness of peer-led behavioral interventions and reported that those incorporating sleep hygiene components were associated with improvements in adolescent mental health [8]. Dale et al. examined 24-hour movement behaviors, concluding that sufficient sleep was a key protective factor against symptoms of depression and anxiety [9]. Kocavska et al. reviewed data from large population samples and found that shorter sleep duration and irregular sleep timing in adolescents were associated with increased risk of emotional difficulties [10]. Smith et al. evaluated health interventions in disadvantaged youth populations, noting that sleep education components were linked to improvements in psychological resilience and overall well-being [11].

Table 1
Characteristics of the included studies (n = 7)

Author (Year)	Population	Study type	Main findings
Baldini et al. (2024)	Adolescents (general and clinical samples)	Systematic review and meta-analysis	Sleep disturbances are significantly associated with increased suicidal thoughts and behaviors.
Palmer et al. (2024)	Adolescents and young adults	Meta-analysis	Sleep deprivation significantly impairs emotion regulation across developmental stages.
Khor et al. (2021)	Adolescents and parents	Systematic review and meta-analysis	Modifiable parental behaviors (e.g., inconsistent routines) are linked to poor sleep hygiene and increased emotional problems.
Brinsley et al. (2025)	School-aged adolescents	Systematic review and meta-analysis	Peer-led health promotion programs including sleep education improve adolescent mental health and well-being.
Dale et al. (2025)	General adolescent and adult populations	Systematic review	Adequate sleep duration serves as a protective factor against depressive symptoms.
Kocavska et al. (2021)	Over 1 million participants, including adolescents	Meta-analysis	Sleep duration and timing vary widely; misalignment is associated with emotional dysregulation.
Smith et al. (2021)	Socioeconomically disadvantaged adolescents	Systematic review	Health literacy interventions (including sleep education) promote better mental well-being.

4. DISCUSSION

This systematic review examined recent evidence (2020–2025) on the association between sleep and mental health outcomes among adolescents. Seven systematic reviews and/or meta-analyses were included. The findings consistently support a negative association between inadequate sleep and mental health, with sleep disturbances emerging as a significant correlate of depression, anxiety, suicidality, and emotional dysregulation.

Across studies, several sleep dimensions – short duration, poor quality, irregular timing – were linked with increased mental health symptoms. Notably, Baldini et al. found that sleep problems were significantly associated with suicidal ideation and behaviors in adolescents, underscoring the clinical relevance of early identification and intervention [5]. Similarly, Palmer et al. showed that even short-term sleep loss impairs emotional regulation, a key vulnerability factor for affective disorders [6]. Environmental and psychosocial factors also play an important role. Khor et al. emphasized the influence of parental behavior on adolescent sleep hygiene and subsequent emotional health [7], while Brinsley et al. demonstrated that peer-led interventions may offer an effective and socially resonant strategy for promoting both sleep and psychological well-being [8]. In addition to individual and relational factors, structural determinants such as physical activity levels [9] and socioeconomic context [11] were shown to moderate the relationship between sleep and mental health. These findings suggest that interventions aimed at improving adolescent sleep must be multidimensional, incorporating behavioral, familial, and community-level components. The current evidence also highlights sleep as a potentially modifiable protective factor in adolescent mental health. Studies such as Kocavska et al. support the view that aligning sleep patterns with developmental needs may reduce vulnerability to internalizing symptoms [10].

Overall, this review reinforces the relevance of integrating sleep-focused components into adolescent mental health promotion and prevention strategies. Future research should investigate the causal pathways in longitudinal designs, explore sleep as a target for transdiagnostic interventions, and consider structural factors (e.g., school start times, screen exposure) affecting adolescent sleep.

5. CONCLUSION

Healthy sleep habits are closely associated with better mental health outcomes in adolescents. The systematic reviews and meta-analyses included in this review highlight the strength and consistency of this relationship. Promoting sleep health should be a key component of adolescent mental health strategies. Future research should focus on longitudinal designs, culturally diverse populations, and the effectiveness of sleep-focused interventions.

REFERENCES

- [1] Centers for Disease Control and Prevention (CDC) (2017). *Youth Risk Behavior Survey (YRBS) 2017 results*. <https://www.cdc.gov/healthyyouth/data/yrbs>
- [2] Shochat, T., Cohen-Zion, M., & Tzischinsky, O. (2014). Functional consequences of inadequate sleep in adolescents: A systematic review. *Sleep Medicine Reviews*, 18 (1), 75–87. <https://doi.org/10.1016/j.smrv.2013.03.005>
- [3] Beattie, L., Kyle, S. D., Espie, C. A., & Biello, S. M. (2015). Social interactions, emotion regulation, and mood during daily life: Examining the role of sleep. *Sleep Health*, 1 (2), 121–127. <https://doi.org/10.1016/j.sleh.2015.02.008>
- [4] Lovato, N., & Gradisar, M. (2014). A meta-analysis and model of the relationship between sleep and depression in adolescents: Recommendations for prevention and intervention. *Sleep Medicine*, 15 (2), 137–144. <https://doi.org/10.1016/j.sleep.2013.06.013>
- [5] Baldini, V., et al. (2024). Association between sleep disturbances and suicidal behavior in adolescents: A systematic review and meta-analysis. *Frontiers in Psychiatry*, 15, 1341686. <https://doi.org/10.3389/fpsy.2024.1341686>
- [6] Palmer, C. A. et al. (2024). Sleep loss and emotion: A systematic review and meta-analysis of over 50 years of experimental research. *Psychological Bulletin*, 150 (4), 440–463. <https://doi.org/10.1037/bul0000410>
- [7] Khor, S. P. H. et al. (2021). Modifiable parental factors in adolescent sleep: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 56, 101408. <https://doi.org/10.1016/j.smrv.2020.101408>
- [8] Brinsley, J. et al. (2025). Effectiveness of peer-led health behaviour interventions on adolescent’s mental health and wellbeing: A systematic review and meta-analysis. *Scientific Reports*, 15, 16480. <https://doi.org/10.1038/s41598-025-01053-8>
- [9] Dale, R. et al. (2025). 24-hour movement behaviours and mental health in non-clinical populations: A systematic review. *PLOS ONE*, 20 (6), e0325445. <https://doi.org/10.1371/journal.pone.0325445>
- [10] Kocavska, D., Lysen, T. S., Dotinga, A., et al. (2021). Sleep characteristics across the lifespan in 1.1 million people: A systematic review and meta-analysis. *Nature Human Behaviour*, 5 (1), 113–122. <https://doi.org/10.1038/s41562-020-00965-x>
- [11] Smith, C., Goss, H. R., Issartel, J., & Belton, S. (2021). Health Literacy in Schools? A Systematic Review of Health-Related Interventions Aimed at Disadvantaged Adolescents. *Children*, 8 (3), 176. <https://doi.org/10.3390/children8030176>