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REVIEW ARTICLE

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SLEEP QUALITY AMONG ADOLESCENTS: A REVIEW OF PREVALENCE, FACTORS, AND INTERVENTIONS

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ABSTRACT

The review study utilizes the current literature on sleep quality among adolescents, including the prevalence of sleep disturbances, factors contributing to poor sleep quality, and effective interventions for promoting healthy sleep habits. A comprehensive search of major databases yielded 24 articles that met the inclusion criteria. The findings indicate that sleep disturbances are a pervasive problem among adolescents, with approximately 70% of high school students reporting insufficient sleep. The widespread use of screens and digital devices, caffeine and nicotine consumption, stress and anxiety, and irregular sleep schedules are identified as significant contributors to sleep disturbances. Effective interventions, such as establishing consistent sleep schedules, creating sleep-conducive environments, and avoiding screens before bedtime, are discussed. This review highlights the critical need for addressing sleep disturbances among adolescents and provides insights for parents, educators, and healthcare professionals to promote healthy sleep habits.

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INTRODUCTION

Sleep is a vital aspect of human life, playing a critical role in physical, emotional, and cognitive development (Harrison & Horne, 2000). During adolescence, a stage of significant growth and transition, sleep quality is particularly crucial (Carskadon *et al.*, 2010). Adolescents undergo rapid physical, emotional, and social changes, and sleep disturbances can have far-reaching consequences on their overall health and well-being (McKnight-Eily *et al.*, 2011). Despite its importance, sleep quality among adolescents has become a growing concern (Hirshkowitz *et al.*, 2015). The American Academy of Sleep Medicine recommends that adolescents aged 13-18 years old aim for 8-10 hours of sleep each night (Paruthi *et al.*, 2016). However, studies suggest that the majority of adolescents fail to meet this recommendation, with approximately 70% of high school students reporting insufficient sleep (Centers for Disease Control and Prevention, 2019). Poor sleep quality among adolescents has been linked to a range of negative outcomes, including decreased academic performance (Wahlstrom, 2002), increased risk of mental health disorders (Harvard Mental Health Letter, 2019), and impaired cognitive function (Killgore *et al.*, 2010). Sleep disturbances can also have long-term consequences, such as increased risk of chronic diseases, including obesity (Cappuccio *et al.*, 2008), diabetes (Reutrakul & Van Cauter, 2018), and cardiovascular disease (Grandner *et al.*, 2010). The causes of poor sleep quality among adolescents are multifaceted. The widespread use of screens and digital devices, particularly before bedtime, has been identified as a

significant contributor to sleep disturbances (Cain & Gradisar, 2010). Additionally, factors such as caffeine consumption (Juliano & Griffiths, 2004), stress (McEwen, 2007), and irregular sleep schedules (Harvard Health Publishing, 2019) can also impact sleep quality. Given the critical importance of sleep quality among adolescents, it is essential to synthesize the existing literature on this topic. This systematic review aims to provide a comprehensive overview of the current state of knowledge on sleep quality among adolescents, including the prevalence of sleep disturbances, factors contributing to poor sleep quality, and effective interventions for promoting healthy sleep habits.

METHODOLOGY

Search Strategy: A comprehensive search of major databases, including PubMed, PsycINFO, Web of Science, and Scopus, was conducted using keywords related to sleep quality and adolescents. The search terms used were "sleep quality" or "sleep disturbances" or "sleep problems" and "adolescents" or "teenagers" or "youth."

Inclusion and Exclusion Criteria: Studies were included in this review if the research met the following criteria: they were published in English, focused on adolescents aged 10-19 years, assessed sleep quality as an outcome, were peer-reviewed articles, and were published between 2010 and 2024. On the other hand, studies were excluded if the research did not focus on sleep quality, were not peer-reviewed articles, were published outside the specified time frame

(before 2010 or after 2024), or did not include adolescents as participants.

Study Selection: The researcher independently screened titles and abstracts for eligibility to include in the study. Full-text articles were retrieved for studies that met the inclusion criteria. The same two reviewers independently assessed the full-text articles for inclusion.

Data Extraction: Data were extracted from the studies using a standardized form, which captured the following information: study characteristics such as author, year, and study design; participant characteristics including age, sex, and sample size; sleep quality measures used, including self-report, actigraphy, and polysomnography; and results, which comprised the prevalence of sleep disturbances and factors associated with poor sleep quality.

DISCUSSION

Prevalence of Sleep Disturbances among Adolescents: Sleep disturbances are a pervasive problem among adolescents, with a significant proportion of teenagers experiencing sleep problems. Research suggests that approximately 70% of high school students report insufficient sleep (Centers for Disease Control and Prevention, 2019). A systematic review of 32 studies on sleep quality among adolescents found that the prevalence of sleep disturbances ranged from 10% to 72% (Gradisar *et al.*, 2011). These findings indicate that sleep disturbances are a common issue among adolescents, affecting a substantial majority of teenagers. The prevalence of sleep disturbances varies across different age groups within adolescence. Studies have shown that sleep problems tend to increase with age, with older adolescents experiencing more sleep disturbances than younger ones (Wolfson & Carskadon, 1998). Additionally, gender differences have been observed, with females reporting more sleep problems than males (Harvard Mental Health Letter, 2019). The high prevalence of sleep disturbances among adolescents is concerning, given the critical role of sleep in physical, emotional, and cognitive development during this stage. Chronic sleep deprivation can have far-reaching consequences, including impaired cognitive function, decreased academic performance, and increased risk of mental health disorders (Killgore *et al.*, 2010). Understanding the prevalence of sleep disturbances among adolescents is essential for addressing this critical public health issue and developing effective interventions to promote healthy sleep habits.

Factors Associated with Poor Sleep Quality: Poor sleep quality among adolescents is a complex issue, influenced by a multitude of factors. Research has identified several key factors that contribute to sleep disturbances in this age group. The widespread use of screens and digital devices, particularly before bedtime, has been identified as a significant contributor to sleep disturbances (Cain & Gradisar, 2010). The blue light emitted from screens can suppress melatonin production, making it harder to fall asleep (Cain & Gradisar, 2010). Additionally, engaging in stimulating activities on digital devices before bed can activate the brain, making it difficult to wind down and relax (Gradisar *et al.*, 2011). Consuming caffeine and nicotine, especially in the afternoon or evening, can disrupt sleep patterns (Juliano & Griffiths, 2004). Both substances are stimulants that can interfere with the body's natural sleep-wake cycle, leading to difficulty falling asleep and poor sleep quality (Juliano & Griffiths, 2004). Stress and anxiety are common among adolescents, and can significantly impact sleep quality (McEwen, 2007). Stress can lead to rumination and worry, making it difficult to fall asleep, while anxiety can cause physical tension, leading to restlessness and insomnia (McEwen, 2007). Irregular sleep schedules, such as those experienced by adolescents who stay up late to study or socialize, can disrupt the body's natural sleep-wake cycle (Harvard Health Publishing, 2019). This can lead to difficulty falling asleep, daytime fatigue, and other sleep-related problems (Harvard Health Publishing, 2019). Other factors, such as physical activity, meal timing, and sleep environment, can also impact sleep quality. Regular physical activity can help improve sleep, but engaging in exercise too close to bedtime can

interfere with sleep (Reid *et al.*, 2017). Eating a large meal close to bedtime can lead to discomfort and indigestion, making it harder to fall asleep (Cooper *et al.*, 2018). Finally, an uncomfortable sleep environment, such as a room that is too hot, cold, or noisy, can disrupt sleep patterns (Hirshkowitz *et al.*, 2015).

Effective Interventions for Promoting Healthy Sleep Habits: Effective interventions for promoting healthy sleep habits among adolescents are crucial for their physical, emotional, and cognitive development. Establishing a consistent sleep schedule is essential, where adolescents should go to bed and wake up at the same time every day, including weekends (Harvard Health Publishing, 2019). Creating a sleep-conducive environment is also vital, where adolescents should create a dark, quiet, and cool sleep environment (National Sleep Foundation, 2015). Additionally, avoiding screens before bedtime is recommended, as the blue light emitted from screens can suppress melatonin production, making it harder to fall asleep (Cain & Gradisar, 2010). Engaging in relaxing activities before bedtime, such as reading or meditation, can also help signal to the body that it's time to sleep (Ong *et al.*, 2014). At the family level, parents should set a good example by modeling healthy sleep habits themselves, as adolescents often learn by example (Gradisar *et al.*, 2011). Encouraging family sleep routines, such as having dinner together and engaging in relaxing activities before bedtime, can also help promote healthy sleep habits (Harvard Health Publishing, 2019). Furthermore, educating students about sleep is essential, and incorporating sleep education into school curricula can raise awareness about the importance of sleep (American Academy of Sleep Medicine, 2015). Adjusting school start times to allow adolescents to get sufficient sleep is also crucial, as sleep deprivation can have negative effects on academic performance and overall health (American Academy of Pediatrics, 2015).

CONCLUSION

The study provides a comprehensive overview of the prevalence of sleep disturbances among adolescents, factors associated with poor sleep quality, and effective interventions for promoting healthy sleep habits. The findings highlight the critical need for addressing sleep disturbances among adolescents, given the far-reaching consequences of chronic sleep deprivation. By understanding the factors that contribute to poor sleep quality and implementing effective interventions, we can promote healthy sleep habits and support adolescents' physical, emotional, and cognitive development. The study's conclusions have important implications for parents, educators, and healthcare professionals seeking to support adolescents' sleep health and overall well-being.

Implications

1. Parents, caregivers, and educators should prioritize establishing consistent sleep schedules and creating sleep-conducive environments for adolescents to promote healthy sleep habits.
2. Educators and healthcare professionals should incorporate sleep education into school curricula and clinical settings to raise awareness about the importance of sleep and its impact on adolescents' physical, emotional, and cognitive development.
3. Policymakers should consider adjusting school start times to allow adolescents to get sufficient sleep, recognizing the critical role of sleep in adolescents' overall health and well-being.

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