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THE IMPACT OF SLEEP ON MENTAL HEALTH: A COMPREHENSIVE REVIEW ACROSS THE LIFESPAN

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ABSTRACT

Background: Sleep plays a crucial role in mental health throughout life. Disrupted, insufficient, or irregular sleep has been linked to adverse emotional, cognitive, and psychological outcomes from childhood through older adulthood. Early identification and intervention may mitigate long-term consequences of sleep disturbances.

Methods: A narrative review of peer-reviewed literature published between 2015 and 2025 was conducted using PubMed and Google Scholar. The review focused on sleep duration, sleep quality, circadian disruption, and their associations with mental health outcomes across different age groups.

Results: Across all life stages, poor sleep was consistently linked to higher risks of depression, anxiety, cognitive impairments, and subclinical psychotic symptoms. Vulnerability was particularly pronounced in adolescents, young adults, and older adults. The relationship between sleep and mental health appeared to be bidirectional, with sleep disturbances both contributing to and resulting from psychiatric symptoms. Interventions focused on improving sleep, such as sleep hygiene programs and Cognitive Behavioral Therapy for Insomnia, were shown to enhance sleep quality and alleviate a range of mental health difficulties.

Conclusion: Sleep is a modifiable and clinically significant factor for mental health. Integrating sleep assessment and interventions into routine mental health care, along with public education and population-level strategies, may substantially enhance mental well-being across the lifespan.

KEYWORDS

Sleep, Mental Health, Sleep Deprivation, Sleep Hygiene, Psychiatric Disorders

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1. Introduction

Sleep is a fundamental biological process and an essential component of human life, playing a critical role in maintaining both physical and mental health. Adequate sleep duration and quality are necessary for optimal cognitive functioning, emotional regulation, and psychological well-being. Across the lifespan, sleep supports crucial processes such as brain development, learning, memory consolidation, and stress regulation, underscoring its importance at every stage of life ^[2,4,7]

A growing body of research highlights a strong association between sleep disturbances and mental health disorders. Insufficient or poor-quality sleep has been linked to an increased risk of psychiatric conditions, including depression, anxiety disorders, bipolar disorder, and schizophrenia. Importantly, this relationship is bidirectional: sleep disturbances can exacerbate the onset, severity, and persistence of mental health problems, while mental health disorders frequently manifest with sleep-related symptoms such as insomnia, hypersomnia, or disrupted circadian rhythms ^[1,2].

Sleep disturbances represent a widespread global and population-level public health concern, affecting individuals across all age groups ^[20]. Sleep needs vary substantially throughout the lifespan, and failure to meet age-specific sleep requirements may have significant consequences for mental health. According to the National Sleep Foundation, recommended sleep duration ranges from 14–17 hours per day for newborns (0–3 months) and 12–15 hours for older infants (4–11 months), to 11–14 hours for toddlers and 10–13 hours for preschool-aged children. School-aged children are advised to obtain 9–11 hours of sleep per night, while adolescents require approximately 8–10 hours. In adulthood, recommended sleep duration decreases to 7–9 hours for individuals aged 18–64 years and 7–8 hours for those over 65 years of age ^[18]. However, despite these recommendations, over one-quarter of adults do not meet the suggested sleep duration ^[19].

The aim of this comprehensive review is to examine the effects of sleep deprivation and sleep disturbances on mental health across different stages of the lifespan, with particular emphasis on

developmental and age-related differences. Additionally, this review explores the potential role of sleep hygiene and sleep-focused interventions as preventive and therapeutic strategies in the management of mental health disorders.

2. Methodology

A comprehensive literature search was conducted to identify relevant studies examining the relationship between sleep and mental health across the lifespan. The databases PubMed and Google Scholar were systematically searched to ensure broad coverage of biomedical and psychological research.

The search strategy employed combinations of the following keywords: “sleep,” “mental health,” “sleep deprivation,” and “psychiatric disorders.” These terms were used individually and in combination to capture studies addressing both general and specific aspects of sleep and mental health. The search was limited to articles published between 2015 and 2025 to ensure the inclusion of recent and methodologically robust evidence.

Eligible studies were selected based on predefined inclusion and exclusion criteria. Inclusion criteria comprised peer-reviewed original research articles, review articles, and meta-analyses conducted in human populations. Studies focusing on sleep duration, sleep quality, sleep deprivation, and their associations with mental health outcomes across different age groups were considered relevant. Exclusion criteria included publications not written in English and case reports, as these were deemed to have limited generalizability.

Data extraction focused on study characteristics, including population age group, study design, sleep-related variables, and mental health outcomes. The selected studies were synthesized narratively and grouped according to age categories across the lifespan (e.g., childhood, adolescence, adulthood, and older age), with particular attention to their clinical relevance and implications for prevention and treatment. This approach allowed for a structured comparison of findings and facilitated the identification of age-specific patterns and mechanisms linking sleep and mental health.

3. Circadian Rhythm Disruptions and Mental Health

Circadian rhythms are endogenous biological cycles that regulate sleep–wake patterns, hormone secretion, metabolism, and emotional functioning. These rhythms are primarily synchronized by the external light–dark cycle; however, contemporary lifestyles have profoundly altered natural patterns of light exposure. Individuals living in industrialized regions such as the United States and Europe are increasingly exposed to substantial levels of nighttime light pollution due to artificial lighting, electronic devices, and extended work schedules^[3]. Such environmental changes can lead to circadian misalignment, with significant implications for mental health^[3].

Disturbances in sleep and circadian regulation are highly prevalent across a broad spectrum of psychiatric conditions. Beyond serving as a risk factor for the initial development of psychopathology, disruptions in sleep and circadian timing are often among the earliest warning signs of relapse. This highlights the central role of the sleep–circadian system not only in the etiology but also in the course and prognosis of mental illness^[2].

Disrupted circadian rhythms have been consistently associated with adverse mental health outcomes, particularly among individuals exposed to atypical work schedules. Night shift workers experience multiple health disparities compared to day shift workers, including an increased prevalence of depressive and anxiety disorders, emotional dysregulation, and other behavioral health conditions. Challenges to the sleep–circadian system imposed by night shift or rotating work schedules significantly increase the risk of developing depression and anxiety disorders, largely through chronic sleep disruption^[3].

Shift work disorder (SWD) is a circadian rhythm sleep disorder associated with working outside conventional daytime hours, typically between 08:00 and 17:00. Individuals with SWD frequently report insomnia, difficulty initiating and maintaining sleep, excessive daytime sleepiness, and involuntary micro-sleep episodes during periods requiring sustained alertness. Affective symptoms commonly associated with SWD include irritability, depressive mood, emotional instability, and impaired interpersonal functioning. SWD may be triggered by night shifts, rotating shifts, afternoon shifts, or early morning schedules, all of which disrupt circadian alignment^[3].

Crucially, SWD is associated with chronic sleep deprivation and the accumulation of a persistent “sleep debt,” which has serious consequences for mental health, occupational productivity, and safety. Chronic sleep loss impairs emotional regulation and increases vulnerability to mood and anxiety disorders^[3]. While prolonged sleep duration has also been associated with poorer subjective well-being and adverse mental health

outcomes, its negative impact appears to be less pronounced than that of insufficient sleep, suggesting a dose–response relationship in which sleep deprivation represents the greater risk to psychological health ^[4].

Overall, technological progress over the last century has profoundly reshaped daily patterns of light exposure, altering not only its duration but also its timing and intensity. Such widespread environmental changes may disrupt circadian synchronization on a population scale, a trend that appears to coincide with the growing burden of mood disorders. While earlier research emphasized circadian misalignment as a direct contributor to anxiety and affective disturbances, more recent findings indicate that sleep disruption itself may play a more central role in driving these outcomes. Evidence from longitudinal studies shows that individuals who move from standard daytime schedules to rotating or nocturnal work frequently experience the onset of anxiety symptoms alongside emerging sleep problems, underscoring the pivotal contribution of sleep loss to the link between circadian disruption and mental health ^[3].

4. Sleep and Mental Health in Children

Sleep plays a critical role in emotional, cognitive, and behavioral development during childhood ^[5]. Evidence from large population-based studies highlights the complex relationship between sleep duration, sleep quality, sleep hygiene, and mental health outcomes in children. A large Canadian survey-based study conducted among 16,170 children aged 5–11 years, using parent-reported measures of sleep and mental health, provides valuable insight into these associations. In this sample, the majority of children met the recommended sleep duration of 9–11 hours per night according to Canadian sleep guidelines. Overall mental health was generally favorable, with most children classified as having high general mental health. Mental health diagnoses were reported for a subset of the sample, most commonly attention disorders, followed by anxiety disorders and mood disorders ^[6].

Across analyses, sleep quality emerged as a more consistent predictor of mental health outcomes than sleep duration alone. Children with high sleep quality were more likely to demonstrate high general mental health and were less likely to exhibit anxiousness, sadness, or psychosocial difficulties. They were also less likely to receive a diagnosis of a mood, anxiety, or attention disorder and less likely to require mental health care, both in unadjusted and adjusted analyses. These findings emphasize that good sleep health in childhood extends beyond sufficient sleep duration and includes qualitative aspects such as ease of falling asleep, continuity of sleep, and overall restfulness ^[6].

Children who met sleep duration recommendations were less likely to experience difficulties with concentration, behavioral control, and accepting changes in routine; however, many of these associations were attenuated after controlling for relevant covariates. Overall, meeting sleep duration recommendations alone showed limited associations with mental health outcomes ^[6].

However, subgroup and sensitivity analyses revealed important nuances. Not obtaining sufficient sleep tended to be more strongly associated with poorer mental health outcomes than obtaining excessive sleep, suggesting an asymmetrical relationship between sleep duration and psychological well-being. Furthermore, sex-specific effects were observed: females who met sleep duration recommendations were more likely to exhibit high general mental health, while males who met recommendations were less likely to experience difficulties with concentration after adjustment for confounding variables.

Sleep hygiene practices also appeared to play a significant role. Notably, children with enforced rules around bedtime were more likely to have a diagnosed mood, anxiety, or attention disorder, to exhibit higher levels of anxiousness, and to experience difficulties accepting changes in routine and controlling behavior ^[6].

Taken together, these findings suggest that while meeting recommended sleep duration is important, it is not sufficient on its own to ensure optimal mental health in children. Sleep quality, sleep disturbances, and broader sleep hygiene practices appear to be more robustly and consistently associated with emotional well-being and psychosocial functioning. These results highlight the importance of adopting a multidimensional approach to sleep health in childhood, with implications for both prevention and early intervention in pediatric mental health.

5. Longitudinal Effects of Childhood Sleep Disturbances on Adolescent and Mental Health

Sleep–wake regulation undergoes substantial changes from late childhood through adolescence, a developmental period marked by biological, psychological, and social transitions ^[5]. Growing evidence suggests that sleep disturbances emerging in childhood may have lasting consequences for mental health in adolescence and young adulthood ^[7,5]. Longitudinal research is particularly valuable in elucidating these developmental pathways.

A longitudinal study of 199 youths assessed sleep–wake problems at three time points during late childhood (ages 9, 10, and 11) using self-reports from the validated School Sleep Habits Survey. At age 18, multiple domains of mental health—including externalizing behavior problems, depressive symptoms, anxiety, and concurrent sleep–wake problems—were evaluated. Latent growth curve modeling revealed that children who exhibited higher levels of sleep–wake problems at age 9 consistently reported higher levels of such problems across late childhood, indicating stability in interindividual differences despite an overall average decline in sleep–wake problems over time.

Importantly, the initial level of sleep–wake problems at age 9 significantly predicted externalizing behaviors, depressive symptoms, and anxiety at age 18, even after controlling for childhood mental health and concurrent sleep–wake problems during adolescence. In contrast, changes in sleep–wake problems from ages 9 to 11 did not independently predict mental health outcomes at age 18. These findings suggest that early-established sleep difficulties, rather than short-term fluctuations during late childhood, may play a critical role in shaping later mental health trajectories.

Consistent with these results, sleep–wake problems measured at ages 9, 10, and 11 were each positively associated with externalizing behaviors, depressive symptoms, and anxiety at age 18. Youth with the highest levels of sleep–wake problems at age 9 continued to exhibit elevated sleep difficulties throughout late childhood, whereas those with the lowest initial levels maintained relatively low levels over time. This pattern highlights both continuity and stability in sleep–wake functioning during this developmental period.

Further analyses demonstrated that adolescents with higher levels of sleep–wake problems in late childhood exhibited greater mental health difficulties in adolescence, even after accounting for baseline mental health and concurrent sleep disturbances. Notably, while sleep–wake problems at age 18 were concurrently associated with anxiety symptoms, they were not consistently associated with externalizing behaviors or depressive symptoms after adjustment, suggesting that early sleep disturbances may exert a more enduring influence on mental health than contemporaneous sleep problems in late adolescence ^[5].

These findings align with a broader literature indicating that short sleep duration and poor sleep quality compromise youths' mental health, contributing to depressive symptoms, anxiety, and externalizing behaviors. Although much of the existing evidence is derived from cross-sectional or short-term longitudinal studies, several longer-term investigations underscore the importance of examining developmental trajectories of sleep problems. For example, persistently high sleep disturbances from early childhood to adolescence have been associated with increased aggressive behaviors in late adolescence, while early-onset and increasing sleep problems from infancy through early childhood predict higher levels of internalizing and externalizing problems in preadolescence ^[5].

Taken together, this body of evidence highlights the importance of early sleep–wake regulation as a predictor of later mental health. Although sleep–wake problems tend to decrease on average during late childhood, children who begin this period with elevated sleep difficulties are more likely to maintain relatively high levels over time and to experience adverse mental health outcomes in adolescence and young adulthood. These findings emphasize the need for early identification and intervention targeting sleep disturbances as a potential strategy to mitigate the long-term risk of psychiatric symptoms during critical developmental transitions ^[5].

6. Sleep and Mental Health in Adolescents

Adolescence represents a transitional stage of development in which patterns of sleep, behavior, and emotional functioning undergo marked reorganization ^[2,7]. During this period, ongoing neurodevelopmental processes interact with changing social demands, making sleep a key regulator of psychological stability and cognitive performance. Disruptions in sleep quantity, timing, or regularity during adolescence may therefore have disproportionate effects on mental health, reflecting the heightened vulnerability of the developing brain to sleep loss and circadian misalignment ^[2].

One of the most prominent changes in adolescent sleep is a biologically driven shift toward later sleep onset and later wake times ^[2,8]. This delay in circadian timing is further amplified by behavioral and environmental factors, most notably the widespread use of electronic devices in the evening hours. Exposure to artificial light from screens and increased nighttime social and online activity contribute to delayed bedtimes, reduced sleep duration, and poorer sleep quality ^[9]. Importantly, later sleep onset is often incompatible with fixed social demands, particularly early school start times, resulting in chronic sleep restriction on school days ^[2].

As a consequence, many adolescents accumulate a persistent sleep debt during the week and attempt to compensate by sleeping longer on weekends ^[2]. Although this pattern may temporarily alleviate subjective

sleepiness, a growing body of evidence indicates that large discrepancies between weekday and weekend sleep—often referred to as social jetlag—are associated with adverse mental health outcomes. Multiple studies conducted across different cultural contexts have consistently shown that greater variability in sleep timing and duration between school days and weekends is linked to poorer overall mental health in adolescents and young adults [2,8,10].

Specifically, adolescents who exhibit larger weekday-to-weekend differences in sleep are more likely to report depressive symptoms, anxiety, emotional exhaustion, reduced life satisfaction, and suicidal ideation [2,10]. These associations appear to be particularly pronounced among individuals who already obtain insufficient sleep on school nights, suggesting that irregular sleep patterns may exacerbate the negative effects of chronic sleep deprivation [10]. In contrast, adolescents who maintain more regular sleep schedules—both during the school week and on weekends—tend to demonstrate better emotional well-being and lower levels of depressive symptomatology over time [8,10].

Sleep timing also appears to be a critical factor. Later bedtimes on school nights have been associated with a higher likelihood of mood disorders, anxiety, behavioral problems, substance use, and poorer self-rated mental and physical health [2,10]. Conversely, earlier and more consistent bedtimes are linked to more favorable mental health profiles [10]. Importantly, excessively long sleep duration on weekends does not confer protective effects; both insufficient and excessive weekend catch-up sleep have been associated with worse mental health outcomes, indicating that sleep regularity may be more beneficial than compensatory sleep alone [10].

Developmental and demographic differences further shape these patterns. Older adolescents generally show later bedtimes, shorter sleep duration on school nights, and greater weekend oversleep compared with younger adolescents [10]. Sex differences have also been observed, with females tending to experience slightly shorter weekday sleep and greater weekend compensation [10]. These variations highlight the complex interplay between biological maturation, social expectations, and behavioral choices during adolescence.

Encouragingly, intervention studies suggest that modifying structural factors can yield meaningful benefits. Delaying school start times has been shown to increase sleep duration on school nights and to improve mood, emotional well-being, and school-related outcomes [10]. These findings underscore the role of environmental and policy-level interventions in addressing adolescent sleep deprivation and its mental health consequences.

Overall, the evidence indicates that insufficient, irregular, and misaligned sleep during adolescence is strongly associated with a broad range of adverse mental health outcomes, including depression, anxiety, behavioral problems, substance use, and suicidality. The negative effects are most pronounced when short sleep duration is combined with large weekday-to-weekend sleep discrepancies. Together, these findings highlight adolescence as a particularly vulnerable period for sleep-related mental health risks and emphasize the importance of promoting sufficient, regular, and developmentally appropriate sleep as a key target for prevention and early intervention.

7. Sleep and Mental Health in Young Adults

The transition from adolescence to young adulthood is marked by increasing independence, changing social roles, and greater variability in daily routines, all of which have important implications for sleep behavior. Evidence from population-based studies indicates that young adults represent one of the age groups most affected by insufficient sleep, with levels of sleep deprivation exceeding those observed in both adolescents and older adults [11]. This pattern appears to have meaningful consequences for psychological well-being and mental health [2, 4, 11].

Findings from large studies conducted in different cultural contexts, including the United States and East Asia, reveal a continuation of sleep-related vulnerabilities observed during adolescence. Similar to younger populations, young adults frequently experience short sleep duration on weekdays followed by compensatory sleep on weekends. Individuals who obtain insufficient sleep during the work or study week are more likely to extend their sleep duration on non-working days, resulting in pronounced weekday-to-weekend differences in sleep timing and duration. This irregular sleep pattern has been consistently associated with poorer mental health outcomes [11].

Across multiple studies, larger discrepancies between weekday and weekend sleep have been linked to a broad range of negative psychological outcomes, including depressive symptoms, emotional exhaustion, reduced life satisfaction, burnout, and suicidal ideation. The strength of these associations appears to be greater for indicators of psychopathology and suicidality than for measures of positive mental well-being, suggesting that sleep irregularity may be particularly relevant to the emergence or exacerbation of clinical symptoms.

Importantly, these associations remain evident after adjustment for relevant sociodemographic and behavioral factors and are strongest among individuals who already experience insufficient sleep during weekdays ^[11].

A proposed mechanism underlying these findings is that repeated shifts in sleep timing may lead to social jetlag and circadian misalignment. Extending sleep on weekends, while seemingly restorative, may further disrupt circadian rhythms and impair emotional regulation, thereby contributing to worse mental health outcomes. This pattern highlights the continuity between adolescence and young adulthood, with persistent irregular sleep schedules representing a shared risk factor across these developmental stages ^[11].

Beyond sleep duration and regularity, disturbances in circadian rhythms and daily activity patterns have also been implicated in mental health problems among young adults. Greater disruption of sleep timing and social rhythms has been observed in individuals with depressive and bipolar disorders compared with healthy controls. In particular, delayed sleep phase tendencies appear to be more prevalent in mood disorders, especially during depressive episodes of bipolar disorder. Studies employing objective measures of rest–activity rhythms further demonstrate that reduced rhythmic stability and lower day–night contrast are associated with emerging mood disorders and greater symptom severity, underscoring the relevance of circadian organization for mental health in early adulthood ^[2].

Sleep duration itself shows a non-linear relationship with mental health in this age group. Both short and, to a lesser extent, long sleep duration have been associated with increased risk of a wide range of mental disorders, including anxiety, depression, bipolar disorder, post-traumatic stress disorder, eating disorders, obsessive–compulsive disorder, attention-deficit/hyperactivity disorder, and general psychological distress ^[4]. Across studies, an intermediate sleep duration is consistently associated with the lowest levels of mental illness and the most favorable indicators of well-being. The highest risks are observed among individuals with very short sleep duration, while long sleep duration is also associated with poorer mental health, although typically to a lesser degree than short sleep ^[4].

While overall sleep and mental health patterns are similar for males and females, some sex-specific differences emerge at extreme sleep durations. Very short sleep appears to confer particularly high risk for conditions such as obsessive–compulsive disorder, eating disorders, and post-traumatic stress disorder in males, whereas long sleep is more strongly associated with poor mental health outcomes in males than in females, with anxiety and depression showing smaller sex differences ^[4].

Taken together, the findings indicate that young adulthood represents a period of heightened vulnerability to the mental health consequences of insufficient, irregular, and misaligned sleep. The persistence of patterns established in adolescence, combined with new social and occupational demands, underscores the importance of promoting not only adequate sleep duration but also regular and well-aligned sleep schedules as a key component of mental health prevention and intervention strategies in this age group.

8. Sleep and Mental Health in Adults

In the adult population, sleep duration and quality are closely linked to mental health outcomes. Short sleep has been consistently associated with a range of psychiatric conditions, including depression, obsessive–compulsive disorder, poor perceived mental health, suicidality, and deficits in cognitive performance. Both short and long sleep durations have also been related to cognitive decline, suggesting that a moderate sleep duration of approximately seven to eight hours per day is optimal for psychological and neurocognitive well-being in adults ^[12].

Beyond general sleep duration, a range of sleep disorders and disturbances—including post-traumatic stress, eating disorders, psychosis spectrum experiences, circadian rhythm disruption, restless leg syndrome, excessive daytime sleepiness, narcolepsy, sleepwalking, and nightmares—are more prevalent among adults experiencing mental health difficulties. These sleep disturbances are not only associated with psychiatric symptoms but can also negatively impact emotional regulation, attention, memory, and overall daily functioning, highlighting the importance of both sleep quantity and quality for maintaining mental health ^[13].

Sex-specific differences in sleep patterns and vulnerabilities have been observed. Females are generally at higher risk for insomnia and report greater dissatisfaction with sleep, with additional sleep disturbances and daytime fatigue often occurring in relation to menstrual cycles, pregnancy, the postpartum period, perimenopause, and menopause. Males, in contrast, are at relatively higher risk for sleep apnea ^[1].

8.1 Sleep and Mental Health in Older Adults

Sleep patterns and quality undergo substantial changes with aging, which have significant implications for mental health and cognitive functioning [14]. Older adults commonly experience declines in sleep efficiency and reductions in slow-wave sleep, alongside an increased prevalence of primary sleep disorders such as obstructive sleep apnea, chronic insomnia, nocturia, and movement-related nocturnal disorders, including restless legs syndrome [1]. However, older adults often report lower levels of perceived sleep disturbance, sleep insufficiency, and sleep debt than younger populations, despite objective evidence of poorer sleep quality [1]. Overall, both elderly and young adults tend to exhibit suboptimal sleep habits and reduced sleep quality relative to middle-aged individuals [15].

Sleep is also crucial for neurocognitive health. Poor sleep in older adults has been linked not only to acute deficits in executive function and declarative memory but also, prospectively, to the development and progression of neurodegenerative conditions such as Alzheimer's disease [1]. These findings highlight the importance of maintaining adequate sleep quality in later life to support day-to-day cognitive performance and long-term brain health.

Research examining sleep across a wide adult age range indicates a clear negative association between advancing age and sleep quality. Older participants report poorer overall sleep compared with both younger and middle-aged adults, and general alterations in mental health predict further declines in sleep quality. Additionally, higher use of sleep-related medications has been linked to worse subjective sleep outcomes, suggesting that pharmacological interventions do not necessarily mitigate age-related sleep disturbances [15].

Beyond subjective sleep measures, poor sleep in older adults is closely related to neurocognitive function. Impairments in executive function, processing speed, learning, and memory recall have been observed in individuals with lower sleep quality. Notably, sleep appears to mediate the relationship between frailty and cognitive performance: more frail older adults with poorer sleep demonstrate greater deficits across multiple cognitive domains, highlighting the interdependence of physical, cognitive, and sleep-related health in later life [14].

Taken together, these findings underscore the complex interplay between aging, sleep quality, and mental health. Age-related physiological, neurological, and behavioral changes contribute to increased vulnerability to sleep disorders, which in turn are associated with both psychological well-being and cognitive outcomes in older adults.

9. Sleep-Focused Interventions and Mental Health

Mounting evidence indicates that improving sleep through targeted interventions can have meaningful benefits for mental health across a wide range of populations [2,21]. The overlap of sleep–circadian disturbances across psychiatric disorders suggests that common mechanisms may underlie both sleep problems and psychiatric symptoms, and that interventions targeting sleep could simultaneously alleviate mental health difficulties [2]. Cognitive Behavioral Therapy for Insomnia (CBT-I), a structured multimodal approach addressing both cognitive patterns and behaviors that perpetuate poor sleep, is widely recommended as a first-line treatment for chronic insomnia [2]. Meta-analyses of randomized controlled trials demonstrate that CBT-I not only improves nighttime sleep and daytime functioning but also reduces symptoms of anxiety and depression, with reductions in insomnia mediating improvements in mood [2]. In specific populations, including individuals with depression or post-traumatic stress disorder, CBT-I has been shown to decrease psychiatric symptom severity, although evidence regarding the persistence of treatment effects over the long term remains limited [2]. Recent trials in older adults suggest that CBT-I may also reduce the incidence and recurrence of major depressive episodes [2].

Large-scale and digital interventions further support the mental health benefits of improving sleep. In a randomized trial involving 3,755 participants, digital CBT for insomnia significantly reduced insomnia severity, while also producing modest but meaningful decreases in paranoia, hallucinations, depressive and anxiety symptoms, prodromal psychotic symptoms, nightmares, and improvements in overall psychological wellbeing and functioning [16]. Insomnia improvements mediated reductions in paranoia and hallucinations, highlighting the causal role of sleep disturbance in subclinical psychotic experiences [16]. Similarly, smaller trials have demonstrated that enhancing sleep can produce medium-to-large improvements in composite mental health measures, depression, anxiety, rumination, and stress, as well as small improvements in positive psychotic symptoms [16,17]. Importantly, a dose–response relationship was observed, whereby greater gains in sleep quality led to greater mental health benefits [17].

Evidence from a large digital sleep intervention involving 30,000 users, with 732 completing the program, emphasizes the role of sleep regularity and total sleep time^[22]. Participants who achieved longer and more consistent sleep duration showed greater reductions in insomnia and depressive symptoms, while improvements in anxiety were most pronounced among those with more consistent total sleep time^[22]. These findings underscore that not only sleep duration but also sleep regularity is crucial for optimizing mental health outcomes.

Collectively, these results highlight the potential of sleep-focused interventions to prevent or alleviate psychiatric symptoms, improve cognitive and emotional functioning, and promote overall psychological wellbeing. By addressing modifiable sleep disturbances, such interventions may serve as both therapeutic and preventive strategies across a wide spectrum of mental health conditions, including subclinical psychotic symptoms.

Complementing these intervention-based approaches, research from Iran involving 9,775 adults emphasizes the role of health literacy in supporting mental health through sleep. The study found that individuals with greater health literacy were more likely to engage in behaviors that promote overall health, including good sleep hygiene^[23]. Importantly, adherence to healthy sleep practices was positively associated with mental well-being and served as a mediator between health literacy and psychological outcomes^[23].

10. Conclusion

Sleep is essential for mental health and overall wellbeing across the entire lifespan, from early childhood through older adulthood. Adequate sleep supports emotional regulation, cognitive functioning, memory consolidation, and psychological resilience. Poor sleep or irregular sleep patterns, especially when persistent over time, can have long-lasting effects on mental and physical health, increasing the risk for mood disorders, anxiety, cognitive decline, and other psychiatric conditions. Sleep difficulties in childhood and in adolescence, may have enduring consequences, highlighting the cumulative impact of sleep disturbances over the life course.

Certain populations are particularly vulnerable to sleep-related mental health risks. Adolescents often experience biologically driven changes in circadian rhythms, coupled with social pressures and technological exposure, which can compromise sleep regularity. Older adults, meanwhile, frequently face age-related changes in sleep architecture and a higher prevalence of sleep disorders, making them susceptible to both cognitive impairments and mood disturbances. Young adults, despite being in the prime of their functional abilities, often fail to maintain proper sleep hygiene due to lifestyle factors, work demands, and irregular schedules, further emphasizing that insufficient or irregular sleep is not only a concern for the very young or old.

Promoting healthy sleep through proper sleep hygiene and targeted interventions, such as Cognitive Behavioral Therapy for Insomnia (CBT-I), is therefore crucial and represents a potentially powerful therapeutic tool. Sleep-focused interventions can complement traditional psychiatric treatments, prevent the onset of mental health conditions, and improve long-term psychological outcomes. Public education on the importance of sleep, routine assessment of sleep patterns in clinical practice, and policies supporting sufficient and regular sleep across different life stages are essential to maximize the benefits of sleep for mental health.

Despite growing evidence, further research is needed to fully understand the mechanisms by which sleep interventions influence mental health, to identify optimal strategies for different populations, and to explore the long-term impact of improved sleep on psychological wellbeing. Integrating sleep as both a preventive and therapeutic component in mental health care holds significant promise and could serve as a cornerstone for promoting mental health across the lifespan.

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