



# Insomnia Epidemic: How Poor Sleeping Habits Are Undermining Mental Wellness

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## ABSTRACT

Insomnia has emerged as one of the most prevalent public health challenges in contemporary society, particularly within increasingly fast-paced and digitally saturated environments. Characterized by persistent difficulty initiating or maintaining sleep, insomnia affects millions globally and imposes substantial emotional and cognitive burdens. This scoping review critically explores the epidemiology, underlying mechanisms, and psychological impacts of insomnia, with a specific focus on its bidirectional relationship with mood disorders, anxiety, and cognitive impairment. Drawing from 46 empirical studies published between 2000 and 2024, alongside relevant theoretical frameworks, the review identifies key patterns and gaps in current research. It further evaluates the effectiveness of evidence-based interventions—including cognitive-behavioral therapy for insomnia, pharmacological treatments, and emerging digital health technologies—while acknowledging their limitations in real-world contexts. The review advocates for more integrative and personalized approaches to insomnia management that emphasize early detection, behavioral interventions, and cross-sector collaboration. These findings offer insights for mental health practitioners, researchers, and policymakers, underscoring the importance of embedding sleep health within comprehensive mental wellness frameworks to improve patient outcomes and alleviate the broader societal burden of insomnia.

**Keywords:** Insomnia, Cognitive-behavioral therapy for insomnia (CBT-I), Circadian rhythm, Digital dependency, Sleep equity

## Introduction

Insomnia has become a significant global public health issue, affecting an estimated 10%–30% of the world's population.<sup>1,2</sup> Far more than an occasional restless night, insomnia is characterized by persistent difficulties with initiating or maintaining sleep, or by waking too early and being unable to return to sleep. When chronic—defined as occurring at least three times per week for a minimum of 3 months—it can severely impair daily functioning, impacting mood, cognitive performance, emotional regulation, and overall quality of life.<sup>3,4</sup>

Increasingly recognized as a primary disorder rather than merely a symptom of other medical or psychiatric conditions, insomnia has been linked to the onset, exacerbation, and maintenance of various mental health disorders. Its persistent nature often triggers a vicious cycle of hyperarousal, emotional dysregula-

tion, and sleep-related anxiety, compounding psychological distress and undermining recovery.

The etiology of insomnia is multifactorial. Psychological factors such as anxiety, trauma, and chronic stress are prominent contributors, often initiating a cycle of sleep disturbance and cognitive hypervigilance. Physiological conditions—including chronic pain, hormonal fluctuations, and comorbid sleep disorders—further complicate sleep regulation. Additionally, modern behavioral and environmental influences—such as excessive screen exposure, irregular routines, and poor sleep hygiene—disrupt circadian rhythms and interfere with homeostatic sleep pressure.<sup>4,5</sup>

Given the interplay of individual, psychological, and environmental factors, addressing insomnia requires a multifaceted approach. This scoping review synthesizes empirical evidence on the psychological consequences, underlying biological mechanisms, and current intervention strategies for insomnia. It aims to inform integrative, evidence-based responses that position sleep health as a foundational component of mental wellness. The manuscript follows the TITAN 2025 reporting guideline for the transparent integration of artificial intelligence in scientific writing and research.<sup>6</sup>

## Methodology

This scoping review synthesized peer-reviewed literature on the psychological and emotional impacts of insomnia, with attention to treatment interventions and underlying biopsychosocial mechanisms. Following PRISMA-ScR guidelines and the TITAN 2025 framework for transparent AI use in research [6], the review employed AI-assisted tools—under human oversight—for citation organization and keyword clustering, while all screening, thematic analysis, and interpretation were conducted manually. We searched PubMed, PsycINFO, Scopus, and Web of Science for English-language studies published between 2000 and 2024 using terms such as “insomnia,” “mental health,” “CBT-I,” and “digital sleep technologies.” Eligible articles included empirical studies, systematic reviews, or meta-analyses examining the relationship between insomnia and psychological health or evaluating relevant interventions. Gray literature, nonempirical formats, and studies focused on noninsomnia sleep disorders were excluded. Of 617 records identified (582 from databases, 35 through additional sources), 67 duplicates were removed. After screening 550 titles and abstracts, 100 full texts were reviewed, yielding 46 studies meeting the inclusion criteria. The study selection process is outlined in the PRISMA-ScR flow diagram (Figure 1).

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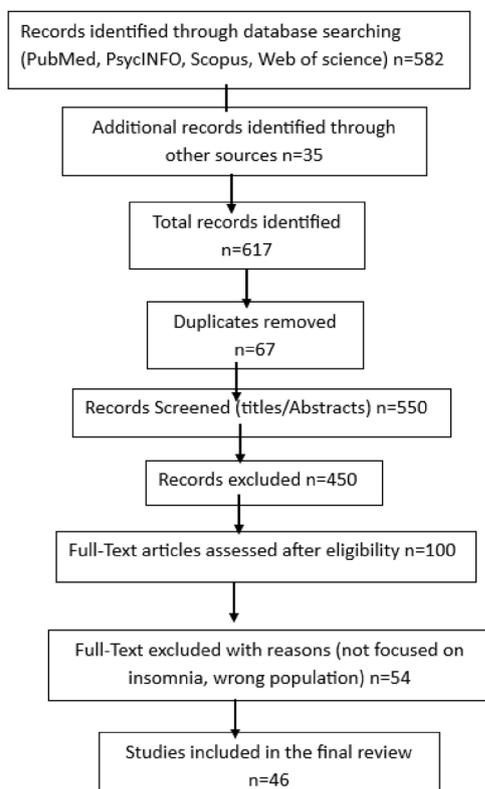


Fig 1 | PRISMA-ScR flow diagram of study selection

## Findings

This scoping review examined 46 studies published between 2000 and 2024, with most employing quantitative (57%), followed by qualitative (23%) and mixed-methods (20%) designs. Research was predominantly from high-income countries, though contributions from low- and middle-income regions are increasing. Six core themes emerged: the bidirectional relationship between insomnia and mental health conditions such as depression, anxiety, and post-traumatic stress disorder (PTSD); the disruptive role of digital technology—especially bedtime screen use and fear of missing out (FOMO)—on circadian rhythms; socioeconomic and environmental stressors, including pollution, housing instability, and financial strain, as key sleep disruptors; cultural narratives that valorize productivity while devaluing rest; growing evidence for behavioral interventions like cognitive-behavioral therapy for insomnia (CBT-I), mindfulness, and acceptance and commitment therapy (ACT), particularly via digital delivery; and the promise of sleep education and community-based efforts in promoting healthy sleep habits. While awareness of insomnia's impact on mental wellness is rising, its integration into public health frameworks remains limited.

The findings reveal a multifaceted and interdependent landscape of factors contributing to the modern insomnia epidemic. Building on these themes, the following discussion interprets these patterns within broader psychological, sociocultural, and systemic contexts. By examining how the identified trends intersect with theoretical frameworks and real-world impli-

cations, this section aims to deepen understanding and highlight pathways for research, intervention, and policy.

## The Architecture of Sleep: Stages and Their Functions

Sleep is a cyclical, biologically essential process comprising two primary types: non-rapid eye movement (NREM) and rapid eye movement (REM) sleep. These alternate in roughly 90-minute cycles throughout the night and serve critical roles in physical restoration, cognitive functioning, and emotional regulation.<sup>7,8</sup>

**NREM sleep** is subdivided into three stages:

- **Stage N1** marks the transition from wakefulness to sleep. It is brief and light, featuring slowed brain activity, reduced muscle tone, and decreased environmental responsiveness—preparing the body for deeper rest.<sup>9</sup>
- **Stage N2**, the longest stage, accounting for about 50% of total sleep, is characterized by sleep spindles and K-complexes. These elements help stabilize sleep and reduce reactivity to external stimuli. Emerging evidence also suggests they may play a role in memory consolidation and physiological regulation, including heart rate and body temperature.<sup>8,10</sup>
- **Stage N3**, or slow-wave sleep (SWS), is the deepest and most restorative phase. It is marked by high-amplitude delta waves and is associated with tissue repair, immune enhancement, and growth hormone release. It also facilitates declarative memory consolidation and the glymphatic system's clearance of brain waste such as beta-amyloid.<sup>8,10,11</sup>

**REM sleep** follows NREM and features REMs, vivid dreaming, and brain activity similar to wakefulness. Muscle atonia prevents dream enactment, while heightened neural activity supports emotional processing, procedural memory consolidation, and neuroplasticity.<sup>10,11</sup> REM is also linked to creativity, psychological resilience, and problem-solving.

Disruptions to any of these stages may impair memory, mood, immunity, and overall vitality. Thus, the full, uninterrupted cycling through NREM (Stages N1–N3) and REM sleep is essential for optimal health across the lifespan (see Figure 2).

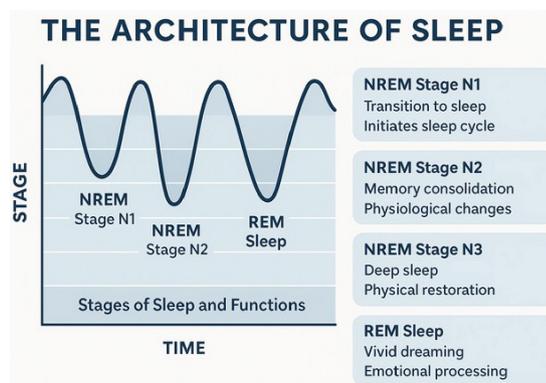
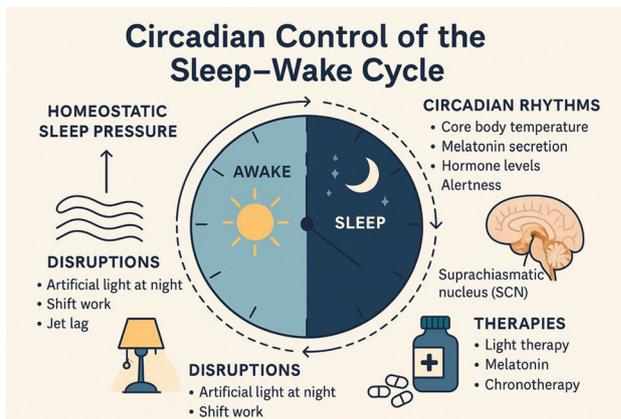


Fig 2 | The architecture of sleep



**Fig 3 | Role of the SCN in receiving light cues and regulating melatonin secretion, thereby influencing the sleep-wake cycle**

### Circadian Control of the Sleep-Wake Cycle

The circadian rhythm is an approximately 24-hour internal clock that regulates cycles of alertness and sleepiness in response to environmental light cues. This endogenous timing system is governed by the **suprachiasmatic nucleus (SCN)**, a cluster of neurons located in the hypothalamus. The SCN is highly sensitive to light and dark signals transmitted via retinal photoreceptors, enabling it to coordinate physiological processes with the external day-night cycle.

The sleep-wake cycle is regulated through an interaction between **homeostatic sleep pressure**—the increasing drive for sleep the longer one remains awake—and circadian rhythms, which align biological functions to external environmental patterns. Acting as the body's master clock, the SCN synchronizes multiple physiological systems, including core body temperature, hormonal release, alertness levels, and metabolism, with the 24-hour cycle.<sup>12</sup>

A central hormonal mediator of circadian regulation is **melatonin**, secreted by the pineal gland under SCN control. Melatonin levels typically rise in the evening, facilitating the onset of sleep, and decline with morning light exposure, reinforcing the daily rhythm of sleep and wakefulness. However, **modern lifestyles** often disrupt these natural cues. Factors such as **exposure to artificial light at night, rotating shift work, and frequent travel across time zones** can lead to circadian misalignment. Such disruptions are associated with **circadian rhythm sleep-wake disorders** and have been linked to mood disturbances, cognitive impairment, fatigue, and elevated risks for metabolic and cardiovascular diseases.<sup>13</sup>

Circadian regulation also changes across the lifespan. **Newborns** lack a fully developed circadian system and typically exhibit **ultradian sleep patterns**—short, evenly spaced sleep-wake cycles throughout the 24-hour period. With increased exposure to light-dark cycles and structured social routines, the circadian rhythm gradually consolidates. By **3–6 months of age**, most infants begin to exhibit a more stable, night-oriented sleep pattern.<sup>14</sup>

Understanding the mechanisms of circadian regulation and their impact on sleep is essential for supporting **emotional regulation, cognitive performance, and overall health**. As environmental and behavioral challenges to circadian stability continue to rise, greater public awareness and targeted interventions are increasingly vital for promoting well-being across all stages of life (Figure 3).

### Sleep's Role in Mental and Emotional Regulation

Sleep is not merely a passive state of rest; it is a dynamic and biologically essential process that plays a critical role in maintaining emotional stability, cognitive function, and overall mental well-being. The sleep-wake cycle is tightly regulated by complex neurochemical interactions and specialized brain regions that promote either alertness or rest. A key contributor to this cycle is **adenosine**, a neuromodulator that accumulates in the brain during wakefulness and contributes to increasing sleep pressure, which is counterbalanced by the body's internal circadian clock.

Throughout the night, sleep progresses through various stages, each contributing uniquely to psychological restoration. During **SWS**, the brain supports physiological repair and consolidates declarative memories. In contrast, **REM sleep**—the stage associated with vivid dreaming—facilitates the processing and integration of emotional experiences. REM sleep plays a crucial role in modulating the intensity of emotional memories, reducing their affective charge while preserving their informational value. This reorganization enhances emotional regulation and bolsters resilience to stressors.<sup>15</sup>

Empirical research indicates that insufficient or fragmented REM sleep is associated with heightened emotional reactivity and increased vulnerability to anxiety-related symptoms. Individuals with sleep disorders such as **insomnia** or **obstructive sleep apnea** often exhibit disruptions in REM sleep architecture, impairing the brain's capacity to regulate affect. For example, in **PTSD**, disrupted REM sleep may interfere with the emotional processing of traumatic memories, prolonging distress and impeding recovery.

Conversely, consistent, high-quality sleep is associated with improved mood, decision-making, and emotional control. Both **deep (SWS)** and **REM sleep** are integral to developing **psychological resilience**—the ability to adapt and recover from adversity—and serve as protective factors against the onset of mood disorders, including depression, anxiety, and emotional exhaustion.

In sum, sleep is a fundamental component of emotional and mental health. Far from being a passive state, it is an active and restorative process that enables the brain to heal, integrate emotional experiences, and maintain psychological balance across the lifespan.<sup>16</sup>

### Root Causes of the Modern Insomnia Crisis: Cultural and Societal Pressures

The modern insomnia crisis extends beyond biological mechanisms; it is profoundly shaped by cultural,

societal, and economic forces. As Rogers<sup>17</sup> argues, contemporary life—defined by digitalization, urbanization, and capitalist productivity norms—has disrupted natural sleep rhythms. In many societies, sleeplessness is increasingly normalized within a culture that glorifies overwork, academic competition, and digital overstimulation.

Historical analysis situates this problem within broader sociotemporal shifts dating back to the Enlightenment era. With the rise of industrial capitalism and the introduction of mechanical timekeeping, rest was reframed as a rigid, eight-hour block, displacing earlier, more flexible and segmented sleep patterns. This imposed uniformity continues to influence modern expectations of sleep, often clashing with individual needs and lived realities.<sup>18</sup>

Grandner<sup>19</sup> explores how **neoliberal ideologies** exacerbate this dynamic by individualizing the burden of insomnia. In this framework, individuals are expected to “self-optimize” by using sleep trackers, online self-help forums, and wellness apps—often internalizing blame when these efforts fail. Martin also provocatively reinterprets insomnia as a potential form of passive resistance: a space for contemplation and critique in the face of relentless productivity demands.

For marginalized populations, the insomnia burden is further compounded by structural inequalities. Ormiston,<sup>20</sup> for example, highlights how **Latinx adults in the U.S.**, particularly women in multigenerational households, experience sleep deprivation linked to immigration stress, financial insecurity, and role overload. While cultural values such as **convivencia** can provide social and emotional buffering, they may also blur personal boundaries and reduce opportunities for restorative rest.

Concurrently, the rise of “**hustle culture**” and the **quantified self movement** has contributed to anxiety-driven sleep disorders like **orthosomnia**—a condition marked by obsessive concern with sleep metrics. These trends are especially pronounced among youth, students, and workers in precarious or remote employment, where the dissolution of boundaries between work and rest exacerbates perfectionism, emotional hyperarousal, and sleep fragmentation. Women, in particular, are disproportionately affected due to the intersection of gendered expectations, caregiving roles, and workplace demands.

Ultimately, modern insomnia is not merely the result of poor habits or individual dysfunction—it is a cultural symptom that reveals the psychological and physiological toll of societies that chronically undervalue rest. Addressing this crisis requires more than clinical solutions; it demands a **collective cultural shift** that recognizes rest as essential to mental, emotional, and social well-being.

#### Digital Dependency and Technology Overload

In today’s hyperconnected environment, **digital dependency** and **technology overload** have emerged as significant contributors to the modern insomnia crisis—particularly among adolescents and young adults.

A growing body of research reveals that excessive and late-night screen use disrupts sleep through intertwined neurobiological, psychological, and behavioral mechanisms.<sup>21–23</sup>

Blue light emitted by smartphones, tablets, and laptops suppresses **melatonin production**, delaying circadian rhythms and sleep onset. Concurrently, emotionally stimulating digital content—ranging from social media interactions to video streaming and gaming—undermines the body’s natural wind-down process, contributing to **cognitive hyperarousal** and **bedtime procrastination**. Adolescents are especially vulnerable to these effects, as **hedonic information systems**—designed with infinite scroll features, variable rewards, and push notifications—activate the brain’s reward circuitry, impairing self-regulation and delaying sleep.<sup>24</sup>

**Low digital literacy** exacerbates the problem. Many adolescents lack the skills to effectively manage screen time or set healthy digital boundaries. As a result, technology becomes a **double-edged sword**—used to manage stress and seek social connection, yet reinforcing emotional dependency and avoidance of sleep. Nascimento<sup>23</sup> introduces the concept of “**social overload**”, wherein the perceived obligation to remain constantly available online fuels **FOMO**, further postponing bedtime.

Some studies caution that chronic late-night digital engagement not only fragments sleep architecture but also disrupts circadian-regulated processes such as metabolism, thereby increasing long-term health risks including **obesity** and **cardiometabolic disorders**.<sup>22</sup>

Importantly, the issue extends beyond screen time duration to encompass the **deep intrusion of digital technologies into biological and emotional systems** that are essential for restorative rest. As boundaries between work and leisure, day and night, continue to blur, the sanctity of sleep is increasingly eroded.

Addressing this digital-era driver of insomnia requires more than individual interventions such as blue-light filters, screen curfews, or wellness apps. What is needed is a **cultural and structural shift** that reclaims the nighttime as a space for **disconnection, recovery, and renewal**. Promoting digital literacy, establishing shared norms around nighttime technology use, and redefining rest as essential rather than optional are critical strategies in restoring balance and safeguarding sleep in the digital age.

#### Environmental and Structural Factors

Modern insomnia is not solely a matter of personal health or lifestyle—it is a symptom of broader **environmental and structural challenges** that shape individuals’ capacity to attain restorative sleep. In urban environments, persistent exposure to **artificial light, noise pollution, and air contaminants** interferes with the body’s circadian rhythms. Streetlights, electronic screens, and indoor lighting suppress **melatonin production**, delaying sleep onset and reducing sleep quality.<sup>25</sup> Unpredictable or chronic noise—such as traffic, sirens, or neighborhood disturbances—triggers

**physiological stress responses** that disrupt sleep continuity. Even **air pollution** has been implicated in poor sleep outcomes, contributing to inflammation and impairing brain functions essential for sleep regulation.<sup>26</sup>

Importantly, **subjective perceptions** of one's environment also significantly influence sleep. Feelings of **unsafety, crowding, or discontent with neighborhood conditions** are strongly associated with disturbed sleep, even when objective physical conditions appear tolerable.<sup>27</sup> For residents of **low-income or high-density housing**, structural barriers such as overcrowded spaces, inadequate insulation, poor ventilation, and insufficient lighting compound the problem. This accumulation of environmental stressors has been referred to as a **"toxic sleep ecology,"**<sup>28</sup> where both external conditions and internalized stress perpetuate chronic insomnia.

Structural inequalities further exacerbate these issues. **Poverty, housing insecurity, and exposure to trauma** are all strongly linked to increased rates of sleep disorders—particularly among **women, ethnic minorities, and other marginalized populations**. Individuals experiencing **displacement, homelessness, or living in temporary shelters** are often forced to sleep in environments that lack safety and privacy. This can lead to **persistent hypervigilance**, severely fragmented sleep, and long-term emotional dysregulation. Over time, such conditions fuel a vicious cycle of **mental health deterioration and sleep disruption.**<sup>29</sup>

Effectively addressing insomnia requires more than behavioral change or personal sleep hygiene—it demands **systemic interventions**. Solutions include improving **housing quality, designing safer and quieter urban spaces, reducing light and noise pollution, and embedding trauma-informed practices** into urban and community planning. Without addressing these **root environmental and structural causes**, individual-level efforts are unlikely to yield sustainable improvements—especially for those disproportionately affected by social and economic inequality.

#### **Mental Health Fallout: Insomnia as a Risk Factor for Mental Illness**

Building on the environmental and structural roots of modern insomnia, it is equally essential to recognize its profound **psychological consequences**. Once considered a secondary symptom of mental illness, insomnia is now widely understood as an **independent and critical risk factor** for a broad range of psychiatric disorders. Longitudinal and epidemiological studies consistently demonstrate that chronic insomnia significantly elevates the risk of developing conditions such as **major depressive disorder, generalized anxiety disorder, panic disorder, PTSD, bipolar disorder, and even suicidal ideation.**<sup>34</sup>

For example, individuals with persistent insomnia are up to **three times more likely** to develop clinical depression compared to those with healthy sleep patterns. This heightened risk is linked to disruptions in key **neurochemical systems**, including **serotonin,**

**dopamine, and the hypothalamic–pituitary–adrenal axis**, all of which play crucial roles in mood regulation, emotional stability, and stress responses. Insomnia also impairs **cognitive function and emotional regulation**, reducing psychological resilience and increasing susceptibility to psychopathology.

In occupational settings, insomnia contributes significantly to **burnout**, amplifying emotional exhaustion, cognitive fatigue, and reduced job performance. The relationship between insomnia and mental health disorders such as PTSD or substance use disorders is often **bidirectional**, with sleep disturbances and psychiatric symptoms reinforcing each other in harmful feedback loops.<sup>30</sup>

**Neuroimaging research** offers further insight by revealing that insomnia alters brain activity. Functional changes include **reduced activity in the prefrontal cortex**, which governs executive functioning and emotional control, and **increased hyperactivity in the amygdala**, a region associated with fear processing and stress reactivity.<sup>30</sup> This neurobiological imbalance promotes **emotional reactivity, irritability, and anxiety**, which in turn perpetuate sleep difficulties.

In anxiety disorders, persistent **hyperarousal and excessive worry** impair sleep initiation and maintenance. In depression, disrupted sleep architecture—characterized by **reduced SWS and REM abnormalities**—worsens affective dysregulation, fatigue, and cognitive dysfunction. These disturbances prolong depressive episodes and increase the risk of relapse.

Similarly, **burnout** illustrates the cyclical nature of the insomnia–mental illness relationship. Chronic workplace stress impairs sleep, which erodes coping capacity and emotional regulation, reinforcing exhaustion and psychological decline. Thus, the interaction between insomnia and mental illness is not linear but **cyclical**, with each perpetuating the other in a self-sustaining spiral of distress.<sup>31</sup>

To effectively disrupt this cycle, **integrated treatment approaches** are essential. Evidence-based interventions such as **CBT-I, mindfulness-based stress reduction (MBSR), targeted pharmacotherapy, and lifestyle modifications** have demonstrated strong efficacy in improving both sleep quality and mental health outcomes. Recognizing and intervening in the insomnia–mental illness feedback loop is critical for promoting long-term psychological well-being, particularly in today's fast-paced, high-stress society.

#### **Breaking the Cycle: Strategies for Healing Sleep Redesigning Daily Rhythms**

While understanding the environmental, structural, and psychological roots of insomnia is crucial, true recovery requires proactive strategies that realign the body and mind with their natural rhythms. One of the most effective methods involves restoring balance to the body's internal clock—the circadian rhythm—which regulates sleep–wake cycles, hormone secretion, metabolism, and other essential physiological functions.<sup>32</sup>

This internal clock is highly sensitive to external cues such as light exposure, meal timing, and physical activity. As such, maintaining consistency in daily routines becomes a cornerstone of healthy sleep.<sup>32</sup> When these rhythms are disrupted—by irregular schedules, shift work, or excessive nighttime screen use—circadian misalignment can occur, leading to delayed sleep onset, fragmented sleep, and diminished daytime alertness and functioning.<sup>33</sup>

Modern societal norms exacerbate these disruptions by devaluing rest, often framing it as a luxury rather than a vital necessity. This pervasive mindset fuels chronic sleep deprivation, increases stress levels, and contributes to emotional instability and cognitive decline.<sup>34</sup> To counter this, a cultural reframe is needed—one that positions rest as a nonnegotiable pillar of health, essential for brain plasticity, immune function, emotional regulation, and metabolic stability.<sup>32</sup>

Within this restorative paradigm, three practical strategies stand out: **consistent routines**, **clearly defined boundaries**, and **personalized wind-down rituals**.

Establishing regular sleep and wake times strengthens circadian alignment and supports the natural release of melatonin, facilitating smoother transitions into sleep.<sup>33</sup> Creating evening boundaries—such as limiting screen time, reducing emotional stimulation, and avoiding stimulants—helps lower cortisol levels and calm the nervous system. Complementing this with intentional presleep rituals—like mindfulness meditation, gentle stretching, or reading under dim lighting—activates the parasympathetic nervous system, easing the body from alertness into rest.<sup>33</sup>

When practiced consistently, these behaviors strengthen neural associations between specific cues and sleep readiness, gradually enhancing both sleep onset and maintenance.<sup>33</sup> Incorporating family members or housemates into shared sleep-supportive routines—such as implementing household digital curfews or participating in communal wind-down activities—can further reinforce these habits and cultivate a restful environment.

Ultimately, this holistic and intentional approach to sleep hygiene does more than improve sleep quality and duration—it supports emotional balance, cognitive clarity, and overall psychological resilience.<sup>35</sup> By reclaiming rest as both a cultural value and a biological necessity, we pave the way for sustainable recovery from insomnia on both individual and societal levels.

### Psychological Interventions

#### CBT-I: A Gold Standard in Sleep Restoration

As individuals begin to realign their daily rhythms and adopt better sleep hygiene practices, those with persistent insomnia often require more targeted support. In this context, CBT-I has emerged as the gold standard in the treatment of chronic insomnia. It offers lasting benefits without the risks or side effects associated with pharmacological sleep aids. CBT-I addresses the

psychological, behavioral, and physiological mechanisms that perpetuate insomnia by helping individuals restructure maladaptive beliefs about sleep, change counterproductive behaviors, and reduce mental and physical arousal that interferes with rest.

The core components of CBT-I include several interlocking strategies. Sleep Restriction Therapy works by consolidating sleep through limiting time in bed to the actual amount of sleep a person gets, then gradually extending that time as sleep becomes more efficient. Stimulus Control Therapy aims to strengthen the bed as a cue for sleep by removing sleep-incompatible activities, such as watching television or using a phone in bed. Cognitive Restructuring helps individuals identify and challenge unhelpful thoughts and anxieties about sleep, such as catastrophizing the effects of a poor night's rest. Sleep Hygiene Education reinforces healthy routines, like consistent sleep and wake times, while Relaxation Techniques—including progressive muscle relaxation, breathing exercises, and mindfulness—help reduce presleep arousal.

Numerous studies<sup>36</sup> have consistently shown that CBT-I improves sleep onset, reduces nighttime awakenings, enhances sleep efficiency, and increases overall quality of life—even among individuals with co-occurring mental health or medical conditions. The versatility of CBT-I also makes it widely accessible: it can be delivered in individual or group settings, and increasingly through digital platforms (dCBT-I), which offer scalable and cost-effective options for broader populations.

Despite its proven effectiveness, CBT-I remains underutilized. Barriers such as a shortage of trained providers, limited public awareness, and structural challenges within health care systems have hindered its widespread adoption. Addressing these gaps will require concerted efforts to train more clinicians, integrate CBT-I into primary care settings, invest in digital delivery platforms, and implement policy frameworks that support behavioral sleep interventions. Ultimately, CBT-I offers more than symptom relief—it promotes self-regulation, restores circadian balance, and contributes to long-term emotional and psychological well-being.<sup>37</sup>

#### ACT and Mindfulness

While CBT-I remains the frontline intervention for chronic sleep disturbances, emerging approaches such as ACT and mindfulness-based interventions offer promising alternatives—or valuable complements—particularly for individuals whose insomnia is deeply interwoven with emotional distress, anxiety, or perfectionistic tendencies. ACT, a third-wave cognitive-behavioral therapy, has gained increasing recognition for its effectiveness in promoting psychological flexibility and reducing the struggle against sleep-related difficulties. Rather than focusing on eliminating distressing thoughts, sensations, or emotions, ACT encourages individuals to accept these internal experiences while committing to actions

aligned with their core values—even in the presence of discomfort.<sup>38</sup> This orientation toward acceptance and value-driven living helps disrupt the self-reinforcing cycle of anxiety, rumination, and wakefulness that often sustains insomnia.

The therapeutic processes central to ACT—such as acceptance, cognitive defusion, present-moment awareness, self-as-context, values clarification, and committed action—help individuals engage with insomnia in a more open, less reactive way. Mindfulness, a foundational element within ACT, has also demonstrated independent efficacy in improving sleep. Interventions like MBSR cultivate nonjudgmental awareness of bodily sensations and mental activity, enabling individuals to disengage from sleep-related worries and regulate physiological arousal. Empirical studies show that both ACT and mindfulness-based approaches can reduce sleep onset latency, diminish nighttime awakenings, and enhance overall sleep quality, especially among individuals with co-occurring anxiety or depressive disorders.

For some, ACT offers a more flexible and compassionate alternative to the structured, cognitively demanding nature of CBT-I. Additionally, the adaptability of ACT and mindfulness allows for delivery in various formats—including individual sessions, group settings, and digital platforms—making them both scalable and accessible. When integrated into a broader sleep health framework, these interventions enrich the therapeutic landscape by addressing not only behavioral contributors to insomnia but also emotional regulation, stress resilience, and the deeper psychological meanings attached to disrupted sleep.

### **Technology That Heals: Navigating the Paradox of Digital Sleep Aids**

In an era where digital overstimulation is a leading driver of sleep disturbances, an emerging suite of technological innovations paradoxically seeks to remedy the very issues it helped create. This duality marks a promising yet complex frontier in the pursuit of better sleep health. Applications such as *Calm*, *Headspace*, and *Sleep Cycle* harness guided meditations, sleep stories, and biometric tracking to enhance relaxation and support improved sleep hygiene. These tools offer data-driven insights and behavioral prompts rooted in cognitive-behavioral and mindfulness-based techniques, enabling users to cultivate healthier routines.<sup>38</sup> Simultaneously, built-in digital curfews—like Apple’s “Downtime” and Android’s “Digital Wellbeing” or “Bedtime Mode”—facilitate screen disengagement during critical presleep hours, thereby promoting circadian alignment and timely sleep onset.<sup>39,40</sup>

Complementary technologies, including blue light filters such as *f.lux*, “Night Shift,” and “Night Mode,” help mitigate melatonin suppression caused by short-wavelength light exposure. Blue-light blocking glasses and screen dimming features are especially effective for children and adolescents, who are disproportionately vulnerable to the circadian-disruptive

effects of screen use.<sup>41</sup> By minimizing overstimulation of the SCN—the brain’s circadian control center—these tools assist in restoring the body’s natural readiness for sleep.

Nevertheless, these digital interventions expose a fundamental paradox in contemporary sleep care: the use of technology to counteract problems that stem from technological overuse. While wellness apps and devices can promote better sleep habits, they may also inadvertently sustain screen dependency, cognitive arousal, and emotional hypervigilance—particularly during the vulnerable presleep wind-down period. Notifications, digital multitasking, and late-night scrolling on social media continue to disrupt sleep quality, even when consumed under the guise of relaxation.

This contradiction underscores the necessity of intentional, mindful digital health engagement. Experts advocate for strategies such as setting strict usage boundaries, enabling “airplane mode” at night, creating screen-free zones in bedrooms, and embracing analog nighttime routines like journaling, stretching, or reading. Alarcón Garavito et al.<sup>40</sup> further emphasize systemic interventions to enhance light hygiene, including public awareness campaigns, urban lighting regulations, and targeted digital guidance for at-risk groups such as adolescents and shift workers.

Ultimately, while digital tools can act as allies in the restoration of healthy sleep patterns, their effectiveness hinges on the user’s intentions and the broader behavioral context. When thoughtfully incorporated into comprehensive interventions such as CBT-I or mindfulness practices, these tools can enhance accessibility, personalization, and engagement. However, they should be viewed not as standalone solutions but as transitional supports in a deeper lifestyle shift. The true challenge lies not in the technology itself, but in recalibrating our relationship with it to recreate the conditions necessary for deep, restorative sleep.

### **Reimagining Sleep in Society: The Role of Education and Advocacy**

Integrating sleep education into school curricula and community programs is a vital preventive strategy for fostering lifelong healthy sleep habits. Adolescents are particularly vulnerable to sleep disturbances due to the natural delay in circadian rhythms during puberty, compounded by academic pressures and social expectations.<sup>41</sup> School-based interventions that teach the science of sleep—covering topics such as circadian biology, sleep hygiene, and the cognitive and emotional benefits of adequate rest—empower students with knowledge and practical skills to make informed lifestyle choices. The most effective programs combine interactive learning with actionable strategies, including consistent bedtimes, reduced homework loads, and digital curfews to minimize screen use before sleep.<sup>42</sup>

Beyond schools, community-based sleep literacy initiatives engage parents, caregivers, educators, and health care providers to build supportive environments

that reinforce healthy sleep practices. These initiatives—delivered through parenting workshops, routine sleep screenings, and culturally tailored resources—promote a holistic approach to sleep health.<sup>41</sup> Codesigning programs with students, families, and educators enhances their relevance and sustainability, ensuring alignment with real-life values and challenges. Strengthening home–school partnerships, embedding sleep education across subjects, training teachers, and advocating for later school start times are additional strategies to institutionalize sleep-friendly norms.<sup>42</sup>

At the societal level, public awareness campaigns challenge cultural narratives that glorify overwork and chronic sleep deprivation. Led by public health agencies, NGOs, and government bodies, these campaigns use mass media—including television, radio, social platforms, and print—to share compelling messages about the consequences of sleep debt, signs of sleep disorders, and evidence-based practices for improving sleep quality. Campaigns such as “Sleep Well, Live Well” and “Sleep Is Power” leverage storytelling, endorsements from health professionals, and influencer engagement to reach diverse populations and reframe sleep as a powerful act of self-care.<sup>41</sup>

When paired with policy reforms—such as regulating work hours, delaying school start times, and embedding wellness into workplace structures—these campaigns reinforce the message that sleep is a collective public health priority. Behavioral science-informed messaging enhances their impact by challenging stigmas, shifting social norms, and positioning rest as fundamental to resilience and productivity.<sup>42</sup> Together, these educational, community, and policy-driven efforts are essential to elevating sleep health to the same level of public concern as nutrition, physical activity, and mental well-being.

### **Institutional Responsibility**

Institutions hold a critical responsibility in advancing sleep health through the implementation of supportive policies and practices across workplaces and health care systems. In occupational settings, wellness policies that prioritize adequate sleep have been shown to enhance employee well-being, productivity, and safety. Effective strategies may include flexible scheduling, limiting excessive overtime, providing sleep hygiene education, and creating designated rest areas or nap rooms—particularly in shift-based or high-demand roles.<sup>41</sup> Growing awareness of the adverse impacts of chronic sleep deprivation—such as increased absenteeism, presenteeism, and workplace accidents—highlights the importance of organizational commitment to sleep health.

Within health care systems, the integration of routine sleep assessments is vital for the early detection and treatment of sleep disorders, which are frequently underdiagnosed yet closely linked to various physical and mental health conditions. Systematic screening during medical consultations, along with timely referrals to sleep specialists or behavioral sleep interventions, can significantly enhance patient outcomes and

reduce the burden of sleep-related chronic diseases.<sup>43</sup> Additionally, training health care providers in sleep medicine and fostering interdisciplinary collaboration are essential steps in embedding sleep health into standard clinical care. Collectively, these workplace and health care initiatives underscore the institutional obligation to prioritize sleep as a fundamental component of public health.

### **Sleep Equity and Vulnerable Populations**

Sleep equity represents an essential public health concern that necessitates attention to the social determinants influencing sleep quality and access to restorative rest, particularly among vulnerable and marginalized populations. Environmental disparities—such as exposure to noise pollution, overcrowded living conditions, and lack of adequate bedding—are disproportionately experienced by low-income communities, contributing to significant sleep disturbances.<sup>41</sup> Housing instability further exacerbates these challenges, often resulting in settings that undermine consistent, high-quality sleep.

Moreover, the psychological toll of trauma—including adverse childhood experiences and chronic stress stemming from socioeconomic disadvantage—can profoundly disrupt sleep regulation and increase the risk of developing sleep disorders.<sup>42</sup> Addressing these inequities calls for comprehensive, multisectoral interventions that extend beyond individual behavior modification. These may include policies that promote access to safe, affordable housing, alongside the implementation of trauma-informed care practices within health care and social service systems.

Equally important are community-based programs that are culturally responsive and tailored to the unique needs of populations most affected by sleep deprivation. By addressing the broader social determinants of sleep health, sleep equity initiatives can play a pivotal role in reducing health disparities and affirming restorative sleep as a basic human right integral to overall well-being.<sup>43</sup>

### **Conclusion: A Wake-Up Call for Mental Wellness**

This manuscript underscores the urgent need to reestablish sleep as a central pillar of mental health, recognizing it not as a peripheral concern but as a foundational component of psychological well-being. Insomnia and poor sleep quality exert profound and far-reaching effects on cognitive functioning, emotional regulation, and overall mental health, contributing substantially to the global burden of psychiatric disorders. Yet, despite this evidence, sleep remains underemphasized in both public health discourse and clinical practice.

Bridging this gap requires a cultural paradigm shift—one that challenges the normalization of chronic sleep deprivation and fosters societal values that respect rest as an essential, nonnegotiable element of health. Such a shift involves widespread education across communities, workplaces, and health care systems,

promoting sleep hygiene and dismantling stigmas that conflate productivity with the denial of rest.

Looking ahead, future research must delve deeper into the complex, bidirectional mechanisms linking sleep disturbances with mental health outcomes across diverse demographic and clinical populations. Preventative strategies should be embedded within early intervention frameworks, with a focus on identifying at-risk individuals and delivering personalized, evidence-based interventions that address the multifactorial origins of insomnia. Advancements in digital health tools, behavioral therapies, and pharmacological innovations also hold promise for improving the reach, precision, and efficacy of sleep-focused care.

Ultimately, reintegrating sleep health into mental wellness frameworks is critical to achieving comprehensive, sustainable solutions that enhance individual quality of life while alleviating the substantial social and economic burdens associated with sleep disorders. This wake-up call invites researchers, clinicians, and policymakers to elevate sleep to its rightful status in mental health agendas—paving the way for a healthier, more rested society.

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