

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

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ABSTRACT: Although sleep has long been treated as an individual biological necessity, it has increasingly become a societal, organizational, and cultural phenomenon in modern societies. Social sleep disruption refers to the collective breakdown of sleep duration, sleep architecture, and circadian rhythms, as well as the clash between individuals' biological time and the institutional, digital, and socio-economic rhythms imposed upon them. Rather than reducing sleep disturbances to physiological issues, this article analyzes the structural effects of working life and digital culture on sleep from an Industrial and Organizational Psychology perspective. Growing evidence shows that chronic sleep fragmentation slows cognitive processes, heightens emotional reactivity, and weakens self-regulation (Walker, 2017). Importantly, this deterioration is no longer occurring at the individual level alone but is increasingly observed on a societal scale. Urban noise levels, shift work patterns, the expectation of 24/7 availability, attention-driven digital algorithms, and socio-cultural role pressures systematically disrupt sleep architecture for broad segments of the population (Foster & Kreitzman, 2014; Roenneberg, 2012). Within organizational structures, the obligation to remain connected after hours, the normalization of being "always online," and the chronicity of performance culture force employees' biological rhythms to submit to the rhythm of work. Consequently, significant negative effects emerge in job satisfaction, organizational commitment, innovation, psychological safety, self-efficacy, and psychological capital (Bakker & Demerouti, 2007; Bandura, 1997; Maslach & Leiter, 2016). Individuals thus begin to carry not only a "sleep debt" but also an organizational rhythm debt. The article further discusses how digital culture-particularly social media platforms-captures and manipulates circadian rhythms. TikTok, Instagram Reels, and other short-form video streams alter dopamine cycles, pushing users toward delayed sleep. Roenneberg's (2012) "social jet-lag" has become a mass phenomenon rather than an individual irregularity. This study conceptualizes this situation as a collapse of social rhythms. Social sleep disruption affects not only individual health but also societal well-being, productivity, educational outcomes, family relations, and organizational efficiency. By integrating neuroscientific findings, organizational behavior models (especially the JD-R Model), cultural rhythm theories, and digital ecology, this paper fills a major gap in the literature. Finally, it offers policy recommendations-including national sleep policies, revised school start times, after-hours communication laws, organizational sleep hygiene programs, and digital rhythm awareness strategies-arguing that this invisible psychological pressure has become a crisis with implications for public health, labor productivity, and organizational well-being.

KEYWORDS: Social sleep disruption, circadian rhythm misalignment, digital attention economy, industrial and organizational psychology, organizational rhythm debt, psychological safety, performance.

1. INTRODUCTION: SLEEP IS NO LONGER AN INDIVIDUAL BUT A SOCIAL PHENOMENON

For most of human history, sleep was regarded primarily as a biological requirement-an internal, physiological cycle belonging solely to the individual. However, the accelerating pace of modern life, the structural features of contemporary work culture, the rhythm-shaping power of digital technologies, and the growing weight of societal expectations have transformed sleep into a large-scale social phenomenon. This transformation points to a process far more complex than individual sleep disturbances and forms the basis of what is increasingly recognized as an invisible psychosocial pressure in modern societies: social sleep disruption. Social sleep disruption is not simply a matter of sleeping less or struggling to fall asleep. The concept describes the widespread deterioration of sleep architecture, difficulties in reaching deep sleep cycles, fragmented REM stages, disrupted wake-synchronization processes, and the collapse of alignment between biological and social time. Individuals in modern societies attempt to synchronize not with their internal circadian rhythms, but with artificial temporal structures created by digital platforms, organizational demands, and cultural expectations. This shifts sleep disturbances from individual issues to a collective societal breakdown. While the psychological, physiological, and cognitive consequences of sleep disturbances have long been documented, the current crisis differs in scale: these disruptions now occur systematically at societal and organizational levels. Urban noise, increased nighttime light

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

exposure, extended working hours, the obligation to remain reachable outside regular shifts, the constant flow of digital stimuli, and economic stressors collectively destabilize sleep-wake cycles across entire populations. As Foster and Kreitzman (2014) emphasize, although human biology evolved for hundreds of thousands of years in alignment with solar rhythms, modern life has overridden this natural timekeeper and replaced it with an artificial social clock. Digital technologies are among the strongest drivers of this transformation. Continuous nighttime notifications, psychological design strategies used by social media algorithms to keep users online longer, and screen-light suppression of melatonin directly interfere with the biological foundations of sleep. As Walker (2017) states, screen-based stimuli “chemically sabotage the brain’s preparation for sleep.” What was once an individual issue has now grown into a structural crisis affecting broad segments of society. Roenneberg’s (2012) concept of “social jet-lag” once described the gap between biological and social time; today, this gap has become a shared condition across entire populations—a mass desynchronization. One of the most critical dimensions of social sleep disruption concerns working life. From an Industrial and Organizational Psychology viewpoint, sleep deprivation is a powerful determinant of employee behavior. In modern organizations, workers are expected to remain available beyond formal working hours; e-mails, WhatsApp groups, and digital task platforms keep work psychologically present long after the workday ends. This blurs the temporal boundaries of work and erodes the employee’s right to rest. The cognitive load generated by constant vigilance makes it difficult for employees to fall asleep, shortens sleep duration, and lowers sleep quality. The organizational consequences extend far beyond physical fatigue. According to Bakker and Demerouti’s (2007) Job Demands-Resources Model, when employees face high demands and insufficient psychological resources, depletion occurs. Sleep disruption accelerates this process, as the mind and body fail to restore themselves overnight, causing employees to begin the workday in a state of cognitive exhaustion. This not only heightens burnout but also increases errors, weakens motivation, intensifies emotional fluctuations, and fuels organizational conflict. Maslach and Leiter (2016) highlight that emotional exhaustion—one of the core components of burnout—is directly linked to inadequate sleep. Within organizational settings, sleep disruption erodes psychological capital as well. Comprising self-efficacy, hope, optimism, and resilience, psychological capital strongly influences work performance, problem-solving ability, and organizational commitment (Bandura, 1997). Chronic sleep fragmentation diminishes self-efficacy by reducing cognitive flexibility, slowing decision-making, and undermining the individual’s ability to cope with demanding tasks. Over time, this leads to the attrition of psychological capital. Social sleep disruption also profoundly affects family relationships, societal psychosocial health, and overall quality of life. Sleep deprivation increases irritability, weakens empathy, and heightens collective intolerance. Thus, social sleep disruption is a quietly expanding psychological crisis in modern societies. Although individuals often interpret sleep problems as personal issues, they are in reality the outcomes of socio-economic structures, digital culture, work practices, and organizational demands. In other words, it is society—not the individual—that is producing sleep disruption. This article reframes sleep disturbances not as isolated health issues but as psychosocial conditions requiring large-scale societal analysis. From an Industrial and Organizational Psychology perspective, sleep disruption emerges as a critical factor reshaping modern organizational practices, employees’ work experiences, performance processes, and the overall organizational climate. For this reason, social sleep disruption is not simply about individual sleep; it is a multidimensional crisis affecting societal productivity, institutional efficiency, workplace relationships, and the general balance of social life. The invisible psychological pressure of the modern age becomes evident precisely here: people know they are sleep-deprived, yet when they ask why, the answer is not individual—it lies within the structure of society and organizations.

2. CONCEPTUAL FRAMEWORK: WHAT IS SOCIAL SLEEP DISRUPTION?

Social sleep disruption is a concept that has become increasingly visible in modern societies yet has not been comprehensively examined in the literature. It goes beyond individual sleep disorders and refers to the emergence of similar patterns of sleep disruption across large segments of the population due to structural and cultural factors. Sleep disruption does not simply mean that a person wakes up several times during the night or has difficulty falling asleep; the core issue is that sleep architecture is systematically, persistently, and similarly disturbed at the societal level. For this reason, social sleep disruption is a multilayered phenomenon that must be evaluated at the individual, organizational, and macro levels. Human biological rhythms have evolved to synchronize with sunlight, darkness, and natural cycles. Waking with sunrise and moving into rest with nightfall reflects the operation of a biological clock shaped over millions of years. However, the modern human has largely lost contact with the natural rhythms that regulate this biological clock. Electric lighting, artificial illumination, the expansion of nightlife, the constant brightness of digital screens, and a culture of 24/7 accessibility have created a form of “social rhythm engineering” that fundamentally disrupts biological timing. This process is not under individual control, because the rhythm of society is determined by the demands of technology and working life (Foster & Kreitzman, 2014). When the conceptual framework of social sleep disruption is examined, it becomes evident that the phenomenon is not limited to the individual’s sleep pattern; rather, it is the outcome of social norms, cultural expectations, economic pressures, and organizational structures. In particular, the time pressure created by modern working life strains employees’ biological rhythms and renders their sleep cycles fragile. Night-time notifications from the workplace, off-duty work expectations, the pressure to remain constantly online, and performance-driven cultures have turned sleep into a genuine social stressor. Bakker and Demerouti’s (2007) Job Demands-Resources Model offers a key theoretical basis for understanding this process: as personal resources decline and demands increase, sleep-based restoration becomes more critical. Yet in modern society,

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

individuals are unable to compensate for these losses through sleep because social rhythms do not permit it. Social sleep disruption is also closely linked to the psychological effects of the digital world. Social media applications, endless content feeds, infinite scrolling technologies, and algorithmic design manipulate the brain's dopamine system. This delays the desire to sleep and systematically pushes sleep to later hours. As Walker (2017) notes, the light emitted by smartphones suppresses melatonin and biochemically interferes with the brain's preparation for sleep. This is not a problem confined to a handful of individuals; it is a mass delay of sleep onset affecting the vast majority of society. Roenneberg's (2012) concept of "social jet-lag" describes the biological consequences of this social delay, yet what we are witnessing today is more than social jet-lag; it is a more complex and continuous collapse of rhythms. The most striking aspect of the concept of social sleep disruption is that the core of the problem is structural, not individual. Traditional sleep research tends to explain sleep disorders through psychological tension, trauma, stress, or medical conditions. Social sleep disruption, by contrast, is the result of social and organizational factors imposed upon individuals beyond their own volition. For example, individuals living in large cities are constantly exposed to a stream of noise: traffic, public transport, the energy of crowds, and urban lighting can all interfere with transitions into deep sleep. This means not just a few people, but thousands living in the same area can experience similar sleep disturbances on the same night. Thus, instead of isolated individual sleep disorders, spatially clustered patterns of social sleep disruption emerge. From the standpoint of industrial and organizational psychology, social sleep disruption is critically important. Sleep quality directly affects work performance, interpersonal relations, decision-making capacity, and perceptions of organizational safety. Individuals experiencing fragmented sleep become more easily angered, their emotional tolerance diminishes, their concentration deteriorates, and they struggle to adapt to new tasks. This leads to micro-level conflicts in organizations, communication breakdowns, and productivity losses. The burnout literature shows that emotional exhaustion—a core component of burnout—is directly associated with insufficient sleep (Maslach & Leiter, 2016). A worker experiencing sleep disruption is unable to recover, and thus begins the workday in a state of mental fatigue. As a result, organizational citizenship behaviors decline, motivation decreases, and the overall organizational climate deteriorates. Conceptually, social sleep disruption is not just a health problem; it is also a cultural construction. Societies that glorify industriousness, label those who sleep more as "lazy," associate sleep deprivation with success, and continually feed the myth of the "sleepless hard worker" turn widespread sleep deprivation into a cultural norm. This myth constitutes a form of social violence against the biological limits of the individual. Even when the person needs sleep, society insists that they continue working, meet deadlines, communicate late into the night, and remain active. Consequently, the individual follows cultural rhythms rather than biological ones. When this cultural rhythm merges with the digital world's pressure to be "always awake and online," social sleep disruption becomes inevitable. Another element expanding the conceptual framework of social sleep disruption is economic inequality. Low-income individuals typically live in noisier, more crowded, and more chaotic environments; they are more likely to work in shift-based jobs; their rest time is limited; job insecurity and economic stress further impair sleep quality. Thus, social sleep disruption is not only a temporal issue but also a class issue. Inequalities in sleep quality lead, in the long term, to deep social disparities in health, productivity, educational attainment, and life expectancy. In this sense, sleep disruption is not just a symptom, but a biological manifestation of systemic inequalities. From a conceptual standpoint, social sleep disruption is a phenomenon that, at the micro level, impairs individuals' mental performance, emotional regulation, and physical health, and at the macro level, shapes societal productivity, economic efficiency, and social cohesion. Therefore, sleep is not merely an individual problem but a critical structural factor influencing the future of society. Sleep disruption is a form of social breakdown emerging from the ways in which culture intervenes in working life, technology intervenes in human psychology, and organizations intervene in employee expectations.

3. HISTORICAL BACKGROUND: FROM SEGMENTED SLEEP TO DIGITAL WAKEFULNESS

In the mind of the modern human, sleep is generally perceived as a continuous whole: one goes to bed at night, wakes up in the morning, and this pattern is accepted as a standard of life. Yet throughout history, sleep was neither as uniform, nor as monophasic, nor as culturally standardized as it is today. For much of human history, sleep was biphasic—divided into two segments—rhythmic, aligned with community life, and firmly anchored to the day-night cycle. The modern notion of a single, uninterrupted block of sleep is, in fact, a relatively recent phenomenon. This historical background is essential for understanding social sleep disruption, because the sleep fragmentation we are experiencing today is not a return to some natural historical pattern; rather, it is a pathological rupture produced by technological pressure and cultural coercion. In the Middle Ages and early modern period, people typically spent the night in two distinct phases of sleep. This pattern was known as "first sleep" and "second sleep." After going to bed soon after sunset, individuals would sleep for several hours, then naturally awaken, spend one to two hours in a semi-wakeful state, and then enter a second sleep phase. This period of wakefulness around midnight was not viewed as pathological; rather, it was considered ordinary, healthy, and even spiritually productive. During this interval, people prayed, engaged in religious practices, read, conversed with family members, occasionally visited neighbors, tended to their children, or simply reflected in silence. Historian Roger Ekirch's seminal work *At Day's Close* demonstrates that this biphasic sleep pattern was widespread in European culture and markedly different from the modern expectation of uninterrupted sleep. This segmented sleep pattern was not unique to Europe; similar practices have been observed in African societies, in certain aspects of Ottoman daily life, and in many agrarian communities. The reason lies in the fact that human biology does not produce sleep with equal intensity throughout the night. Under

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

natural conditions, melatonin secretion peaks shortly before and after midnight, suggesting that a biphasic sleep rhythm is biologically supported. However, this pattern was only sustainable when natural light was the primary determinant of the day-night cycle. In short, throughout history, sleep was “flexible,” “fragmented,” and “aligned with social rhythms.” One of the greatest ruptures in the history of sleep occurred with the Industrial Revolution. The emergence of factories, the use of the clock as a tool to measure production and productivity, the monetization of time, and the reduction of the human body to a component of a machine radically altered the rhythm of sleep. Industrial capitalism reshaped the human body according to an economic model that demanded productivity during specific hours of the day. Biphasic sleep practices did not align with the need for a continuous, disciplined workforce, and thus gradually disappeared. The spread of gas lighting and later electricity profoundly changed the social timing of sleep. Waking at midnight ceased to be a normal experience, and artificial lighting enabled people to remain active for much longer into the night. This compressed, and eventually pathologized, the natural biphasic sleep pattern. Industrial society taught individuals the norm of “eight hours of uninterrupted sleep at night” and standardized this expectation both in medical literature and in everyday practice. Yet this pattern had been absent for most of human history. The transformation of sleep under industrialization is not simply a change in habit; it is the subordination of biological rhythm to industrial rhythm. Humans were separated from their internal biological clock; the natural rhythm governed by sunlight was surrendered to the rhythm of the factory clock. Sleep thus ceased to be a purely natural process and became a continuation of the production model. From this perspective, the modern understanding of sleep is the product of a shift from flexible and rhythmic patterns to rigid and uniform ones. Sleep is one of the most visible domains through which the Industrial Revolution brought the human body under disciplinary control. Workers were expected to go to bed at a certain hour, wake at a certain hour, and be present in the factory early in the morning. Factory sirens, in effect, reprogrammed the biological clock of society. During this period, sleep was organized not primarily according to human biological needs but in line with the demands of the economic system. Thus, the notion of “uninterrupted sleep” was constructed as an industrial necessity. The striking point is that this norm has persisted into the present. Even today, the idea of eight hours of continuous sleep is widely regarded as something almost innate, whereas it is, in fact, a cultural imposition of the nineteenth and twentieth centuries. By the twenty-first century, sleep patterns have once again begun to transform; however, this transformation is not natural as in the past, but rather driven by technological, cultural, and organizational pressures that enforce a new kind of fragmentation. The constant stimulus bombardment of the digital world, the blue light emitted by smart devices, the dopamine-triggering design of social media algorithms, and the culture of 24/7 accessibility are now key factors that fragment sleep. From this angle, the sleep fragmentation of the modern era is not a return to historical biphasic sleep, because the earlier pattern included a natural, biologically supported intermediate phase. What we are witnessing today is a biochemically harmful, mentally exhausting, and socially pressured form of pathological fragmentation. Digital wakefulness has become the new norm of the modern world. Being awakened by a notification in the middle of the night, scrolling through social media for long minutes before sleep, delaying bedtime with “just one more video,” and reaching for the screen immediately upon waking all form a behavioral chain that manipulates biological rhythms. As Walker (2017) argues, modern screen culture biochemically suppresses melatonin secretion, preventing the brain from adequately preparing for sleep. This creates large-scale circadian disruption. Roenneberg’s (2012) concept of “social jet-lag” no longer describes merely the difference between “larks” and “owls,” but also a general temporal shift, systemic delays in sleep, and the collapse of social rhythms. Another factor driving sleep fragmentation today is the temporal structure of working life. After-hours work messages, e-mails sent at midnight, and the requirement to coordinate with global companies across time zones chronically disrupt employees’ natural sleep rhythms. The modern worker’s mind cannot disengage from work; cognitive preoccupation continues even in bed. Thus, in twenty-first century societies, sleep fragmentation is fueled not only by digital factors but also by organizational culture. Unlike the historical biphasic pattern, this fragmentation is not a benign rhythm but a psychologically unsustainable burden emerging from economic and cultural pressures. The most important insight from this historical background is the following: at no point in history has the rhythm of sleep been as artificial, constrained, and manipulated as it is today. Segmented sleep in the Middle Ages was part of a natural rhythm; the idea of continuous sleep that emerged with the Industrial Revolution was the product of industrial imperatives; the modern rupture in sleep is the result of biological rhythms being fragmented under digital and organizational pressures. Social sleep disruption thus emerges as the most complex and destructive form of sleep deterioration in the historical trajectory of human rest.

4. NEUROPSYCHOLOGICAL EFFECTS: THE DESTRUCTIVE IMPACT OF SLEEP DISRUPTION ON THE BRAIN

Sleep is one of the most critical physiological functions through which the human brain renews itself, clears toxins, and recalibrates emotional and cognitive processes. The brain depends on the consolidating role of sleep not only to rest, but also to learn, regulate emotion, make decisions, sustain attention, and manage social relationships. Therefore, sleep disruption is not merely a disturbance in duration; it is the breaking of a fundamental link in the chain of brain functioning. When sleep disruption occurs at a societal scale, it generates an invisible “epidemic of brain fatigue” that impairs individuals’ neurocognitive processes. The increasing prevalence of attention problems, emotional reactivity, irritability, social conflicts, and burnout in modern societies largely stems from the neurobiological breakdown of sleep (Walker, 2017). The prefrontal cortex is the brain region most severely affected by sleep disruption. It is the center of distinctly human functions such as decision-making, impulse control, complex problem-solving,

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

sustained attention, and the regulation of social behavior. The deep sleep stage known as N3 is especially critical for the restoration of the prefrontal cortex. However, individuals experiencing social sleep disruption often wake frequently during the night, truncate their REM stages, and fail to obtain sufficient deep sleep. This creates a process that might be described as “prefrontal cortical slowing.” The brain effectively loses its neural speed: attention spans shorten, thinking slows, planning capacity declines, and cognitive flexibility weakens. According to Walker’s (2017) research, even a single night of fragmented sleep can reduce prefrontal cortical efficiency by up to 40 percent. This impairment is not limited to the following day; it exerts a deeper impact on the individual’s overall cognitive profile. The weakening of the prefrontal cortex disrupts not only cognitive processes but also emotional regulation. Neuroscientific studies have shown dramatic increases in amygdala activity among sleep-deprived individuals. The amygdala is the brain’s “emotional alarm center,” responsible for managing fear, threat, anger, and stress responses. Under normal sleep conditions, there is a strong brake-and-control relationship between the amygdala and the prefrontal cortex: the prefrontal cortex calms the amygdala and modulates emotional reactions. Sleep disruption distorts this balance. The amygdala becomes hyperactive, the prefrontal “brakes” weaken, and individuals begin to respond to internal and external stimuli more intensely and less controllably than usual. In daily life, this manifests as “emotional overflow,” uncontrollable outbursts of anger, exaggerated reactions to minor events, and emotional fragility. The question of why sleep-deprived individuals become more easily irritated, experience more conflict in relationships, and succumb to stress more quickly can be explained through this neurobiological dysfunction. Reduced response inhibition is another critical consequence of sleep disruption. Inhibition refers to the capacity to control impulses, suppress inappropriate behaviors, and give socially acceptable responses. This function is also largely regulated by the prefrontal cortex. Fragmented sleep increases neuroinflammatory processes in the prefrontal cortex, slows synaptic transmission, and disrupts inhibitory mechanisms in the brain. Consequently, individuals with insufficient sleep exhibit more impulsive behavior, make riskier decisions, become less patient, show reduced social tolerance, and display sudden outbursts and rash reactions. This is particularly problematic in the workplace. A sleep-deprived employee is more error-prone, more easily stressed, quicker to burn out, and more likely to experience tension in team communication. These effects weaken not only individual performance but also relationships and psychological safety within the organization (Maslach & Leiter, 2016). Sleep disruption also significantly elevates anxiety levels. From a neuroscientific perspective, sleep is the process during which the brain filters emotional memories, clears residual stress, and restores emotional balance. REM sleep is the critical phase in which emotional memories are reprocessed and emotional load is lightened. REM deficiency prevents the brain from discharging this emotional burden. As a result, individuals experience anxiety during the day without a clear cause, perceive greater threat in their environment, feel chronically uneasy, and display symptoms of persistent stress. Walker’s (2017) studies show that anxiety centers in sleep-deprived individuals can exhibit more than 30 percent hyperactivity. Thus, social sleep disruption is one of the invisible biological foundations of the rising prevalence of anxiety disorders in modern societies. Irritability is among the fastest and most apparent consequences of sleep disruption. When the amygdala-prefrontal cortical balance is disturbed, individuals perceive emotional stimuli as more threatening than they actually are, and this heightened perception quickly turns into irritability. This impairs not only personal relationships but also social interactions at large. An increase in irritability across a population fosters social intolerance, erosion of empathy, an uptick in everyday conflicts, and a general climate of tension. Here, the sociopsychological dimension of social sleep disruption becomes visible: individual sleep problems have the capacity to transform the emotional climate of society. Thus, one of the key biological reasons why societies are more easily agitated, why social conflicts escalate quickly, and why public debates are more heated today is the spread of social sleep disruption. Burnout syndrome is both a cause and a consequence of sleep disruption. Maslach and Leiter (2016) define burnout along three dimensions: emotional exhaustion, depersonalization, and reduced sense of personal accomplishment. Sleep deprivation directly affects all three. Emotional exhaustion increases as sleep deteriorates, because a brain that cannot restore itself at night begins the workday with “insufficient fuel.” Depersonalization stems from weakening of prefrontal social-empathy circuits. The sense of personal accomplishment declines as cognitive slowing and motivational loss set in. This cycle intensifies sleep problems; sleep deprivation deepens burnout, driving individuals toward psychological collapse. One of the most striking outcomes of social sleep disruption is its relationship with increased tendencies toward aggression at the sociopsychological level. Sleep disturbances heighten aggressive impulses because amygdala hyperactivation amplifies threat perception. Weakening of the prefrontal cortex disrupts the mechanisms that inhibit these aggressive impulses. Empirical studies show that sleep-deprived individuals are more prone to road rage, domestic conflicts, social disputes, and impulsive behaviors (Walker, 2017). When social sleep disruption becomes widespread, the overall tension level of society rises; social polarization deepens; impatience, intolerance, and aggression increase. The growth of violent incidents in modern societies is influenced not only by cultural or economic factors but also by the chronic disruption of sleep as a major psychobiological factor. Taken together, these neurobiological processes reveal the extent of the damage that social sleep disruption inflicts on the modern brain. This damage affects not only individuals’ mental capacity but also the social fabric of society, organizational work cultures, family relationships, and overall quality of life. Consequently, social sleep disruption is not merely a health issue; it is a multidimensional crisis signaling a neurobiological breakdown in modern societies.

5. SOCIOLOGICAL DYNAMICS OF SOCIAL SLEEP DISRUPTION

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

Alongside its neurobiological consequences, social sleep disruption has another dimension that is at least as significant, yet even more invisible: social processes. In modern society, sleep is not only a biological necessity but also a social practice shaped by working patterns, family structures, social roles, urbanization dynamics, class inequalities, and perceptions of safety. Therefore, social sleep disruption should not be understood as a problem experienced by individuals in isolation, but as a structural breakdown that permeates society as a whole. The collapse of sleep patterns affects a wide range of domains—from the quality of interpersonal relationships and the rhythm of urban life to family responsibilities and cultural norms. From a sociological perspective, the first key dynamic of social sleep disruption lies in the structural pressures of working life. Modern work culture has reorganized almost every moment of time around the concepts of productivity, efficiency, and performance. Workplaces are no longer merely physical locations; they have become systems of constant connectivity that reach into employees' minds day and night through digital channels. The “night-time message culture”—that is, e-mails, WhatsApp notifications, and task requests sent outside official working hours—is one of the social mechanisms that most severely disrupt employees' sleep rhythms. This culture affects white-collar and blue-collar workers differently. While white-collar employees carry the mental burden of work into their homes, blue-collar workers are often exposed to the irregularity of shift systems. Although both groups experience sleep disruption in distinct ways, the outcome is the same: loss of personal time, mental fatigue, and an inability to rest fully at night. The victory of institutional rhythms over biological rhythms is one of the greatest paradoxes of modern society. Working life forces employees to wake up at a fixed time in the morning, expects them to remain reachable at specific hours at night, and legitimizes these demands under the label of “organizational norm.” The norm of being “always online” operates as a silent yet powerful mechanism of control in the workplace: if an employee does not respond to a message sent at night, they may be perceived as insufficiently dedicated. Sociologically, this produces a form of cultural pressure under which the individual reshapes their sense of self in line with organizational expectations. As a result, sleep is no longer under the control of the individual; it becomes an extension of work culture. This is not merely a work-life balance issue, but one of the most visible structural sources of social sleep disruption. A second key dynamic of social sleep disruption concerns family structures and social roles. As the emotional and functional core unit of modern society, the family is a decisive factor in the regulation of sleep. One of the most neglected forms of sleep disruption is the “heightened vigilance” experienced particularly by mothers. The state of being on alert throughout the night for the sake of the child prevents sleep from deepening. In the sociological literature, this is referred to as “protective wakefulness”: even when the child is asleep, the mother's mind does not fully relax. This is more pronounced in low-income families, where childcare responsibilities are concentrated heavily on mothers. As a result, many women have a sleep pattern that is fragmented not biologically but socially. Care work is not limited to children; eldercare, caregiving for sick family members, and household responsibilities create similar cycles. The fact that women disproportionately shoulder care work in many societies reveals a gendered dimension of sleep disruption. Night-time awakenings not only shorten total sleep duration but also produce a sustained state of hypervigilance. This persistent alertness manifests in subsequent days as emotional instability, loss of concentration, and extreme fatigue. From a sociological viewpoint, social roles generate a web of expectations that systematically disrupt women's sleep. The notion of sleep debt among children is also crucial within this framework. In modern societies, increased screen use, earlier and more intense exposure to digital stimuli, school start times that do not correspond to biological rhythms, and heavy homework loads have led to severe sleep deprivation in children. For the child, sleep debt is not only a personal problem; it also becomes a social issue through declining academic performance, behavioral problems, attention difficulties, tense peer relationships, and emotional dysregulation. A child with sleep debt, in effect, represents a society in sleep debt to its own future. Thus, social sleep disruption is not limited to adults; it is a sociological rupture that shapes future generations. A third major dynamic of social sleep disruption is urbanization, noise, and insecurity. Individuals living in metropolitan areas experience a constant state of “micro-awakening.” This leads to a persistent hyper-alertness to environmental stimuli. Night-time traffic noise, sirens, crowd movement, irregular sounds, and artificial light pollution all systematically interfere with the transition to deep sleep. These environmental factors that disrupt sleep are external pressures beyond individual control. The continuous arousal generated by urban life turns sleep into a luxury in modern society. Noise is not merely a physical condition; it is also a stressor that keeps individuals in a state of constant vigilance within social life. Low perceived safety in cities further intensifies sleep disruption. Feelings of insecurity activate a continual “threat-monitoring system” in the human brain. In the sociological literature, this is referred to as a mode of “constant vigilance.” In this state, the brain cannot fully relax and enter deep sleep, because it remains mentally prepared for potential danger or risk. This is especially pronounced in neighborhoods with high crime rates. Even if individuals do manage to sleep biologically, their sleep quality is severely compromised. In short, perceptions of safety function as a social variable determining the quality of sleep. Understanding the sociological dynamics of social sleep disruption reveals that the sleep crisis is not a consequence of individual weakness or failure, but a structural outcome of how society operates. Modern life centers not on the biological rhythms of the individual but on the rhythms of society. The pressures of working life, the burden of family roles, the environmental threats of urbanization, and the culturally valorized image of “constant activity” systematically undermine sleep. For this reason, social sleep disruption is not only a health issue; it is also one of the most invisible sociological crises of our time.

6. IMPLICATIONS FROM AN INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY PERSPECTIVE

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

Just as social sleep disruption profoundly affects the biological functioning of individuals, it has also become one of the most powerful organizational variables shaping employees' performance, workplace experiences, team relationships, and psychological well-being. In the modern world of work, employees are not merely physical laborers; they are systems that generate productivity through cognitive, emotional, and psychosocial processes. Accordingly, sleep disruption should be regarded as an "invisible performance saboteur" at the organizational level. Core constructs in Industrial and Organizational Psychology-such as job performance, psychological safety, self-efficacy, organizational commitment, innovation, and burnout-are directly dependent on the quality and continuity of sleep. In this context, the increasingly normalized state of sleep deprivation in contemporary work culture is not just a private matter for individuals; it is a critical factor shaping the overall climate and productivity of organizations. The impact of sleep disruption on job performance is among its most immediate and tangible consequences. Job performance comprises not only task completion but also attention, memory, problem-solving, planning, cognitive flexibility, and decision-making-multifaceted processes governed by the prefrontal cortex and heavily reliant on deep stages of sleep. When employees experience fragmented sleep, their cognitive capacity declines because the brain cannot adequately process information accumulated during the day, clear metabolic waste, or reorganize neural networks. As a result, focus spans shorten, mental fatigue increases, and error rates in complex tasks rise. Elevated error rates are not simply a matter of individual competence; sleep deprivation systematically impairs cognitive processes. In tasks requiring sustained attention, micro-sleep episodes and rapid attentional lapses can lead to workplace accidents and operational errors. Sleep disruption also slows decision-making processes. The sleep-deprived brain processes information more slowly, forcing employees to take longer to reach decisions that they would ordinarily make within seconds. However, this extra time does not necessarily yield better decisions; on the contrary, it often increases indecision. Research on job performance indicates that individuals with fragmented sleep exhibit impaired risk assessment, sometimes making overly cautious or excessively risky decisions (Walker, 2017). This can have serious consequences for both managers and frontline workers. A leader may make flawed strategic choices under decision fatigue, while an operational employee may use inappropriate equipment and cause a workplace accident. In this sense, sleep disruption affects the very core of job performance and remains largely overlooked by organizations. Another profound effect of sleep disruption concerns psychological safety. Amy Edmondson's construct of psychological safety refers to the extent to which employees feel comfortable expressing themselves, sharing ideas, and exercising the right to make mistakes at work. Psychological safety is a foundational organizational variable shaping the quality of team relationships. Because fragmented sleep amplifies emotional reactivity, it undermines this sense of safety. A sleep-deprived individual becomes more easily irritated, more emotionally fragile, and more prone to harsh reactions. As a result, minor disagreements within a team can escalate, misunderstandings become more frequent, and employees adopt more defensive interpersonal stances. With emotional regulation impaired, interpersonal tensions arise more frequently and conflicts escalate more quickly. In organizational terms, a linear mechanism emerges: sleep disruption → emotional reactivity → intra-team conflict. Just a few sleep-disrupted individuals within a team can destabilize the entire group dynamic, as tension is contagious. As psychological safety declines, innovation also suffers. Innovation requires cognitive flexibility, willingness to take risks, and creative thinking. Sleep deprivation systematically impairs all three. The brain's capacity to generate new ideas diminishes, employees cling more tightly to routine, become hesitant to advocate for new ideas, and risk-taking is suppressed as tolerance for mistakes narrows. Self-efficacy is one of the central concepts in Industrial and Organizational Psychology, grounded in Bandura's (1997) Social Cognitive Theory. It refers to an individual's belief in their capacity to perform a task, confidence in their abilities, and motivation to achieve a goal. Sleep disruption directly erodes self-efficacy. A sleep-deprived employee feels less capable, as cognitive capacity is diminished and challenging tasks appear more burdensome than they actually are. This, in turn, undermines other components of psychological capital: hope, optimism, and resilience weaken. Consequently, employees do not merely suffer from sleep loss; they also experience a collapse in self-concept. Over time, this leads to reductions in job satisfaction, motivation, and organizational commitment, along with a chronic decline in performance. The most powerful organizational impact of sleep disruption is seen in burnout syndrome. According to Maslach and Leiter's (2016) model, the core components of burnout are emotional exhaustion, depersonalization, and reduced sense of personal accomplishment. Sleep disruption feeds all three. Emotional exhaustion is a direct consequence of sleep loss, as a brain that cannot recover overnight starts the workday with depleted emotional resources. Depersonalization emerges from the weakening of prefrontal circuits responsible for social empathy. The sense of personal accomplishment shrinks as cognitive capacity and self-efficacy decline. Therefore, sleep disruption acts both as a trigger and an accelerator of burnout. The Job Demands-Resources (JD-R) model provides one of the most suitable frameworks for understanding sleep disruption within organizational behavior (Bakker & Demerouti, 2007). According to this model, when job demands (high workload, time pressure, role ambiguity, emotional stress) increase and job resources (psychological support, sense of control, autonomy, opportunities for rest) decrease, employees experience energy depletion. Sleep disruption multiplies this energy loss. Employees begin their day with already depleted resources; job demands feel mentally heavier; their ability to utilize available resources diminishes. The burnout cycle accelerates, and intentions to leave the job increase. One of the invisible organizational effects of sleep disruption manifests in micro-behaviors at work. Micro-aggressions, passive-aggressive attitudes, communication breakdowns, the escalation of minor errors, misunderstandings within teams, and emotional instability in leadership are all more frequently observed among sleep-deprived employees. Over time, such micro-behaviors can accumulate into macro-level

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

organizational problems. As psychological safety declines, employees become reluctant to voice ideas, creativity diminishes, and the pace of organizational innovation slows down. Sleep disruption also adversely affects leadership behavior. Sleep-deprived leaders are more likely to be authoritarian, impatient, and reactive. Reduced empathy makes it more difficult for them to connect with employees. This deteriorates the emotional climate of the organization and undermines employees' sense of trust and commitment. Ultimately, sleep disruption is not merely an individual issue; it is an organizational problem with a domino effect on leadership, team dynamics, and organizational culture.

7. THE DIGITAL SLEEP ECONOMY: TECHNOLOGY COMPANIES, ALGORITHMS, AND NEW CYCLES OF DEPENDENCY

The rapidly transforming structure of the digital age is affecting human behavior, attention processes, and core biological rhythms more profoundly than ever before. One of the domains where this impact is most invisible yet most powerful is sleep. While traditional economic models were built on physical labor and time, the digital economy has targeted human attention as its most valuable resource. For this reason, the modern economy is often referred to as the attention economy. The attention economy is based on keeping the individual's eyes fixed on the screen and their mind continuously open to online content. Thus, for digital companies, the most valuable resource is not merely the user's time, but their awake time. This new economic system directly conflicts with the individual's biological rhythm, because the human brain evolved over millions of years to rest at night and be active during the day. The digital sleep economy constructs a form of "wakefulness exploitation" on top of this biological architecture. Technology companies' algorithms are designed to keep users online for as long as possible. Most applications therefore rely on behavioral design techniques such as "infinite scrolling," "push notifications," "autoplay," and "sleep-delaying content recommendations." These techniques target the brain's dopamine-based reward and motivation circuits. Each notification and each new piece of content triggers a small release of dopamine, reinforcing the user's desire to return and consume more. This neurodynamic loop chemically sabotages the brain's transition into sleep. Night-time exposure to screens suppresses melatonin secretion, makes it harder to fall asleep, and delays the onset of the sleep cycle. Algorithms not only drive the attention economy; they also interfere with circadian rhythms. The circadian system, governed by the body's internal clock, regulates the 24-hour biological cycle, and the sleep-wake rhythm is one of its most critical components. However, the potent stimuli of digital platforms exert a direct effect on the suprachiasmatic nucleus (SCN) in the brain. Under normal conditions, the SCN is calibrated by the natural cycle of light and darkness. Screen light-especially blue wavelengths-sends the SCN a signal equivalent to "it is daytime, not night." As a result, the brain miscalibrates its internal clock, and individuals miss their natural sleep window. This produces a digital variant of what Roenneberg (2012) calls social jet-lag: large segments of society set their sleep schedules according to the light of their smartphones rather than their biological clocks. Social jet-lag is no longer limited to early-rising students or shift workers; it has become a mass rhythm displacement triggered by digital algorithms. The digital sleep economy not only shortens total sleep duration; it also fundamentally alters sleep architecture. Under normal conditions, sleep unfolds in cycles composed of NREM and REM stages. Screen-based stimuli are particularly likely to delay the onset of REM sleep, which is essential for emotional memory processing, stress discharge, and cognitive flexibility. When REM is delayed, sleep becomes more superficial, and individuals experience heightened emotional reactivity the following day. The relationship between the digital world and sleep is therefore not merely a matter of "going to bed late"; the chemical and architectural structure of sleep is disrupted, preventing the brain from completing the restorative processes it requires. One of the most powerful features of the attention economy is the timing of digital content. Many applications are designed to offer more content in late-night hours, because statistical analyses show that people tend to interact with devices most intensely at night, driven by loneliness, boredom, anxiety, and escapism. As a result, platforms push more dopamine-triggering content during these hours. This content strategy targets moments of biological vulnerability and intensifies sleep loss. Users unconsciously become trapped in a "prolonged wakefulness cycle" engineered by digital companies. This is one of the strongest sociotechnological mechanisms explaining why sleep deprivation has become a mass phenomenon in modern societies. Another invisible dimension of the digital sleep economy is sleep-tracking applications. At first glance, sleep tracking appears to be a tool designed to improve individual health, yet it can have paradoxical effects. Individuals who track their sleep may develop a habit of "monitoring" their sleep throughout the night and evaluating it the next morning according to a score produced by the app. This behavior can give rise to orthosomnia, a modern sleep-related fixation characterized by an excessive desire to achieve "perfect sleep," constant checking of metrics, and heightened anxiety in response to low scores-an anxiety that, in turn, leads to poorer sleep. Thus, sleep-tracking apps can evolve from tools intended to improve sleep into mechanisms that generate sleep-related anxiety. This is a striking example of how digital technology can entrap human psychology in paradoxical cycles. The digital sleep economy also has profound implications for organizational life. When employees feel compelled to check work e-mails at night or stay awake late responding to messages in workplace WhatsApp groups, they are effectively pulled into a "work-oriented wakefulness cycle" driven by digital technologies. This severely undermines psychological safety and work-life balance. Sleep-deprived employees become more conflict-prone, less innovative, and less productive. In this sense, the digital world is not only disrupting individual sleep but also reshaping organizational structures as a powerful driver of sleep disruption. Moreover, the digital sleep economy can deepen social inequalities. Socioeconomically disadvantaged groups may

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

be more exposed to intensive screen use because they have fewer opportunities for offline social and recreational activities, live in more constrained environments, and experience higher levels of stress. As a result, screen dependence and sleep disorders are more prevalent in these populations. Thus, the digital sleep economy is not merely a technological issue; it is also a class-based problem. In sum, the digital sleep economy is one of the greatest threats to sleep in modern societies. The new cycle of dependency created by technology companies through the attention economy profoundly disrupts biological rhythms, psychological well-being, and organizational functioning. Algorithmic interference in circadian rhythms, the massification of social jet-lag, and the paradoxical effects of sleep-tracking technologies form the digital foundations of social sleep disruption. Understanding these mechanisms is critical for recognizing why contemporary sleep problems constitute a societal, not merely individual, crisis.

8. MACRO-LEVEL CONSEQUENCES OF SOCIAL SLEEP DISRUPTION

Social sleep disruption is not confined to individuals or employees; it is a large-scale socioeconomic crisis that increasingly transforms the functioning of societies, reduces economic productivity, increases the burden on public health systems, worsens educational outcomes, and generates marked behavioral differences between generations. Sleep is not merely a physiological need; it operates as a foundational infrastructure that directly shapes a society's health, productivity, resilience, and social cohesion. Accordingly, the collapse of sleep at the societal level represents one of the most significant invisible crises of the modern era. The first macro-level consequence of social sleep disruption is productivity loss. A country's economic performance is determined not only by the number of workers or total working hours but also by employees' cognitive performance, attention spans, decision-making capacities, and problem-solving skills. Sleep disruption impairs all of these processes. Sleep-deprived employees work more slowly, both physically and mentally; error rates increase, efficiency declines, and work processes take longer. As a result, insufficient sleep leads to a decrease in total factor productivity. Global research suggests that sleep deprivation can cost a country the equivalent of 1-3% of its GDP. These losses arise not only from reduced productivity but also from the costs of increased errors, workplace accidents, delayed processes, and duplicated work. At the societal level, sleep disruption functions as an invisible brake on economic growth. A second major macro-level consequence is the increase in healthcare expenditures. Sleep deprivation affects not only mental processes but also the immune system, cardiovascular function, metabolism, and hormonal regulation. In societies with widespread fragmented sleep, conditions such as hypertension, diabetes, obesity, chronic pain syndromes, and depression are more prevalent. This imposes an enormous burden on healthcare systems. As sleep deprivation becomes chronic across the population, healthcare expenditures rise dramatically due to long-term treatment of chronic illnesses. Sleep-deprived individuals also tend to use more medication, seek healthcare services more frequently for stress-related complaints, and show increased demand for psychiatric and psychological support. Thus, social sleep disruption is not only a threat to individual health but also a structural risk factor for national health budgets. One of the most visible sociopsychological consequences of social sleep disruption is increased unrest and aggression. Sleep deprivation profoundly disrupts emotional regulation; heightened amygdala activation amplifies threat perception, lowers thresholds of patience, and weakens social tolerance. This leads to more frequent interpersonal conflicts, increased irritability in daily interactions, and a general atmosphere of tension. Rising aggressive behavior in public spaces, road rage, escalated hostility on social media, and elevated polarization in political discourse can all be seen as neuropsychological reflections of social sleep disruption. As a population's average sleep duration decreases, the collective emotional climate becomes angrier, more reactive, and more volatile. In this sense, sleep is one of the most important determinants of a society's mental health. Sleep disruption also creates a deep macro-level crisis in education systems. Children and adolescents are biologically inclined to fall asleep later, yet early school start times conflict with these natural rhythms. A large majority of Generation Z and Generation Alpha are growing up under conditions of chronic sleep deprivation. Sleep loss shortens attention spans, impairs learning capacity, disrupts memory consolidation, and slows cognitive development. Consequently, academic achievement declines, exam performance deteriorates, and behavioral problems in schools increase. Teachers frequently report concentration difficulties, hyperactivity-like behaviors, and learning challenges among their students. A sleep-disrupted cohort produces weaker educational outcomes, which in the long term erodes a country's human capital. From the perspective of the sociology of education, sleep deprivation is a critical factor shaping a society's future cultural, scientific, and economic capacity. Generational differences in behavior are also among the macro-level consequences of social sleep disruption. Generations Z and Alpha are growing up under a level of digital stimulation unprecedented in history. Due to screen dependency, blue-light exposure, social media notification cycles, and the behavioral design strategies of digital platforms, these generations have largely lost alignment with biological rhythms. Digital wakefulness culture produces delayed bedtimes, shortened sleep duration, and disturbed sleep architecture among young people. This generates distinctive behavioral and personality profiles: they tend to be more easily stimulated, more quickly bored, more reactive, more anxious, and more prone to emotional fluctuations. These traits yield not only individual but also societal and cultural consequences, as the future workforce, leaders, and parents are being shaped under the influence of this sleep disruption. At the macro level, social sleep disruption also undermines social cohesion. Sleep-deprived individuals have reduced capacity for empathy, which in turn weakens solidarity and erodes social bonds. Declines in interpersonal trust can deepen social polarization. In this way, sleep disruption contributes to the erosion of social capital. Societies' psychological resilience is closely linked to the quality of their sleep; sleep-deprived societies tend to be more fragile, more stressed, and more conflict-prone. In summary, social

Social Sleep Disruption: The Invisible Psychological Pressure of the Modern Age

sleep disruption is a large-scale crisis affecting the entirety of society-from productivity and education to public health, social psychology, generational behavior, and economic development. Sleep is not simply part of an individual's daily routine; it is a strategic resource shaping the future of societies. Recognizing social sleep disruption and redesigning sleep-related policies at the national level are therefore among the most urgent needs of modern societies.

9. CONCLUSION

Social sleep disruption is one of the quietest yet most destructive crises of the modern world. This crisis affects not only individuals' biological rhythms but also societies' psychosocial health, economic productivity, organizational functioning, and the development of future generations. Sleep is one of the most fundamental biological functions regulating human behavior, yet it is now constantly interrupted by digital technologies, organizational pressures, urbanization dynamics, and cultural norms. Thus, in contemporary societies, sleep disruption is not an individual anomaly but a collective social reality. Its roots are socio-economic, its outcomes neurobiological, and its effects permeate the entire social structure. Within this context, individual awareness alone is insufficient to resolve social sleep disruption; structural transformation is required at both national and institutional levels. In the absence of a national sleep policy, a society's biological rhythm remains vulnerable to the demands of the modern world. The first step, therefore, is to establish a comprehensive national sleep policy. Such a policy-encompassing health, education, working life, and digital media regulation-should treat the protection of biological rhythms as a public good. As global public health agendas increasingly recognize the importance of sleep, it is scientifically and socially critical that countries like Türkiye also adopt sleep regulation as a strategic national priority. In the field of education, one of the most urgent reforms concerns school start times. Scientific research shows that adolescents are biologically inclined to fall asleep later and that current start times conflict with their natural rhythms. Aligning the education system with biological rhythms would not only improve academic performance but also benefit mental health, social adjustment, and overall development. A generation growing up under chronic sleep deprivation begins life at an educational disadvantage-a disadvantage that ultimately translates into substantial losses in a country's human capital. In the context of working life, the introduction of a "night-time messaging ethics code" for workplaces is crucial. Digital communication technologies have blurred the boundaries between work and private life, trapping employees in a continuous cycle of arousal. Night-time e-mails, messages, and task assignments disrupt employees' sleep, increase organizational stress, weaken psychological safety, and accelerate burnout. Organizations must therefore adopt formal guidelines that define after-hours communication boundaries within a framework that protects sleep health. Without safeguarding employees' right to uninterrupted rest at night, organizational productivity cannot be sustainable. Given the impact of digital life on sleep, it has become essential to regulate screen use through public guidance. Screen time and the timing of digital content are critical for sleep hygiene at the population level. Social media and content platforms' practice of offering more stimulating content during evening and night hours disrupts circadian rhythms and massifies social jet-lag. Awareness strategies addressing the impact of screen use on sleep should be developed in educational settings, parental guidance programs, and public health campaigns alike. At the institutional level, the development of organizational sleep hygiene programs is now a necessity. Sleep hygiene is not solely an individual responsibility; organizations must design ergonomic working hours, breaks, rest facilities, and "digital quiet hours" outside regular working time. Such programs increase employee engagement, reduce burnout, elevate performance, and strengthen psychological safety within organizations. Investing in sleep is, in essence, investing in the cognitive capacity and psychological resilience of the workforce. Ultimately, social sleep disruption is not simply a matter of individuals' night-time rest; it is a large-scale systems crisis that affects societal productivity, mental health, family structures, education, intergenerational relations, and organizational functioning. As an invisible psychological pressure of the modern age, it requires holistic interventions ranging from the national to the individual level. To build future societies that are healthy, productive, and psychologically robust, sleep policies must be treated as a core public health priority. Protecting sleep means protecting not only individuals, but the future of society itself.

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