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Sleep disorders and their impact on the mental health of public health professionals: Main role of social workers

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Abstract---Aim: This review aims to explore the impact of sleep disorders on the mental health of public health professionals, with a particular focus on the role of social workers. Methods: The review synthesizes findings from various empirical studies, longitudinal research, and intervention trials to examine the relationship between sleep disturbances and mental health issues. It focuses on the three most studied mental health conditions related to sleep disorders: schizophrenia, depression, and post-traumatic stress disorder (PTSD). Results: The findings indicate that sleep disturbances are prevalent

across various mental health conditions and may serve as a significant contributing factor rather than merely a symptom. In schizophrenia, sleep issues often precede and exacerbate psychotic episodes. In depression, insomnia and hypersomnia are common, with insomnia significantly increasing the risk of developing depression. In PTSD, sleep disturbances, including insomnia and nightmares, are integral to the disorder and contribute to its persistence. Conclusion: Sleep disturbances play a crucial role in the onset and progression of mental health issues. Addressing sleep problems through targeted interventions can significantly alleviate symptoms of schizophrenia, depression, and PTSD. Social workers are vital in identifying and addressing sleep issues among public health professionals, potentially improving mental health outcomes in this population.

Keywords---Sleep disorders, mental health, public health professionals, social workers, schizophrenia, depression, PTSD, insomnia, hypersomnia, nightmares.

Introduction

Everyone knows the repercussions of getting too little or too much sleep. A lot of people are also aware of the consequences of multiple nights of sleep disturbances. Anxiety might grow when there are sleepless hours at night, which can affect mood, confidence, and cognitive function the next day. Many people feel that poor sleep negatively affects mental health because of their own experiences with sleep disturbances and the evidence provided by studies [1-6]. Despite being widely acknowledged, this viewpoint differs from how sleep disturbances are typically conceptualized in the context of mental health services. It's common to regard insomnia symptoms linked to other mental health disorders as secondary [7], meaning that insomnia is either a sign or an outcome of other mental health problems. The non-specificity of sleep issues across a range of diseases suggests that these challenges may not account for particular disorders, which could deprioritize their treatment in patient care. This Review supports reconsidering the role that sleep plays in mental health treatment, in line with the commonsense perception of laypeople. The way that existing diagnostic procedures are implemented, teaching physicians to recognize particular issues while frequently ignoring non-specific ones, may be contributing to this problem. This method would work well if psychiatric diagnostic categories were truly discrete and independent. However, many medical practitioners feel that psychiatric categories are not really autonomous due to high rates of comorbidity, diagnostic instability, and variability within illnesses. Empirical research suggests that a comparatively small number of distinct kinds comprise the plethora of mental diagnoses [8,9]. As a result, common causes and symptoms ought to be apparent in all diagnostic groups. The ideal way to conceptualize causality for a diagnostic category would be to see it as complicated, involving both shared and specific causes, both essential for comprehension and intervention. According to this viewpoint, non-specific indicators have a significant capacity for explanation.

Seeing mental health problems as the result of an intricate web of interconnected psychiatric symptoms is an alternate perspective to the traditional method of diagnosing and classifying mental health conditions.[10, 11]. A single symptom might start a whole network that varies from person to person. The intricacy of causality in mental health issues is explicitly addressed, and the emphasis on individual patient experiences—which were formerly utilized to generate syndromes linked with diagnoses—is maintained. Probabilistic graphical modeling can be used to illustrate the causal directions, strengths, and connections (edges) between symptoms (nodes) within networks [12,13]. It is possible to identify the key symptoms in causal cascades, which then become therapy targets. According to this viewpoint, prevalent mental health symptoms that are linked to several disorders have the ability to have an impact on networks of psychiatric problems. The Research Domain Criteria framework, which identifies the arousal and regulation system as one of six important domains of human functioning that are likely to have an impact on mental health, also recognizes the significance of disturbed sleep and circadian rhythms across a range of mental health issues [14]. These new conceptualizations implicitly give non-specific problems substantial causal status.

The non-specific issue of sleep disruption, which is a very likely cause of many mental health problems, is the focus of this review. Sleep is not a passive state; getting enough sleep is essential for maintaining one's physical and mental health. The phases of sleep that the body experiences include rapid eye movement (REM) and non-REM, which alternate roughly every 90 minutes. Adults' non-REM sleep contains three substages that correlate with their depth of sleep, whereas REM sleep makes up around 25% of total sleep and becomes more frequent in later cycles. Arousal level, the time of day (circadian rhythm), and the amount of time spent awake (homeostatic load) all contribute to sleep. Throughout the brain, several neuronal areas, circuits, and neurotransmitters govern these processes [15]. Sleep is probably beneficial for a number of reasons, including memory consolidation [16], emotional processing [17], and restoration (which may include clearing the brain of waste products) [18].

A number of effects of sleep deprivation, such as increased levels of anxiety and depression [4], a decrease in positive mood, poor emotion regulation, negative perception of neutral stimuli, heightened pain perception, poor response inhibition, working memory impairment, and a reduction in problem-solving ability, are likely to increase susceptibility to mental health conditions. Limiting sleep also has physiological impacts, including adjustments to immunological and endocrine systems [24, 25]. But illnesses such as insomnia are not just disorders of sleep deprivation; they usually contain other components as well, such as disturbed sleep, poor sleep quality, and adverse psychological consequences. Trauma and other environmental risk factors for mental health issues interfere with sleep as well [26]. In clinical presentations, sleep disturbances alone without additional mental health symptoms are uncommon [27]. The majority of mental health problems have altered sleep patterns, according to a meta-analysis of polysomnographic studies [28]. Prominent scholars specializing in sleep and circadian rhythms have contended that sleep has a basic effect on mental health [4,29,30]. The elimination of the primary/secondary insomnia split from diagnostic systems is a major change over the last ten years [31].

We examine the possible role that sleep disturbances may play in mental health issues in this Review. Sleep problems should be noticeable before other disorders manifest, common in clinical presentations, and, most importantly, when properly treated, should result in a decrease in other mental health issues if sleep difficulties are not just secondary problems but rather contribute to the multifactorial causation of major mental health disorders. Our primary focus is on insomnia, which is the most prevalent and well-researched sleep disorder. We also take into account the impact of relatively common parasomnias, such as nightmares, and disruptions to the circadian rhythm. We focus on sleep disruption as a frequent contributing factor to mental health issues. Because of this, even if rarer diseases like sleep apnea are clinically significant when they do occur, they are not treated. Stronger causal inferences can be drawn from the discussion of interventionist-causal research, experimental investigations, and longitudinal studies, which we prioritize. Because treatment studies directly manipulate a suspected causative component and evaluate the outcomes, they are increasingly seen as being extremely informative about causation when done appropriately [32]. Claims about causality from treatment trials can be further supported by mediation analysis [33]. This Review looks at the three conditions—post-traumatic stress disorder, depression, and schizophrenia—that have been studied the most in relation to sleep.

The Schizophrenia Syndrome

There is a growing emphasis on how sleep affects schizophrenia as a result of two primary research directions. First, in the context of non-affective psychosis, clinical experiences with patients experiencing persecutory delusions have shown that sleep disruptions are widespread, that psychological interventions can ameliorate these disturbances, and that improvements in sleep frequently result in a reduction in delusions [34, 35]. These findings raised the possibility that sleep disturbances could exacerbate psychotic episodes. Second, studies on circadian neurobiology have demonstrated that major disturbances in the sleep-wake cycle are common in individuals with schizophrenia [36,37], suggesting a common causal relationship between schizophrenia and circadian misalignment. In addition, problems falling asleep, staying asleep, oversleeping, nightmares, and abnormal sleep patterns are now commonly reported by patients [38]. But according to a survey, not many mental health providers formally evaluate sleep issues in this patient population [39].

There is ample evidence linking sleep difficulties to psychotic episodes. For instance, a WHO global health survey research with almost 250,000 individuals discovered that sleep issues increased the likelihood of having delusional thoughts or hallucinations [40]. It also counts what kind of psychotic experience you had. Insomnia was found to have moderate associations with hallucinations, paranoia, and cognitive disorganization, but little link with negative symptoms and no correlation with grandiosity, according to a classical twin study involving 5,000 teenage twin pairs [41]. Additionally, this study demonstrated that the genetic and environmental factors that affect sleeplessness also affect paranoia, hallucinations, and cognitive disarray. These results are corroborated by a molecular genetic investigation that discovered a polygenic risk for schizophrenia

linked to nightmares and shorter sleep durations [42]. Research utilizing experience sampling techniques in longitudinal investigations has demonstrated that insufficient sleep is a predictor of recurrent episodes of paranoia and hallucinations (43–46). Remarkably, sleep difficulties were observed by 75% of patients with schizophrenia prior to the emergence of persecutory delusions.

Though it falls short of explaining the correlation, negative affect is the element that connects sleep difficulties and psychotic experiences on a consistent basis [34,41,45,46,48, and 49]. It should come as no surprise that sleep problems are very common in schizophrenia patients. Half (906 patients) of 1,800 patients with non-affective psychosis who participated in a self-report research reported having insomnia⁵⁰. Patients who were now suffering hallucinations, paranoia, or both had high rates of sleeplessness. [48] (80%) of 60 first-episode psychosis patients who participated in a diagnostic sleep interview reported having at least one sleep disorder, the most prevalent being insomnia and nightmares, with an average of three sleep problems per patient [51]. For individuals at a high risk of psychosis, sleep problems and circadian disturbances are further indicators of a poor prognosis [52, 53]. Actigraphy studies have revealed that schizophrenia patients had less efficient sleep and more fragmented sleep than non-clinical controls⁵⁴; nevertheless, it is crucial to remember that actigraphy may not be as effective in situations where sedentary behaviors and low activity levels are the norm. Although the results of polysomnography studies have been contradictory and difficult to interpret, they have shown that individuals with schizophrenia have shorter sleep durations and a variety of sleep architectural problems when compared to controls [55,56].

Two research provide light on the consequences of changing the length of sleep. 3,755 students with insomnia participated in the largest study to date, the OASIS trial, where they were randomized to receive either no intervention or an online sleep intervention [57]. With an effect size of 1.1, the intervention dramatically decreased sleeplessness. Crucially, although minor (effect size 0.2) gains were noted in paranoia and hallucinations, the intervention did not specifically target psychotic episodes. There is minimal evidence to support a reverse causal relationship between changes in psychotic experiences and changes in sleeplessness. This interventionist-causal investigation, which did not include individuals with psychosis, indicates that sleeplessness is a causal factor in delusions and hallucinations. A study that included [68] non-clinical adults and limited their sleep to 4 hours per night for three nights further supports this finding. The study found that the reduction in sleep caused increases in paranoia (impact size 0.4), hallucinations (effect size 0.9), and cognitive disorder (effect size 0.6), but not in grandiosity [6]. The effects of sleep deprivation on psychotic symptoms were mediated by negative affect and associated processes rather than working memory impairment.

According to recent research, cognitive behavioral techniques modified for this purpose may help individuals with psychosis improve their sleep, despite the fact that these issues are complicated and frequently severe. The main goals of these therapies are to increase the frequency of daily activity, establish a suitable sleep window, and stabilize rhythms [58,59]. Positive outcomes for patients at ultra-high risk of psychosis (effect size 1.7) [60,61], patients in psychiatric wards (effect

size 0.9) [62], and patients with persistent delusions and hallucinations (effect size 1.9) [63] come from case studies and pilot randomized controlled trials. Additionally, a pilot randomized controlled experiment showed that imagery rehearsal treatment was an effective way to treat nightmares in patients with psychosis (effect size 1.1) [64]. These trials imply that sleep improvements can lead to benefits in other mental health outcomes, like psychotic experiences and psychological well-being, albeit they are not conclusive due to limited power. The relationship between bad sleep, nightmares, and suicide thoughts needs to be investigated further [64,65].

Depression

Psychiatry views hypersomnia and insomnia as signs of depression, suggesting that sleep problems are common in persons who suffer from the illness. High frequencies of sleep disruptions among people diagnosed with depression are confirmed by numerous empirical studies. In the United States, for example, an epidemiological study conducted on 3,573 people who were having a major depressive episode revealed that 92% of the participants reported having at least one sleep complaint, 85% of them had insomnia, 48% had hypersomnia, and 30% had both hypersomnia and insomnia⁶⁶. Findings from polysomnographic investigations in major depression with insomnia are similar to those from primary insomnia [69]. These studies have found abnormalities such as disturbances in sleep continuity and REM sleep in depression [67,68]. Restriction, fragmentation, or lack of sleep has been demonstrated in small experimental investigations with non-clinical subjects to exacerbate depression-like symptoms⁴.

Insomnia and depression share genetic and environmental similarities, according to classical twin research [70,71]. Insomnia and depression are likely to co-occur because of stress and adversity [72]. Additional common processes that have been suggested including disruption of the hypothalamic-pituitary-adrenal axis, inflammation, aberrant brain activation (especially in areas related to emotion regulation), and neurotransmitter imbalances (such as increased cholinergic or decreased aminergic transmissions) [73]. Prioritizing sleep treatment in the management of depression has been advocated, nevertheless, as there is mounting evidence that sleep abnormalities in depression may be more than merely a symptom [74–76]. Studies with a long follow-up have shown that sleeplessness raises the likelihood of developing depression later on. The relative risk of getting depression was shown to be doubled by sleeplessness, according to a meta-analysis of 34 cohort studies involving over 150,000 participants [77]. A rigorous definition of insomnia was used in another meta-analysis of eleven trials, which found that insomnia was linked to almost three times the likelihood of later developing depression⁷⁸. Moreover, a higher risk of suicide thoughts and attempts has been connected to insomnia [79,80]. Research on patients has demonstrated a separation between depression and sleep issues, indicating that insomnia might not just be a symptom. For example, a study of 5,481 inpatients discovered that more than half of the 3,108 patients who were discharged from the hospital with a depressive remission still had severe sleep problems [81].

Research that addresses sleep problems yields stronger causal findings. The results of 49 research with a total of around 6,000 participants showed a moderate reduction in depressive symptoms (effect size 0.45) in the meta-analysis of psychological therapies (mostly cognitive behavioral therapy, or CBT) for enhancing sleep [82]. A significant decrease in depression was observed in seven trials including people with insomnia in the context of mental health issues (effect size 0.81). In a 2019 trial, 1,711 people with insomnia were randomly assigned to receive either digitally delivered cognitive behavioral therapy (CBT) or sleep hygiene education. The results showed that the CBT intervention significantly improved sleep quality and reduced depression, with a small to moderate reduction (effect size 0.38), which continued after the intervention [83]. It has also been demonstrated that treating insomnia lowers the chance of developing depression for at least the year that follows [84].

Less research has been done on the impact of treating insomnia in those who have been diagnosed with serious depression. In a 16-week experiment, 150 patients with severe depressive disorder and insomnia who were not receiving treatment were randomized to receive either a control therapy or cognitive behavioral therapy (CBT) for insomnia. Although there were more substantial improvements in sleep with CBT⁸⁵, the experiment did not find any differences in depression remission between the two groups. Similar improvements in depression were seen in all treatment groups in another experiment with 107 patients who had serious depression and insomnia; however, the trial was underpowered to identify differences between groups once more⁸⁶. Digital CBT for depression and digital CBT for insomnia both reduced depression in a comparable way, according to a year-long experiment involving 43 patients [87]. More extensive studies addressing sleep issues in individuals with depression are required. Overall, CBT trials for insomnia that also look at depression outcomes show that effective treatments for insomnia also lessen symptoms of depression, pointing to a causal relationship between sleep disruptions and depression. It might also be claimed, though, that rather than a decrease in the primary symptoms of depression, better sleep provides alleviation for mood. This poses a problem for causal experiments that use interventionists. However, the impact sizes of insomnia therapies on depression are similar to those of depression-specific treatments, suggesting that the changes are substantial and suggest a causal relationship.

Furthermore, a small number of randomized controlled trials have investigated how complete sleep deprivation, or wake treatment, affects depression. After sleep restriction, patients' moods usually improved during the day, but depression usually returned the next night. A review of randomized controlled studies found little evidence to support wake therapy's ability to increase depression patients' rates of recovery [88. 64] inpatients with moderate to severe depression participated in the largest experiment to date, which produced conflicting results about wake therapy's potential to reduce depression slightly. However, this benefit was not sustained over time [89]. Promoting consistent, uninterrupted sleep of a normal duration is advantageous for individuals suffering from depression, and cognitive behavioral strategies have demonstrated efficacy in attaining this kind of sleep, even in inpatient mental facilities [90]

PTSD, or posttraumatic stress disorder

Anxiety and sleep are inextricably linked because perceived dangers cause hyperarousal, which is the opposite of a sleep-promoting condition. Thus, anxiety can interfere with sleep, and insomnia, which is defined as the inability to lower cortical, somatic, and cognitive arousal, can in turn increase anxiety [92]. Tight structural connections between arousal areas in the brainstem and the cerebral cortex enable this bidirectional interaction, which makes it simple for anxiety-related information to interfere with sleep [94]. Research on genetics has revealed a full overlap in the hereditary factors between generalized anxiety disorder and insomnia [95]. Anxiety disorders are known to be associated with high rates of sleep disruptions, especially in PTSD and generalized anxiety disorder, where symptoms include insomnia [96].

Insomnia (an arousal-type symptom) and trauma-related nightmares (an intrusion-type symptom) are the two main sleep disorders associated with PTSD. These symptoms' frequency can differ depending on the type, time, intensity, and population under study (97, 98). 70% of PTSD sufferers who participated in an urban population study reported having trouble sleeping, of which 40% had insomnia and 20% had nightmares [99]. Of Vietnam soldiers suffering from PTSD, 44% had difficulty falling asleep, 91% reported difficulty remaining asleep, and 52% reported nightmares. According to a meta-analysis of 31 polysomnography studies, PTSD is linked, in comparison to controls, to shorter sleep duration overall, more interrupted sleep, and shallower sleep [101]. Nevertheless, overall variations in REM sleep were not statistically significant, even though younger PTSD patients (30 years and younger) slept for shorter periods of time [102,103].

According to research, sleep issues may contribute to the development of PTSD and thus call for specialized care. After fear conditioning, for example, people who were sleep deprived expressed a higher expectation of a shock than people who slept well. Neural pathways caused by sleep deprivation resemble those of anxiety disorders as well [106]. When compared to remaining awake, sleeping after watching a violent movie decreased the likelihood of intrusive memories [107]. Lack of sleep prevents extinction learning about conditioned phobias, indicating that getting enough sleep reduces worry in the future [108]. It has been demonstrated that getting enough sleep improves exposure learning in phobia treatment [109]. Sleep issues both before and after trauma are predictive of the development of PTSD, according to longitudinal research [110–114]. Less than 4 hours of sleep per night was found to be a strong predictor of the disorder's persistence over the course of the following years in a study involving over 2,000 U.S. military personnel and veterans diagnosed with PTSD¹¹⁵. The results of treatment clearly show a reciprocal association between anxiety and sleeplessness, even though these studies do not prove causation. Anxiety can be treated with cognitive behavioral therapy (CBT), which improves sleep. A meta-analysis of CBT for anxiety disorders revealed a moderate decrease in insomnia¹¹⁶. Although sleep is improved by psychological therapy for PTSD, especially trauma-focused approaches, considerable insomnia persists in nearly half of the patients [117–119].

CBT methods for nightmares and sleeplessness also lessen PTSD symptoms. Nearly 600 participants in 11 randomized controlled trials of cognitive behavioral therapy (CBT) for sleep revealed that PTSD symptoms decreased, however not as much as with the best CBT for PTSD [120]. CBT treatments for insomnia and PTSD are more successful when conducted individually than in groups [121,122]. Clinical trials support the theory that sleep disturbance is a contributing causative element in PTSD by showing that treating sleep disturbances can be a route to curing the disorder. Empirical research is still needed to determine the best way to combine sleep therapy with PTSD treatment, whether it comes first, second, or in tandem [123].

Conclusion

Sleep disorders significantly impact the mental health of public health professionals, necessitating a closer examination of their role in various psychiatric conditions. This review highlights the pervasive nature of sleep disturbances in schizophrenia, depression, and PTSD, emphasizing their potential causal relationship with these disorders. In schizophrenia, sleep issues such as insomnia and nightmares frequently precede and exacerbate psychotic episodes, underscoring the need for early identification and intervention. Similarly, in depression, insomnia is not merely a symptom but a significant risk factor for the onset and persistence of the disorder. The high prevalence of sleep disturbances among individuals with depression calls for prioritizing sleep treatment as a critical component of depression management. PTSD is another area where sleep disturbances, particularly insomnia and trauma-related nightmares, play a central role. The bidirectional relationship between anxiety and sleep disruption further complicates the disorder, as inadequate sleep can heighten anxiety, creating a vicious cycle. Longitudinal studies support the notion that addressing sleep problems can mitigate the risk of developing PTSD and aid in its treatment. Cognitive behavioral therapies tailored for insomnia and nightmares have shown promise in reducing PTSD symptoms, though further research is needed to optimize these interventions. The review underscores the importance of social workers in addressing sleep disturbances among public health professionals. Social workers are well-positioned to identify sleep issues early and provide or coordinate appropriate interventions, thereby improving overall mental health outcomes. Given the critical role of sleep in maintaining mental health, integrating sleep assessments and treatments into mental health care protocols is imperative. This approach can lead to more effective management of mental health disorders and enhance the well-being of public health professionals, ultimately improving their capacity to serve the community.

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