Educational Administration: Theory and Practice
2024, 30(4),1073-1076
ISSN: 2148-2403
https://kuey.net/

Research Article

Neurological Effects On Sleep And Mental Health: Understanding The Bidirectional Relationship And Therapeutic Interventions

Susheela Singh[1*], Chandra Sekhar Mohapatra[2], Asavari Santosh pate[3], Neha Ravichandran[4], Rajasree Gopalakrishnan[5], Kiran Haridas[6]

[1*]Psychologist, Jio Jindagi, Wellness Retreat Trust, IGNOU, MA in Clinical Psychology, New Delhi
Email ID: monasingh9711@gmail.com
[2]Associate Professor, Department of Pathology, Sri Ram Chandra Bhanj Medical College & Hospital (SCBMCH) Cuttack, Odisha
Email ID: drcsmohapatra@gmail.com
[3]MSc Nursing in CVTS, MUHS Nashik University, Maharashtra Email ID: asavari.pate@gmail.com
[4]PhD Scholar, Sunrise University, Rajasthan Email ID: ravichandranneha@gmail.com
[5]Educational Psychologist, IGCSE Psychology Facilitator, Al Diyafah High School, Dubai, UAE & Sunrise University, Rajasthan
Email ID: rajasreegopalakrishnan08@gmail.com
[6]Clinical Pharmacologist, Bangalore Email ID: drkiranharidas@gmail.com

Citation: Susheela Singh et al. (2024), Neurological Effects On Sleep And Mental Health: Understanding The Bidirectional Relationship And Therapeutic Interventions, *Educational Administration: Theory And Practice*, *30*(4), 1073-1076
Doi: 10.53555/kuey.v30i4.1610

ARTICLE INFO

ABSTRACT

The relationship across sleep and mental health (MH) is bidirectional, with one influencing the other. Research shows that therapies targeting sleep have a significant impact on symptoms of depression. Additionally, a bidirectional relationship exists across sleep disruption and mental problems, with overlapping brain processes contributing to both phenomena. Understanding the bidirectional relationship across sleep and MH is crucial for improving overall well-being. This study explores the relationship across sleep and various MH conditions, along with the interaction of occurring MH conditions and their impact on sleep. The study reveals a strong correlation across sleep and MH conditions, like depression, along with seasonal affective disorder, along with anxiety disorders, along with bipolar disorder, along with schizophrenia, along with ADHD, and ASD. The bidirectional association is evidenced the impact of sleep interventions on MH and shared neural mechanisms contributing to both sleep disturbances and mental disorders. Understanding the neurological effects on sleep and MH is essential for comprehensive care that embraces the complexity of the human experience. The findings have implications for developing effective strategies for improving both aspects of well-being, including the integration of psychological, and therapeutic interventions in a comprehensive approach to care.

Keywords: *Sleep, MH, bidirectional relationship, neurological effects, therapeutic strategies, cognitive-behavioral therapy*

Introduction:

The relationship across neurological impacts, sleep, and MH is bidirectional, with one exerting an influence on the other. Research on sleep length and MH is crucial. The American Academy of Sleep Medicine recommends seven to nine hours of sleep each night for adults. Sleep is essential for mood control, cognition, and MH. Lack of sleep increases the risk of mood disorders, cognitive impairment, stress, and MH issues. One must understand and address how sleep duration affects MH to improve well-being treatments. Research studies have shown that therapies targeting sleep have a significant impact on symptoms of depression (Gee et al., 2019). Moreover, there is a well-established reciprocal relationship across sleep disruption and mental problems, with overlapping brain processes that contribute to both phenomena (Yang et al., 2022). Sleep along with MH are closely intertwined, with evidence suggesting a bidirectional relationship across the two. While MH disorders can disrupt sleep, poor sleep can also contribute to the development and worsening of

MH problems. Understanding the connections across sleep and MH is crucial for improving overall well-being and treating psychiatric disorders. A complementary relationship exists among sleep and MH. Various MH conditions can considerably impact the standard and duration of sleep. On the other hand, sleep disorders have the potential to exacerbate MH conditions and heighten the likelihood of developing psychiatric disorders. For example, there is a consistent association across insomnia and anxiety and depression. Chronic insomnia can contribute to a cycle of negative thoughts, which can worsen symptoms of anxiety and depression. There is a strong correlation across sleep apnoea and an elevated threat of depression and cognitive decline. Restless leg syndrome is associated with feelings of discomfort and a strong urge to move the legs. It has been linked to anxiety, depression, and a decrease in overall quality of life.

Research has also shown a mutually influential association across MH issues and sleep difficulties, suggesting that a combination might trigger the other (Lam & Lam, 2021). Furthermore, there is a noteworthy and reciprocal association across sleep disruption and conditions such as sadness, anxiety, and distress connected to COVID-19 (González-Hijón et al., 2023). Furthermore, the connection across sleep and MH has been emphasized, since therapies targeting MH have also been shown to enhance sleep quality (Harry-Hernandez et al., 2020). Moreover, a study conducted on individuals who work in shifts revealed that their perception of sleep quality and mental exhaustion had a negative influence on their ability to learn, highlighting the significance of sleep quality for MH and overall well-being (Shokrolahi et al., 2022). There is extensive documentation on the bidirectional association across sleep and MH. There is evidence that supports the impact of sleep interventions on MH, as well as shared neural mechanisms that contribute to both sleep disturbances and mental disorders. Furthermore, there is a reciprocal cause-and-effect relationship across MH problems and sleep disorders. This underscores the need of managing sleep and MH in a holistic approach to enhance overall well-being. This study explores the relationship across sleep and various MH conditions, including depression, along with seasonal affective disorder, along with anxiety disorders, along with bipolar disorder, along with schizophrenia, along with ADHD, and ASD. Additionally, it discusses the interaction of co-occurring MH conditions and their impact on sleep. By recognizing the complex interplay across sleep and MH, researchers and clinicians can develop effective strategies for improving both aspects of well-being.

OBJECTIVES

•To assess the neurological effects on across sleep and MH.
•To Explore how brain activity during sleep stages influences emotional processing and MH outcomes.
•To Evaluate therapeutic strategies like cognitive-behavioral therapy for insomnia

Literature review

The Bidirectional Relationship Between Sleep and Mental Health

The relationship across sleep and MH is bidirectional, with one influencing the other. Research has shown that therapies targeting sleep have a significant impact on symptoms of depression (Gee et al., 2019), while there is a reciprocal relationship across sleep disruption and mental problems. Poor sleep can also contribute to the development and worsening of MH problems (Yang et al., 2022). Understanding the connections across sleep and MH is crucial for improving overall well-being and treating psychiatric disorders. Various MH conditions can considerably impact the quality and duration of sleep, while sleep disorders can exacerbate MH conditions and heighten the likelihood of developing psychiatric disorders. For example, insomnia can contribute to a cycle of negative thoughts, worsening symptoms of anxiety and depression. Sleep apnea has been linked to an elevated threat of depression and cognitive decline, while restless leg syndrome is associated with anxiety, depression, and a decrease in overall quality of life.

There is extensive documentation on the bidirectional association across sleep and MH, supporting the impact of sleep interventions on MH and shared neural mechanisms contributing to both sleep disturbances and mental disorders. This underscores the need for a holistic approach to managing sleep and MH to enhance overall well-being. Managing narcolepsy typically involves a combination of medication, making necessary lifestyle changes, and incorporating scheduled naps into daily routines. Sleep disorders include parasomnias, such as sleepwalking and night terrors, circadian rhythm disorders, and hypersomnias, which cause excessive daytime sleepiness. Research has also shown a mutually influential association across MH issues and sleep difficulties, suggesting that a combination might trigger the other (Lam & Lam, 2021). There is a noteworthy and reciprocal association across sleep disruption and conditions such as sadness, anxiety, and distress connected to COVID-19 (González-Hijón et al., 2023). Additionally, therapies targeting MH have been shown to enhance sleep quality. A study on individuals who work in shifts revealed that their perception of sleep quality (Harry-Hernandez et al., 2020). and mental exhaustion negatively influences their ability to learn, highlighting the importance of sleep quality for MH and overall well-being (Shokrolahi et al., 2022). These conditions can exacerbate sleep disturbances and impact overall well-being. Understanding the causes, symptoms, and treatment options associated with sleep disorders can help individuals improve their sleep quality and overall health. There is extensive documentation on the connection across neurological disorders

and sleep disturbances, and researchers are exploring various therapeutic interventions and potential treatment strategies to address this complex relationship.

Research Gap

The research paper aims to identify the research gap in the relationship across sleep and MH. Specifically, it intends to assess the neurological effects of sleep on MH, explore the influence of brain activity during sleep stages on emotional processing and MH outcomes.

Sleep and Specific Mental Health Problems

Sleep and MH are interconnected, with over 300 million people worldwide experiencing depression. Sleep disturbances, such as insomnia, excessive daytime sleepiness, and hypersomnia, are common signs of depression. Historically, sleep problems were believed to be an outcome of depression, but recent evidence suggests that inadequate sleep may cause or worsen it. The relationship across sleep and depressive symptoms can create a vicious cycle, where one worsens the other. However, this relationship also presents an opportunity for exploring innovative treatments. Seasonal Affective Disorder (SAD) is a form of depression that primarily impacts individuals during shorter daylight hours, particularly in northern climates. It is strongly linked to the disturbance of an individual's internal biological clock, which is vital in regulating bodily functions, including sleep. Individuals with SAD may experience disruptions in their sleep patterns, either sleeping excessively or experiencing insomnia.

Anxiety disorders, such as general anxiety disorder, along with social anxiety disorder, along with panic disorder, along with specific phobias, along with OCD, along with PTSD, can cause overwhelming fear or worry, impacting daily life and increasing the likelihood of developing health issues like heart disease along with diabetes. Also, sleep problems are commonly linked to anxiety disorders, as anxiety and apprehension can lead to a heightened state of alertness, which is often linked to difficulty falling asleep. Sleeping difficulties can arise from various factors, not solely linked to feelings of anxiety. Studies have shown that individuals with a higher susceptibility to anxiety may experience its activation due to inadequate sleep. Chronic insomnia could potentially contribute to the development of anxiety disorders in certain individuals.

Bipolar disorder involves episodes of intense mood swings, ranging from elevated states of mania to periods of profound depression. Sleep patterns in individuals with bipolar disorder undergo significant changes in response to their emotional state. During manic episodes, individuals often experience a decreased need for sleep, while during periods of depression, they may find themselves sleeping excessively. Sleep disruptions often persist during periods when an individual is not experiencing episodes. Although there is evidence suggesting a correlation across sleep disturbances and the exacerbation of manic and depressive episodes, addressing insomnia can potentially alleviate the effects of bipolar disorder.

Schizophrenia is a MH disorder that involves difficulty distinguishing across reality and imagination, leading to insomnia and circadian rhythm disorders. Medications used to treat schizophrenia can worsen sleeping problems, but stabilizing and normalizing sleep patterns can offer potential advantages. Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by decreased attention span and heightened impulsiveness, often identified during childhood. Many individuals with ADHD often experience difficulties with sleep, including trouble falling asleep, frequent awakenings, and excessive sleepiness during the day. There is a bidirectional connection across sleep and ADHD, as well as other sleeping problems, like obstructive sleep apnea along with restless leg syndrome (RLS). Studies have primarily focused on sleep difficulties related to ADHD in children, but it has been discovered that adults can also be affected. There is a reciprocal connection across sleep and ADHD (Spruyt and Gozal, 2011), as well as worsening symptoms such as decreased attention span and behavioral issues.

ASD is a range of neurodevelopmental conditions that impact communication along with social interaction. Sleep issues, like insomnia along with sleep-disordered breathing, are more common among children along with adolescents having ASD (Williams et. Al., 2020). Prioritizing the management of insomnia and other sleep disruptions in individuals with ASD can help reduce excessive daytime sleepiness and mitigate various health and behavioral issues.

Therapeutic Interventions

Sleep disorders require a multifaceted approach involving evidence-based therapeutic interventions, like CBT for insomnia, along with CPAP therapy, medication, lifestyle changes, psychiatric evaluation, holistic approaches, multidisciplinary care, and education and support. CBT helps identify and modify thoughts and behaviors contributing to sleep difficulties, promoting healthier sleep patterns and addressing underlying factors like anxiety or stress (Freeman et. Al., 2017). CPAP therapy is generally given for sleep apnea, which encompasses wearing a mask to prevent airway collapse during sleep and ensure optimal oxygenation. A psychiatric evaluation and holistic approaches are crucial in identifying underlying MH conditions and enabling tailored interventions that address both sleep and MH concerns. A multidisciplinary approach

involving healthcare professionals specializing in sleep medicine, psychiatry, and other relevant fields enhances the overall care experience. Education and support are essential for empowering individuals to actively participate in their treatment and contribute to long-term success in managing sleep disorders.

Conclusion

The relationship across sleep and MH is crucial for overall well-being. Disruptions in sleep patterns can have significant impacts on mental and emotional states. A comprehensive understanding and targeted interventions are necessary to break the cycle of disturbances. Diagnostic processes, including screening questionnaires, tests, and consultations with sleep specialists, are essential for accurately identifying and characterizing sleep disorders. These assessments go beyond physiological aspects and include psychiatric evaluations to identify potential links across sleep disturbances and MH conditions. Treatment modalities, like CBT-I along with CPAP therapy for sleep apnea, offer effective solutions that go beyond symptom management. The integration of psychological, medical, and lifestyle interventions forms a comprehensive approach that addresses the root causes of sleep disorders. A healthy sleep hygiene practices is vital for treatment. Individuals can actively contribute to their well-being by optimizing their sleep environment, establishing consistent routines, and adopting relaxation techniques. Collaboration across healthcare professionals, including sleep medicine specialists and psychiatrists, ensures a nuanced and holistic approach to care. understanding the neurological effects on sleep and MH is crucial for a future where comprehensive care embraces the complexity of the human experience.

References

1. Gee, B., Orchard, F., Clarke, E., Joy, A., Clarke, T., & Reynolds, S. (2019). The effect of non-pharmacological sleep interventions on depression symptoms: a meta-analysis of randomised controlled trials. Sleep Medicine Reviews, 43, 118-128.
2. González-Hijón, J., Kähler, A., Frans, E., Valdimarsdóttir, U., Sullivan, P., Fang, F., ... & Lovik, A. (2022). Unravelling the link between sleep and mental health during the covid-19 pandemic.. https://doi.org/10.1101/2022.03.28.22273027
3. González-Hijón, J., Kähler, A., Frans, E., Valdimarsdóttir, U., Sullivan, P., Fang, F., ... & Lovik, A. (2023). Unravelling the link between sleep and mental health during the covid-19 pandemic. Stress and Health, 39(4), 828-840. https://doi.org/10.1002/smi.3223
4. Harry-Hernandez, S., Reisner, S., Schrimshaw, E., Radix, A., Mallick, R., Callander, D., ... & Duncan, D. (2020). Gender dysphoria, mental health, and poor sleep health among transgender and gender nonbinary individuals: a qualitative study in new york city. Transgender Health, 5(1), 59-68. https://doi.org/10.1089/trgh.2019.0007
5. Freeman, D., Sheaves, B., Goodwin, G. M., Yu, L. M., Nickless, A., Harrison, P. J., Emsley, R., Luik, A. I., Foster, R. G., Wadekar, V., Hinds, C., Gumley, A., Jones, R., Lightman, S., Jones, S., Bentall, R., Kinderman, P., Rowse, G., Brugha, T., Blagrove, M., ... Espie, C. A. (2017). The effects of improving sleep on mental health (OASIS): a randomised controlled trial with mediation analysis. The lancet. Psychiatry, 4(10), 749–758.
6. Lam, L. and Lam, M. (2021). Sleep disorders in early childhood and the development of mental health problems in adolescents: a systematic review of longitudinal and prospective studies. International Journal of Environmental Research and Public Health, 18(22), 11782. https://doi.org/10.3390/ijerph182211782
7. Williams Buckley, A., Hirtz, D., Oskoui, M., Armstrong, M. J., Batra, A., Bridgemohan, C., Coury, D., Dawson, G., Donley, D., Findling, R. L., Gaughan, T., Gloss, D., Gronseth, G., Kessler, R., Merillat, S., Michelson, D., Owens, J., Pringsheim, T., Sikich, L., Stahmer, A., ... Ashwal, S. (2020). Practice guideline: Treatment for insomnia and disrupted sleep behavior in children and adolescents with autism spectrum disorder: Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. Neurology, 94(9), 392–404.
8. Shokrolahi, I., Naeini, S., & Habibi, E. (2022). The effect of sleep quality and mental fatigue on the learning rate of shift workers with fast shift work rotation. Indian Journal of Occupational and Environmental Medicine, 26(4), 225. https://doi.org/10.4103/ijoem.ijoem_439_20
9. Yang, F., Tt, L., & Wang, Z. (2022). Functional connectome mediates the association between sleep disturbance and mental health in preadolescence: a longitudinal mediation study. Human Brain Mapping, 43(6), 2041-2050. https://doi.org/10.1002/hbm.25772
10. Tolaymat, A. and Zhao, L. (2017). Sleep disorders in childhood neurological diseases. Children, 4(10), 84. https://doi.org/10.3390/children4100084
11. Spruyt, K., & Gozal, D. (2011). Sleep disturbances in children with attention-deficit/hyperactivity disorder. Expert review of neurotherapeutics, 11(4), 565–577.