



## Review Article

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### A REVIEW ON THE RELATIONSHIP BETWEEN NIDRA QUALITY AND MENTAL HEALTH: A PHYSIOLOGICAL ASPECT

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#### ABSTRACT

Ahara, nidra, and brahmacharya are the three fundamental pyramids of life according to the ancient Ayurvedic texts, and they all play an essential part in preserving human health. Nidra nourishes the body and helps us avoid sickness by reducing stress. When practised regularly, nidra may help a person to live a long and healthy life, retain their memory and intellect as they age, and improve their appearance, voice, and overall health. In addition to reversing disease processes and preventing recurrence, nidra may help boost a person's immune system so that he can avoid contracting illness. Anidra refers to the array of clinical states brought on by nidra deficiency (primary insomnia). Chronic insomnia, also known as secondary or tertiary insomnia, is a symptom of poor health that may lead to psychological difficulties such as dissociation from reality (delusions), paranoia, and hallucinations. There is an increased risk of cardiovascular illness in those with poor mental health because of its impact on the cardiovascular system. For both psychological and physical well-being, nidra is a valuable tool. This review presents a critical explanation of nidra, mental health, and their relationship with respect to cognitive and physiological aspects.

**Keywords:** Depression, Mental health, Nidra, Physiological, Sleep Quality, and Stress.

#### INTRODUCTION

On average, an individual spends nearly one-third of their lives in slumber. Getting enough quality sleep is beneficial to health and happiness. Sleep is responsible for various critical physiological changes to maintain optimal health and performance. In Ayurveda, sleep, or nidra, is crucial to maintaining a healthy and happy existence. It is one of the three big auxiliary pillars (trayopastambhas) upon which a person's health rests. Since restful night-time sleep is an entirely organic and nutritious occurrence, it goes by the name "bhutadhatri" as well (nourishing all living beings)<sup>1</sup>. The ability to relax and restore the body's tissues during sleep is a sign of overall wellness. According to Ayurvedic texts, sleep is the first of the four fundamental, natural impulses necessary for health, the others being the urges to eat, drink, and have sexual intercourse. Nidra is sometimes referred to metaphorically as "Vaishnavi maya," which means "food for the soul," implying that, like Lord Vishnu (the sustaining deity), nidra is essential for one's physical and mental well-being<sup>2</sup>.

Sleep is a regular state of relaxation characterised by a loss of awareness, a decrease in sensory activity, and a reduction in the voluntary contraction of muscles. Humans, by nature, sleep for one-third of their lives. An individual needs, on average, 7-9 hours of sleep. In Asia, the incidence of sleep disorders ranges from 26.4% to 39.4% of the general population. The regular sleep cycle is altered with age. The incidence of sleep problems for people with asthma ranges from 12.5% to 19.7%, whereas it is 38.95% for children with asthma<sup>3,4</sup>.

Many mental illnesses share similarities with stress and anxiety. Therapeutic and pharmaceutical approaches supported by evidence are now used to treat them. However, research shows that many patients don't seek professional care when needed, highlighting the need for effective "self-improvement" techniques<sup>4</sup>. On the other hand, both medical experts and patients agree that: (1) it is not desirable to rely on medication for the rest of one's life, and (2) prolonged sessions of conventional psychotherapy may rack up substantial financial costs. Further, scientific investigations have shown that anxiolytic medications and antidepressants are ineffective, may be addictive, negatively affect memory and thinking, and lead to erectile dysfunction<sup>5</sup>.

Despite the variety of effective methods for treating mental illness, some patients may prefer an alternative or complementary approach. This could be due to the side effects of prescribed medications, a lack of improvement after therapy, financial concerns, or simply a desire to try something new. So-called mind-body treatments are included in the category of complementary and integrative medicine. Self-help therapy might consist of the instruction of specific techniques like Hatha yoga, relaxation, yoga nidra and sitting meditation to assist patients in reaching a sense of mental quiet. Extensive research shows that these methods effectively address mental health issues.<sup>1,3</sup> These nonpharmacological therapies, and practices, are widely accepted worldwide, have no known harmful effects (or very few), and may be used by patients themselves. This may be why alternative and integrative medicine researchers have focused so much on practices like meditation and mindfulness in recent years.<sup>6</sup>

## Sleep Quantity and Sleep Quality

The average human sleeps between 7 and 6 hours per day as they age, down from 18 to 16 hours for new-borns. It's common knowledge that people experience these shifts as they age<sup>7</sup>. Several estimates for the ideal amount of sleep at various ages have been studied, but no one understands why these changes occur or what variables govern them. There is also a significant disparity in sleep duration across nations. The use of electronic media and participation in after-school activities have been cited as causes of less sleep. Children and pre-schoolers as young as three have been shown to sleep less when bedtimes are delayed<sup>8</sup>.

Both internal and external influences were identified by Quante *et al.*, 2010<sup>9</sup> as reducing sleep duration and quality. As observed by Fukuda *et al.*, 2010<sup>10</sup>, delayed awakening and mealtimes can influence children's bedtime. Lack of sleep has been linked to many problems in the contemporary world<sup>11</sup>.

People with neurodevelopmental issues may have trouble sleeping or sleeping poorly, particularly in children diagnosed with ASD and ADHD<sup>12</sup>. Also, accelerometry and heart rate-based wearable devices are increasingly used to monitor sleep; while the technology can identify sleep amounts, it can't predict subjective sleep quality<sup>13</sup>. Despite a shift in the connection between subjective and objective sleep efficiency, there does not appear to be a systematic change in subjective sleep quality with age<sup>14,15</sup>.

## Sleep and its disorders

A person's physical well-being, sense of security, and quality of life may all be negatively impacted by sleep problems.

A sleep disorder may be identified by one or more symptoms, such as excessive daytime drowsiness, breathing difficulties, or restless sleep<sup>16</sup>. Sleep disturbances, such as trouble falling asleep, are another indication. Sleep disturbances come in a wide variety of forms. Typically, they were classified according to the reasons they occurred or how they manifested themselves. Behaviours, issues with their regular sleep-wake cycles, breathing difficulties, the inability to fall asleep, and daytime sleepiness are definite markers of sleep disorders<sup>17</sup>.

### Insomnia

Insomnia is usually described as an individual's self-reported sleep disturbances. One definition of insomnia in the sleep literature is the existence of polysomnographic evidence of disrupted sleep. Insomnia is diagnosed when one has any of the following symptoms: a lengthy sleep latency, numerous nocturnal awakenings, extended durations of alertness throughout the sleep period, or frequent transient arousals<sup>18</sup>. Insomnia is thus considered a symptom as well as an indication.

Multiple studies have shown that insomnia is a risk factor for the emergence of depressive symptoms, anxious thoughts, and suicidal ideation. Depressed mood worries about health and physical functioning, and anxiety were all related to objectively short sleep duration in recent research from the Penn State Adult Cohort<sup>18</sup>.

Sleep misperception (underestimating time sleeping and overestimating time awake throughout the night) and a psychological profile consistent with intrusive thoughts, depression, and anxiety, were shown to be related to insomnia despite standard sleep duration<sup>19,20</sup>. These findings suggest

insomnia is linked to mental illnesses. Insomniacs with objectively short sleep duration may be predisposed to depression due to biological mechanisms like hyperactivity of the HPA axis. This speculation, however, has yet to be verified<sup>21,22</sup>.

### Sleep apnoea

In sleep apnoea, breathing temporarily stops many times during the night. They may have sleep apnoea if they snore loudly and have daytime fatigue despite getting a full night's rest<sup>23</sup>.

Types of Sleep Apnoea:

- **Obstructive sleep apnoea:** Relaxed throat muscles are the most typical cause of this condition.
- **Central sleep apnoea:** In which the brain fails to adequately activate the muscles responsible for breathing, leading to the condition.
- **Complex sleep apnoea syndrome:** Central sleep apnoea that develops due to therapy for obstructive sleep apnoea is often referred to as comorbid central sleep apnoea.

People with sleep apnoea are at a far greater risk of developing mental health issues, including anxiety, panic disorder, depression, bipolar disorder, or even schizophrenia. Mood, anxiety, and post-traumatic stress disorder are all frequently comorbid with sleep apnoea, and there are claims of an increased risk of sleep apnoea in psychosis and schizophrenia, according to studies<sup>24</sup>. Newer studies imply a link between sleep apnoea and suicide ideation and conduct, although they are mostly case reports and research with small sample sizes<sup>25</sup>. Suicidality and other forms of psychopathology are often seen together; thus, learning more about the connection between sleep apnoea and both may help researchers better understand how to improve public health<sup>26</sup>.

### Restless legs syndrome (RLS)

A common cause of restless legs syndrome (RLS) is an unpleasant feeling in the legs that prompts an overwhelming desire to move them. This is something that generally occurs at night when they are seated or lying down. Getting up and moving about helps to momentarily relieve the pain<sup>27-29</sup>. The symptoms of restless legs syndrome, also known as Willis-Ekbom illness, may appear at any time and often worsen with age. It can potentially interrupt sleep, which in turn may impair everyday activities. Multiple studies have shown that RLS symptoms are linked to worse mental health than healthy controls. In their review of the literature, Picchetti and Winkelman (2005) found that RLS symptoms are associated with signs of depression<sup>28,29</sup>.

Both anxiety and depression ratings were positively connected with RLS symptom severity, whereas neither was affected by other concurrent conditions (such as hypertension, anaemia, chronic renal disease, diabetes mellitus, or migraine). According to their findings, RLS symptoms "were probably the key deciding factor for the anxiety and sadness levels, with higher scores corresponding with more severe RLS<sup>30,31</sup>."

### Narcolepsy

Sleep-related hallucinations, sleep fragmentation, excessive daytime sleepiness (EDS), cataplexy, and sleep paralysis are the five hallmarks of narcolepsy, a severe neurological disorder. Unfortunately, narcolepsy is often misinterpreted as a mental disorder at first, which prolongs the time it takes to get a proper diagnosis and start treatment. In addition to its physical impairments, narcolepsy may cause severe problems in one's personal and professional life<sup>32,33</sup>.

### Depression, Anxiety, and Stress associated with Sleep Imbalance

Guided nidra (yoga nidra) has been extensively adopted to deal with stress and the problems that might develop because of it. Yoga nidra, a relatively effortless form of yoga, has generally been shown to have beneficial effects on reducing anxiety. The effects of yoga nidra on psychological factors, including anxiety, as well as on patients' overall sense of well-being, have been studied in a randomised, controlled trial for those with menstruation irregularities<sup>34,35</sup>.

Yet another study on yoga nidra research focused on stress and anxiety. A total of 110 students from the same PG Yoga class were split into two groups. One group of 80 students was selected for the practice of Yoga nidra and assigned as the experimental group. Another 30 students group considered as control group. Both groups had been practicing the set of asanas, pranayamas and shatkarma regularly. The experimental group that was engaged in the practice of Yoga nidra for half an hour daily for six months reported substantially lower levels of stress and anxiety<sup>36</sup>.

Yoga nidra's intended effect is to trigger a state of deep relaxation. Guided nidra, like yoga nidra, may help alleviate anxiety, a significant contributor to various mental health issues<sup>37,38</sup>.

### Physiological aspects of Sleep Deprivation

The state of our bodies affects our thoughts and mental processes. Short-sleepers and long-sleepers have been demonstrated to increase their risk of death from any cause. Excessive or inappropriate slumber or wakefulness is like the destructive darkness that steals joy and youth. Sleep deprivation may result in depression, obesity, weakness, infertility, illiteracy, and even death<sup>39</sup>. Sleep deprivation has been linked to a wide variety of medical issues, including halimaka (a severe form of jaundice), head diseases, body heaviness and stiffness, fever, giddiness, mental inactivity, blockage in srotas (body channels), dyspepsia, swelling, anorexia, nausea, nasal catarrh, hemicrania's, itching, pain, rashes, eruptions, cough, and stupor. Inappropriate sleeping patterns result in hallucinations, fever, headache, dropsy, nausea, blockage of tissue pores, and weakened digestive function. Inadequate sleep has been related to attention, focus, impulsivity, mood control, and cognitive performance<sup>40</sup>.

### Cardiovascular Effects and Inflammatory Conditions

Heart disease and other cardiovascular diseases (CVD) kill more people than any other illness, regardless of gender. Several treatments for rheumatoid arthritis, an inflammatory illness, boost the effectiveness of antidepressants. Trials in individuals with other inflammatory illnesses, such as Crohn's disease and ankylosing spondylitis, have also demonstrated antidepressant effectiveness<sup>41</sup>.

Hypertensive individuals have been studied in terms of how yoga nidra (a type of meditation) affects their blood pressure and psychological factors. Forty people, 30 men and 10 women, were randomly chosen to do yoga nidra for 15 days straight. When participants' blood pressure was measured before and after yoga nidra, it was shown to have decreased significantly and positively.<sup>42</sup> One more study looked at the impact of regular yoga Nidra practice on erythrocyte sedimentation rate in 110 subjects (30 students in the control group and 80 in the experimental group).

A basic, non-specific haematological screening test, the erythrocyte sedimentation rate (ESR), may be used to detect the presence of inflammation in the body. Red blood cells settle more rapidly under various disease situations due to increases in plasma immunoglobulins, fibrinogen, and other acute phase response proteins. The participants in the experimental group were instructed to do yoga nidra and encouraged to incorporate it into their normal yoga practice by practicing for 30 minutes per day (except Sunday and holidays) for a period of six months. The control group of students was given the assignment to do their usual yoga routine (asana, pranayama and shatkarmas)<sup>43</sup>. The study showed a significant change in the ESR level by the inclusion of yoga nidra practice. The results were significant at 0.01 level of confidence as per the result of the study. That suggests that the practice of Yoga nidra relaxes the body, it makes one free from the stress, it improves the metabolism; and it boosts the immunity as well.

When comparing the two groups, it became clear that the inclusion of yoga nidra practice led to significantly higher decreases in ESR among female ( $P < 0.01$ ) and male ( $p < 0.01$ ) students compared to the findings of those who performed just the usual yoga regimen. These results concluded that yoga nidra could help relieve stress, balance metabolism, and enhance general bodily functioning<sup>38,43</sup>. (Table 1)

**Table 1: Relation between Cardiovascular Effects and Inflammatory Conditions with sleep and mental health**

Author	Aim	Conclusion
Xu L <i>et al.</i> , 2022 <sup>44</sup>	This article aimed to enhance the long-term outcomes for children diagnosed with mental health disorders by describing the numerous risk factors for CVD in childhood and the various methods for mitigating these risks.	The various routes that negatively affect cardiometabolic outcomes motivate doctors to think about methods to reduce these risks and provide more justification for the significance of early diagnosis and treatment for CVDs.
Matsuda R <i>et al.</i> , 2021 <sup>45</sup>	They investigate the relationship between depressive and anxious symptoms and sleep disruptions among hospitalised patients suffering from CVDs.	In individuals with cardiovascular diseases, depression and anxiety were prevalent. Low-quality sleep may be a significant contributor to emotional and mental health issues.
Mitra AK <i>et al.</i> , 2021 <sup>46</sup>	To analyse data showing a link between obstructive sleep apnoea and cardiovascular disease mortality and identify causes	Being overweight or obese, drinking, smoking, having high blood pressure, type 2 diabetes, and having high cholesterol are all risk factors for obstructive sleep apnoea (OSA) and its associated morbidities, which may be mitigated by proper management.
Li X <i>et al.</i> , 2021 <sup>47</sup>	Verified patients' mental health, inflammatory markers, sleep quality, and viral negative conversion time (NCT) in connection to the COVID-19 pandemic.	Their research showed that the people they verified suffered from mental health and sleep concerns. People with both sleep and psychological problems had higher levels of inflammation. Scores higher on the PSQI were associated with elevated inflammatory responses and decreased lymphocyte counts. There was a correlation between anxiety and NCT length, and the inability to get a good night's sleep made NCT last longer in that group.

Ling F <i>et al.</i> , 2021 <sup>48</sup>	This research aimed to examine how several factors, including health-related quality of life, sleep quality, and disease features, are connected to one another in relation to the burden of mental illness.	The fact that people with diseases have altered mental states indicates the need to provide them with professional psychiatric help. The illness itself reduces the quality of life. Improvements in health-related quality of life and sleep quality are associated with more positive mental health outcomes.
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### Cognition and Brain Functioning

Studies on how yoga and meditation affect brain activity didn't begin until the 1970s. In the 1970s, a study on the yoga teacher Swami Rama was held to determine the neurophysiological effects of nidra. Unlike most people, the author discovered that Swami Rama could enter a deep level of relaxation very instantly.

After being subjected to electroencephalography (EEG) testing, it was concluded that Swami had a unified state of awareness. Swami Rama also showed excellent command of his heart and blood vessels<sup>49</sup>. Several brain regions with established roles in the execution of mental picture tasks showed differential activity. To provide one specific example, spectral EEG analysis revealed differential activity during meditation<sup>51</sup>. (Table 2)

**Table 2: Relation between Cognition and Brain functioning with Sleep and Mental health**

Author	Aim	Conclusion
Li Y <i>et al.</i> , 2022 <sup>52</sup>	They suggested that the brain and genetic factors may underpin the nonlinear relationship between sleep duration and behavioural measurements.	Mediation analysis and structural equation modelling discovered an integrated model including cognition, the polygenic risk score (PRS), sleep, mental health, and brain shape. This reveals that the nonlinear connection between sleep, cognition and mental health may be based on hereditary processes and changes in brain structure.
Yang FN <i>et al.</i> , 2022 <sup>53</sup>	The purpose of this study was to determine whether or not pre-adolescent mental problems and sleep disturbances share the exact brain mechanism.	As suggested by the pathway model, there may be a shared neurological mechanism between sleep disruption and mental health issues, in which these two factors influence one another through two anticorrelated brain networks (DMN and DAN). One year later, poor mental health and sleep disruption are linked to DMN and DAN, which are less well-defined.
Paulich KN <i>et al.</i> , 2021 <sup>54</sup>	Using a range of correlation and regression analysis while accounting for socioeconomic status and race/ethnic group, they look at the links between screen usage and mental health issues, behavioural difficulties, academic achievement, sleep habits, and peer connections.	The authors conclude that prolonged exposure to electronic media is modestly linked to various adverse outcomes, including worse mental health, more behavioural difficulties, lower academic achievement, less restful sleep, and fewer positive peer interactions.
Ymer L <i>et al.</i> , 2021 <sup>55,56</sup>	To account for any off-target effects of treatment, they compared cognitive behavioural therapy for sleep disruption and fatigue (CBT-SF) to a health education programme.	In addition to Health Education, CBT-SF may help treat sleep disruption and exhaustion.

### Yogic Nidra and Health

Yoga nidra often called "yogic sleep", is an ancient tantric relaxing method in its purified form. The most basic explanation is that it's a kind of yoga where they do the "corpse position," also known as Shavasana while visualising positive outcomes for their life<sup>57, 58</sup>.

Yoga nidra's intended effect is to induce a profoundly restful state, distinct from sleep, in that participants remain awake but deeply relaxed. A study on healthcare workers showed significant improvement in self-reported mindfulness scores following a guided 8-week iRest Yoga nidra program. Participants reported

that they were better able to focus their attention on current activities<sup>58</sup>. Fasting therapy, bloodletting, nasal drops, vamana (emesis), samshodhana (purification therapies), and engaging the subject in challenging mental activities or strong feelings like fear, grief, and anger are all effective ways to manage excessive sleep because they all reduce sleshma, which in turn reduces the amount of time spent sleeping. In addition to samshodhana, Maharshi Charaka recommends cultivating more sattva guna (mental purity) and repressing tamo guna to break the cycle of excessive slumber<sup>60</sup>. Yoga nidra has also been lauded for its purported ability to improve physical and psychological well-being<sup>61</sup>. Some diseases related to inappropriate sleep, as shown in Table 3.

**Table 3: Diseases related to inappropriate Sleep**

Sleep pattern	Diseases
Sleep in excess. <sup>62</sup>	Cause of antahvidradhi (internal abscess).
Sleeping with face down. <sup>63</sup>	This leads to mukha roga (diseases of mouth).
Comfortable sleep for a long time. <sup>64</sup>	Prameha (group of urinary disorders), madhumeha (diabetes).
Untimely sleep pattern. <sup>65</sup>	Causes ajirna (indigestion.)
Sleep in the daytime. <sup>66</sup>	The etiological factor for sthaulya (obesity), kaphaja jvara (a type of fever due to kapha), kaphaja arsha (a type of haemorrhoids), visarpa (a type of skin disease), vatarakta (correlated with gouty arthritis).

### CONCLUSION

The primary goal of this article is to provide a description of nidra and to underline its significance in human existence. Studies of nidra are crucial in the modern period. Nidra is an important part of a healthy lifestyle. Mental health and sleep are closely related.

In many areas of life, Sharira (body) and Sattva (mind) interact with one another. Sleep is included in most of the clinical diagnostic criteria for certain illnesses. Long working hours have replaced sleep time due to busy schedules and overload. Stress, depression, and worry have reduced sleep time.

Ayurvedic Samhitas emphasise the importance of sleep-in maintaining health. Dinacharya and yoga promote restful sleep. Good sleep improves daytime functioning. More study is required to describe the effects and underlying processes of nidra and its role in well-being, particularly mental well-being.

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