

Meditation as a Potential Approach for Sleep-Wake Disorders

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ABSTRACT

Sleep disorders are hazardous to both physical and psychological health across different population groups, resulting in increased medical expenditure and social costs. Diverse treatments are available to cope with this problem, involving complementary and alternative therapy in which meditation is a non-medication, non-intrusive, safe and economical choice. Research supports the efficacy of various types of meditation on a wide range of sleep-related diseases among disparate bodies of people such as youngsters, the elderly, military and individuals with emotional illnesses when they practise it properly and regularly. Moreover, integrating this practice with other therapeutic measures is recommended to maximise its effectiveness; for example, counselling, music therapy, physical exercise and aromatherapy. Meditation has become a remarkable method for promoting sleep health from curative, rehabilitative and preventive perspectives.

Key words: body-mind therapy, Buddhist-informed intervention, complementary and alternative medicine, insomnia, mental health, sleep deprivation, sleep quality

Sleep Disorders

Sleep-wake disorders, in accordance with Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5), comprise 10 classifications, including insomnia disorder, hypersomnolence disorder, narcolepsy, breathing-related sleep disorders, circadian rhythm sleep disorders, non-rapid eye movement (NREM) sleep arousal disorders, nightmare disorder, rapid eye movement (REM) sleep behaviour disorder, restless legs syndrome, and substance or medication-induced sleep disorder (1). This updated version also highlights high risks of comorbid conditions between sleep problems and coexisting physiological and psychiatric illnesses (2). These disorders disturb infants and adolescents (3), adults (4), the elderly (5), pregnant women (6), students (7), soldiers (8), and people with disabilities (9) or psychological problems (10).

Poor sleep lessens metabolic homeostasis (11) and emotional self-regulation (12), thereby negatively affecting physical and mental health (13) and work performance

(14), as well as threatening driving safety (15). Aside from damaging quality of life (16), it also likely demolishes social relationships (17), due to which some victims may produce suicidal ideation (18). As such, public medical expenditure (19) and social costs (20) accelerate.

Treatment Methods

Although medications, such as eszopiclone, zolpidem and suvorexant, are satisfactory for short-term effects in improving sleep quality, research data not only give cause to doubt their long-term efficacy but, more importantly, warn us of their harm to cognitive and behavioural functions over the long run (21). Furthermore, adverse effects, such as headaches, drowsiness and nausea, worsen psychotic symptoms (22) and increase drug dependence (23). Non-pharmaceutical, non-intrusive methods have become adjunct measures for sleep disorders; for example, dietary patterns and food (24), along with psychotherapy, in particular cognitive behavioural therapy (25) (a counselling model that aims at modifying thought, emotion

and behaviour). Mind-body therapy, or even called “mind/body medicine” (26), has recently been developed as another such measure.

Mind-Body Interventions

The mind-body approach aims to promote the use of the brain or mind in connection with the body for healing or rehabilitative purposes (27, 28), resulting in reductions in the inflammation process (29) and nuclear factor kappa B pathway (30), and benefiting to various disease treatments, entailing oncology (31), neurology (32), pain (33) and cognitive impairment (34). It consists of numerous interventions; for instance, yoga, biofeedback, qigong, imagery, relaxation, and hypnosis. Among these, using meditation as a non-medicine mode for abnormal sleep (35) has been practised since the 1970s.

Meditation as a Strategy Tackling Sleep Disorders

Meditation, a transcendental state of consciousness (36, 37), is a safe (38) and economical (39) vehicle of cultivating body-mind harmony (40). It is a practice within different religious traditions (41) and across ethnicities (42), and shows encouraging signs of treating physical and psychological challenges (43, 44). Currently, it has been secularised as “applied meditation” (45), going beyond religious boundaries (46); for example, Islamic practitioners have also been accepting Buddhist-informed mindfulness therapy (47). It has already been adopted extensively in human service fields, covering social work (48), education (49), counselling (50), and health care (51).

Good sleep is characterised by prolonged NREM sleep along with shorter REM sleep during sleep cycles. Such sleep is imperative for maintaining good memory (52), encouraging academic (53), athletic (54) and job performance (55). Clinical specialists have observed long-term effects of meditation on low-frequency prefrontal-parietal activation, and low-frequency oscillatory activities over prefrontal and left parietal electrodes across whole night NREM cycles (56). These neuroplastic changes in brain function increase good sleep, and have positive correlation with the length of meditation experience (57).

Buddhism-Based Measures

Among various types of meditation, the evidence indicates that mindfulness contributes to disease treatments,

encompassing insomnia and other sleep disorders (58, 59). The positive impacts on biomarkers of positive thoughts (60), stress relaxation and sleep that have been seen through mindfulness-based meditation are very promising (61). This practice, originally from Buddhism, influences metacognitive processes, which can stabilise emotions (62), and regulate emotional distress (63), specifying rumination, intrusive thoughts, thought suppression, avoidance, emotion suppression and cognitive reappraisal. Its ability to strengthen self-awareness leads to improved physical and mental conditions and generates internal cues for readiness to sleep (64). All these not only produce alertness towards the negative factors affecting people with sleep difficulties, thus allowing the problems to be addressed, but they also manage total wake time and enhance sleep quality (65). Significantly, equanimity is attained, reducing physical and psychological tension (66), and result in a reduction in insomnia severity (67) and in better sleep (68, 69). In addition, mindfulness-based meditation achieves lower levels of pre-sleep arousal and milder subjective insomnia symptoms post-intervention; the longer the duration of meditation, the greater decrease in cognitive arousal scores (70).

Also as a kind of Buddhist meditation, vipassanā meditation can help practitioners experience bodily sensations, stabilise emotional qualities (71), develop wisdom, and achieve direct understanding of surrounding phenomena (72). According to 20 senior meditation practitioners and 16 novices, it enhances sleep-organisation and slow wave sleep (SWS) and REM sleep, lessens the number of intermittent awakenings, and reduces the duration of non-REM stage II sleep (73) (the phase that prepares an individual for deep sleep).

Zen meditation is a form of open monitoring meditation and involves changes in ongoing oscillatory activity as well as connectivity patterns (74). These occurrences in brain structures induce consciousness changes (75), allowing the user to deliberately let go of things they are clinging to (76). This mechanism assists the individual to fall to sleep.

Transcendental Meditation

Transcendental meditation focuses on the attention process through the sounds of mantras in order to accomplish inner peace (77), and to alter neural oscillations that will generate favourable outcomes in neuropsychiatric

disorders (78). It is also used for improving sleep (79), thus illustrating insomnia alleviation with long-term effects (80).

Effectiveness on Various Types of Sleep Disturbance

Different types of meditation have demonstrated their effectiveness on sleep disturbance. They also show strong indications of curing poor sleep in diverse groups.

Sleep Quality: In spite of the fact that the ratio of sleep problems among women is twice that of men (81), male fecundability has been shown to have a direct link with sleep duration (82). Evidence denotes a direct relationship between sleep quality and sperm health (83), thus affecting reproduction. A study carried out with 45 men explore how vipassanā meditation can improve sleep (84). This meditation likely induces neuronal plasticity events and then enhances SWS and the number of sleep cycles, reducing REM sleep time. Similar outcomes were obtained from 30 other male participants who practised Indian cyclic meditation (85), and another group of 12 males who conducted transcendental meditation (86).

Stress-related Sleep Loss: Chronic insufficient sleep threatens military personnel through fatigue and stress among soldiers and officers (87). It seriously erodes the effectiveness of deployment and military service (88). After joining a six-night meditation programme, ten military men, aged 21-30 years old, were able to crucially improve their sleep loss management (89).

Geriatric Sleep Deprivation: A decreasing trend in sleep quality corresponds to ascending age (90), reflected in the fact that a large proportion of older adults are poor sleepers. Sleep deprivation impacts geriatric health, particularly sleeplessness and sleep apnea (91). Using meditation in sleep disorders is not limited to the younger population (92); its outcomes are apparent among the elderly as well. Mindfulness techniques show effectiveness against insomnia among seniors (93), compared to sleep hygiene education (94). Forty-five seniors averaging 66 years old who participated in a mindfulness meditation group exhibited significant improvement relative to the comparison sleep hygiene education group in secondary health outcomes of insomnia symptoms, depression symptoms, fatigue interference, and fatigue severity (95). They also reported reductions in sleep-related daytime impairment and remediation of sleep problems.

Cancer-induced poor sleep: Poor sleep, often associated with fatigue and emotional problems, negatively affects oncology patients (96). Mindfulness-based meditation demonstrably improves sleep quality and duration, and decreases sleep and mood disturbance and stress for this group of patients (97). It also reduces their psychological and physical symptoms and enhances their well-being and quality of life (98). Therefore, meditation is suggested as a supportive instrument for their post-treatment plan (99).

Depression-incurred sleep problem: There is a connection between sleep disorders and people with psychiatric symptoms (100). It has become increasingly prevalent to adopt meditation in order to enrich patient sleep quality among those who suffer from psychiatric disorders (101, 102). Twenty-four participants with depression were recruited to undertake mindfulness-based cognitive therapy for their sleep problems (103). Completing eight 3-hour weekly sessions plus a full day retreat, they reported decreased wake times and enhanced sleep efficiency, along with sustainable recovery from depression.

How to Optimise the Effectiveness of Meditation on Improving Sleep Quality

An integrative approach is a mixture of more than one method within a programme, in this case resulting in efficacy against illnesses such as psychological disorders (104), pain management (105), and cancer (106). Meditation is always used with other interventions; for example, psychodynamic programmes (107) and aerobic exercise (108). Thus, the multi-model has been used in sleep management.

Mixed Mode

Cognitive behavioural therapy is widely applied to coping with emotional disorders, including sleep deprivation (109). It is integrated with meditation and has been found indicative of relief in night-time insomnia symptoms as well as reductions in pre-sleep arousal, sleep effort, and dysfunctional sleep-associated cognitions (110); although Cvengros, Crawford (111) argued little correlation between maladaptive beliefs on sleep and meditation, hinting at insignificant sleep-oriented behaviour with meditation.

Music is able to facilitate active self-regulation of emotions (112) and engender tranquillity (113). Hence, it

is always a soothing and relaxing tool for both players and audience (114), and results in a feeling of wellness and improved sleep quality (115). Its healing function inspires professionals to adopt music therapy with meditation in sleep deprivation (116), even for breast cancer patients (117) or individuals with neuro-degenerative diseases (118).

Being a complementary and alternative medical practice, aromatherapy applies essential or natural oils extracted from plants on skin or olfaction (119) to achieve physiological and mental well-being. Evidence suggests that aromatherapy can enable the user to gain better sleep (120). Therefore, it is reasonably assumed that better sleep quality can be achieved from a combination of aromatherapy and meditation; whereas empirical data also concur, with results indicating that this combined method can manage stress and anxiety (121).

Apart from sitting and standing forms of meditation, movement is also a technique to attain meditation (122). Taiji is a prevalent traditional Chinese exercise that has presented effectiveness on emotional health (123), also including abnormal sleep tendencies (124). Meditation, together with taiji, enables practitioners to be calm, control stress (125), and alleviate neuroticism (126). Improvements in sleep have been displayed in such a combined practice (127). Further examinations will substantiate the practicability of this combination.

Simultaneously, the popularity of yoga is growing in the fitness field. While also stemming from an Indian exercise, yoga contains a set of posture, breathing and relaxing techniques (128) which promote health- and spiritual-related quality of life (129), including chronic insomnia (130) and sleep quality (131). When intermingled with meditation, it likely maximises the effects on sleep (132), but concrete evidence is desired.

Incorporated into Daily Life

Studies support a viable alternative known as mindful sleep (133). Such “therapeutic mindfulness” (134) relates to a positive interrelation with frequency of practice and sleep enhancement, and a reduction in sleep-interfering cognitive processes (135). This relationship is due to the fact that meditation veterans can regulate their minds more easily and effectively towards the edge of sleep (136). In order to extend the frequency of meditation in a more

comforting manner, incorporation of this practice into daily activities would be greatly helpful (137), for example in eating, (138, 139), reading (140), learning (141), sporting (142) and walking (143), from which favourable outcomes are achievable (144). Additionally, establishing this exercise as a community-based activity (145) is beneficial not only to individual wellness but equally critically to interpersonal and social relationships (146). This becomes a holistic approach to enriching quality of life (147).

Safety during Meditation

Even though prominent research results support the efficacy of meditation, including among people with intellectual disabilities (148), there is separate evidence presenting no effects (149). This implies that meditation is not necessarily suitable for all people (150). It also underpins the importance of having a qualified trainer to guide proper practice, especially for novices, such as in posture, breathing techniques and thought management (45), in order to avoid the detrimental risks (151) of meditation-incurred psychotic symptoms (152). Meditation practitioners must beware of this risk.

Limitations

As discussed earlier, meditation is advantageous against sleep disorders. It is possible to advance it to its preventive functions. It indeed helps prevent ailments; for example, acute respiratory infection (153), cardiovascular disease (154), and relapse of substance abuse (155). These results justify the utilisation of this practice for preventing sleep problems. However, more reliable data collected from randomised controlled trials are necessary to provide clinical researchers and practitioners with promising signs.

Conclusion

The mind-body approach has increasingly become accepted as an alternative treatment, and includes meditation as a notable option. Different types of meditation mark positive indicators in relation to various sleep problems; especially, mindfulness-based meditation. Meditation is powerful, safe and cost effective regardless of age, sex, religion, ethnicity and social class, so long as novices are under proper guidance with regular practice. Hence, it is a potentially curative, rehabilitative and preventive solution for sleep health.

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