

Sleep and Women: Review of Quality of sleep, sleep patterns & Women's health

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Abstract

Sleep troubles are not new for people of any age, but women tend to suffer more than the general population. It has been attributed to a number of factors such as hormonal changes related to menstrual cycles or menopause, cardiovascular diseases, stress, weight, BMI, depression etc. Hormone replacement therapy, vitamins, isoflavones, yoga and acupuncture have been proved to be beneficial. The present review article will summarize and highlight the importance of adequate sleep in women and disorders of sleep and associated with sleep. This section will help the practitioners in better understanding of the sleep quality and its importance in women and hence management.

Key words: Sleep, middle age women, pain, apnea, health

Introduction

40 million men and women have been said to suffer from sleep disorders but sleep disorders are seen to affect more women than men^[1] According to a new study published in Maturitas journal, most middle-aged women report poor quality of sleep leading to poor quality of life and related to chronic illness. Study undertaken by Dr. Päivi Polo at the University of Turku in Finland stated that the women most often reported waking up frequently at night where sixty percent reported the problem to persist at least once a week. She also found out that 16% women reported of having difficulty falling asleep.^[2]

Sleep troubles are not new for people of any age, but women tend to suffer more than the general population. It has been attributed to a number of factors such as hormonal changes related to menstrual cycles or menopause, cardiovascular diseases, stress etc. Therefore, sleep problems can be a symptom of a disease or mental state, which the caretakers should be careful of while treating the women with such disorders.^[2]

Studies have reported high level of sleep disturbance in middle-aged women. It affects the life of a woman in areas of mood, higher blood pressure and higher waist/hip ratios and depression. It has been that the transition into postmenopausal status is associated with deleterious changes in sleep patterns among women who do not take hormone replacement therapy. [3]

The present review article will summarize and highlight the importance of adequate sleep in women and disorders of sleep and disorders associated with sleep. This section will help the practitioners in better understanding of the sleep quality and its importance in women and hence management.

Sleep and pain

It has been seen that painful disorders interfere with sleep while disturbances in sleep also contribute to the experience of pain. It was observed that noise stimuli disrupted slow wave sleep which resulted in an unrefreshing sleep, diffuse musculoskeletal pain and fatigue in normal healthy women particularly in patients with fibromyalgia. It has been noted that disturbances in sleep, pain behavior and psychological stress influence return to work in working women with soft tissue injury. The study concluded that there is a reciprocal relationship between pain and sleep quality. [4]

In another study fifty women with fibromyalgia syndrome, the sleep quality, pain intensity, and attention to pain for 30 days were recorded. The result was that the women with poor sleep reported more pain. A night of poorer sleep was followed by a significantly more painful day, and a more painful day was followed by a night of poorer sleep. It was also observed that the pain attention and sleep were unrelated at the across-persons level of analysis but there was a significant bi-directional within-person association between pain attention and sleep quality that was not explained by changes in pain intensity. [5]

Recent researches have shown that patterns of sleep and rest can predict physical disability, independent of depression and pain levels. The study found out a positive correlation between disturbed sleep and rest patterns and poor sleep quality with depression and pain-related disability where depression was found to be a stronger mediator than pain severity. The results of this study highlight the importance of role of sleep in chronic pain suffering. [6]

Another longitudinal research reported that disturbed sleep is a consequence of pain but sleep disruption might also contribute directly to hyperalgesia. [7]

On the other hand classic uncontrolled studies, have reported that selective slow wave sleep deprivation may decrease the threshold of mechanical pain. [8,9]

According to a 1996 Gallup Poll, more women suffer from nighttime pain than men. In a more recent study of 2000, every fourth women reported sleep interruption at least three times in a week because of pain or discomfort. [1]

Another study was done on healthy women, where diaries were used to estimate menstrual phase. The study demonstrated that the hormonal cycle and menstrual pain affected the sleep pattern but still more research is required in the present field to test ad study all women at the same point in the menstrual cycle. [10]

A study was carried out on breast cancer women patients. It correlated depression, pain and life stress with different types of negative change in self-reported sleep disturbances in middle aged women. All these suggest specific ways to address the problem of sleep disturbance for women with metastatic breast cancer and show how different types of disturbed sleep may be clinical markers for depression, pain, or life stress in this population. [11]

Sleep disordered breathing

There have been plenty of studies on the sleep and breathing pattern in women but the prevalence of sleep-disordered breathing has not been well studied especially in terms of the effects of age, body mass index (BMI),

and menopause. A study looked into it and reported that those postmenopausal women without hormone replacement therapy had a greater prevalence of sleep apnea than in those with hormone replacement therapy. Overall, this study concluded that menopause is a significant risk factor for sleep apnea in women and that hormone replacement therapy might be associated with its reduced risk. [12]

Sleep apnea has also been seen to be common in women with coronary heart diseases and it hold importance in predicting coronary heart diseases after adjustment for age, body mass index, hypertension, smoking habits, and diabetes. [13]

Another research extensively studied sleep-disordered breathing in women. They reported that sleep disordered breathing was a one of the causes for divorce or social isolation by 40% of the case patients. It also found out abnormal maxillomandibular features in 45% of the women with sleep disordered breathing. Sleep disturbances and disordered breathing was also associated with dysmenorrhea and amenorrhea in 43% of middle aged women. The study concluded that the caretakers should be careful about the upper airway sleep-disordered breathing which might be associated with craniofacial features, a low body mass index and a respiratory disturbance index of less than 5. This would further help in the management of such women. [14]

A study was carried out in Korea on sleep disordered breathing and its related factors in middle aged adults. The prevalence of sleep disordered breathing in the Korean population was apparently more in middle aged men than in middle aged women. Also, logistic regression analyses showed that sex, body mass index, and hypertension were closely associated with the risk of sleep disordered breathing.^[15]

A study compared the post and the premenopausal women with respect to the sleep disordered breathing. Postmenopausal women resembled men with respect to disordered breathing pattern during sleep which was more frequent and severe as compared to the premenopausal women. It was attributed to the effect of progesterone in the premenopausal women.^[16]

Another study carried out in Hong Kong in Chinese women reported that the BMI and age were significant independent predictors of sleep disordered breathing.^[17] A research found a relation between the sleep disordered breathing and weight and concluded that gain in weight was associated with increase in severity of sleep disordered breathing.^[18]

Another study assessed the extent to which sleep-disordered breathing, difficulty initiating and maintaining sleep, and excessive daytime sleepiness were associated with impairment of quality of life (QoL). They reported that mild to moderate sleep-disordered breathing was associated

with reduced QoL, while severe sleep-disordered breathing was associated with poorer QoL and subjective sleep symptoms are comprehensively associated with poorer QoL.^[19]

Sleep and Heart Diseases

In a study which was carried out prospectively, a significant association between reported sleep duration and incidence of coronary heart disease was noted. Also, short and long sleep durations were associated with an increased risk of coronary heart diseases.^[20]

Disordered breathing during sleep has been found to be associated with unfavorable effects on the cardiovascular physiology, but very few researches have studied its postulated association with coronary heart diseases. A cross sectional study was done to find out the association between sleep-disordered breathing and self-reported coronary heart diseases. It was found out that sleep-disordered breathing was more strongly related with self-reported heart failure and stroke than with self-reported coronary heart disease.^[21]

Another cohort research carried out between 1970 and 1973 studied on the associations between sleep duration, cardiovascular disease risk factors and mortality taking into accounts the perceived stress of individuals. The study concluded that short sleep over a prolonged period might be associated with

an increased risk of mortality and women who reported sleeping fewer than 7 hours had greater risk of increased mortality from any cause over a 25 year period than those who reported sleeping 7–8 hours. [22] Another study reported similar results and stated that sleep duration is an independent predictor of mortality and increased risk of mortality occurs in those with shorter or longer sleep durations. [23]

In a research which studied the occurrence of central and obstructive sleep apnea in patients with congestive heart failure (CHF), in both men and women, reported that risk factors for obstructive sleep apnea differed by gender. BMI is said to be associated with obstructive sleep apnea in men while in women, age was the only important risk factor. [24]

Another research was carried out which studied the relationship of snoring and cardiovascular disease in women. These women were followed up for eight years. The data suggested that the snoring is associated with a modest but significantly increased risk of cardiovascular disease in women which was further found to be independent of age, smoking, BMI and other cardiovascular risk factors. [25]

A study carried out in Stockholm also reported similar results stating that snoring and poor sleep quality was associated with recurrent cardiac events which could not be explained by depressive symptoms or cardiovascular risk factors. [26]

Another cohort study found out a relation between sleep and myocardial infarction reported associations between short sleep duration and incident myocardial infarction in middle-aged women but not men from the general population. [27]

Sleep and Diabetes Mellitus

A study carried out in Finland on middle aged men and women examined the association between sleep duration with type 2 diabetes mellitus. It concluded that there was an independent association between abnormal sleeping times and type 2 diabetes in middle-aged women. Even after adjustments for age, body mass index, sleep apnea probability, smoking, physical activity, and central nervous system-affecting medication, sleep duration of 6 hours or less or 8 hours or longer was independently associated with type 2 diabetes. No such results were obtained in men involved in the study. [28]

Studies have stated that short-term sleep results in impaired glucose tolerance. Another study reported similar results and stated that sleep restriction may be an independent risk factor for developing symptomatic diabetes. [29]

The Current Management Options

As already stated above, women on hormonal replacement therapy (HRT) had lesser sleep disturbances than those not on hormonal replacement therapy. HRT have beneficial effects on sleep. On the other hand HRT has many negative effects on the heart, breast cancer, active infections etc. which compels the practitioners to try antidepressants, melatonin and hypnotic medications for sleep disorders in women especially middle aged women and those approaching menopause. Also, in those women in whom HRT is contraindicated, therapies like vitamins, isoflavones and valerian have been shown to be beneficial.

On the other hand, acupuncture has been shown to be of some help for insomnia and represents an alternative to traditional medications such as benzodiazepines in some patients. Melatonin is an agent naturally produced by the body. It has been seen to reduce depression and anxiety symptoms.

Therapeutic massage and yoga have also proved to be beneficial for sleep disturbances in women undergoing the menopausal transition. If performed at least twice a week over a 4-5 month period, improves the depression and overall quality of life when compared with passive movement or no intervention at all. In all the cases, the underlying pathology should be suspected secondary to the age of the women. Both medical and non-medical measures along with psychological support

are helpful in managing a woman with disturbed sleep. [30]

Conclusion

Past studies have shown that the sleep patterns and habits change in a woman as the age advances affected by the changes in their hormones. Stress, depression, fear, anxiety and physical ailments can all affect the sleep of a woman.

The management remedies stated above along with relaxation techniques, biofeedback, cognitive therapy would definitely help a woman achieve better sleep. The management should target both the physical pain and the sleep to achieve better results. Studies have only found out the relationship of sleep with different diseases in women but have not proved disturbed sleep to be a cause for any disease. Gender specificities occur in terms of sleep disorders and there are genetics and sexual hormones that affect sleep. [31]

Overall, sleep holds a major importance especially in a woman's life and it should not be neglected. A woman should be encouraged to lead a stress free healthy lifestyle in order to avoid sleep disorders or lessen its effects.

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