

INSOMNOLENCE: RISK FACTORS IN PERIMENOPAUSAL WOMEN- A SCOPING REVIEW

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ABSTRACT:

The interval right before menopause is called the menopausal transition period, or perimenopause. This physiological end of the regular menstrual cycle is often accompanied by a variety of symptoms, including hot flashes, sleeplessness, dry vagina, memory loss, weariness, poor libido, night sweats, and irritability. The most prevalent symptom among all of these is sleeplessness or insomnia. Numerous risk factors might induce insomnia, which subsequently deteriorates one's quality of life.

In order to obtain data for identifying the risk variables contributing to insomnia, this study was planned as a scoping review. Four databases were searched, adhering to PRISMA rules, for articles that described the risk factors of insomnia that were published between 2013 and 2023. The databases that are used are Scopus, MEDLINE, Google Scholar, and PubMed. The terms perimenopause, insomnia, risk factors, insomnia, sleep disturbances, and aetiology of sleep disorders were the keywords that were utilized.

This review study illustrates the contributing elements to insomnia in perimenopausal women and the decline in quality of life that ensues. It also covers an array of non-pharmaceutical, non-invasive therapeutic alternatives that are helpful in reducing insomnia symptoms.

Keywords: Insomnia, Insomnolence, Risk factors, Sleep disturbances, Perimenopause, Aetiology of sleep disturbances.

INTRODUCTION:

Menopause, which marks the end of a woman's ability to procreate, is an important life event. An imbalance in the ovarian follicular activity's regular functioning finally results in the menstrual cycle ending. Amenorrhea or not having menstruated for a minimum of 12 months is a sign of menopause. The menopausal transition period, also known as perimenopause, is the time immediately preceding menopause. Women between the ages of 40 and 55 are typically the ones who have it. Along with other symptoms, this physiological end of normal menses is frequently accompanied with hot flashes, insomnia, dry vagina, memory loss, exhaustion, low libido, night sweats, and irritability. Among all these symptoms, insomnia, or sleep difficulties, is most common in perimenopausal women (51.7%) [1,2].

The menopausal transition phase is characterized by a rise in the prevalence of insomnia, sometimes referred to as sleep disruption or insomnia, which appears to develop linearly with time. Lack of wakefulness is known as sleep. Any one of the following symptoms, as listed in the Diagnostic and Statistical Manual of Mental Disorders 5 [DSM-5] that the patient reports experiencing for three or more nights per week, for three or more consecutive months, meets the criteria for an insomnia disorder: prolonged delay for sleep, increased alertness after sleep begins, and/or early morning awakenings. Because they may accept sleep disturbances as normal, perimenopausal women often disregard the symptoms of insomnia as a sign of a sleep disorder and choose not to seek treatment [3].

Sleep disturbance is divided into two categories: subjective and objective, which don't always coincide. A self-reported complaint of nonrestorative sleep, trouble falling asleep, frequent awakenings, or waking up too early in the morning is known as subjective sleep disruption. Reduced sleep efficiency or anomalies in sleep architecture are referred to as objective sleep disturbances, and they can be quantified by electroencephalogram (EEG), electrooculogram (EOG), and

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electromyogram (EMG) polygraphic recording conducted all night. A sleep recorder that includes simultaneous monitoring of skin conductance, finger temperature, leg movements, and breathing can show whether hot flashes, periodic leg movements, sleep apnea, or partial upper airway obstruction are the primary causes of sleep disturbance [4].

By synthesizing and critically analyzing the data, this review aims to identify potential risk factors for insomnia in perimenopausal women. This will aid future researchers in developing treatment protocols that ensure the intensity of risk factors is reduced, and thereby improving the quality of life for perimenopausal women in the process.

METHODOLOGY:

Literature Search Strategy:

To find relevant studies on the risk factors associated with insomnia in perimenopausal women, a thorough literature search was carried out using a combination of keywords such as "Perimenopause", "Insomnia", "Sleep disturbances", "Insomnia", "Risk factors", and "Aetiology of sleep disturbances" across multiple electronic databases, including PubMed, MEDLINE, Google Scholar, and Scopus.

Inclusion and Exclusion Criteria:

Research articles, meta-analyses, systematic reviews, clinical trials, and case studies published in English were the requirements for inclusion. Cutoff date for this review is 2023. Menopausal symptoms and associated risk factors in perimenopausal women were taken into consideration in studies. Articles written in languages other than English and those including postmenopausal women were excluded.

Study Selection:

Two separate reviewers screened the publications and then determined which titles and abstracts were relevant. Following the selection of studies that met the inclusion criteria, the full texts of those studies were obtained.

DATA EXTRACTION:

Using a standardised data extraction form, information was taken out of the chosen research. The subsequent data was gathered:

Title, authors, year of publication

Study structure and approach

Data Synthesis:

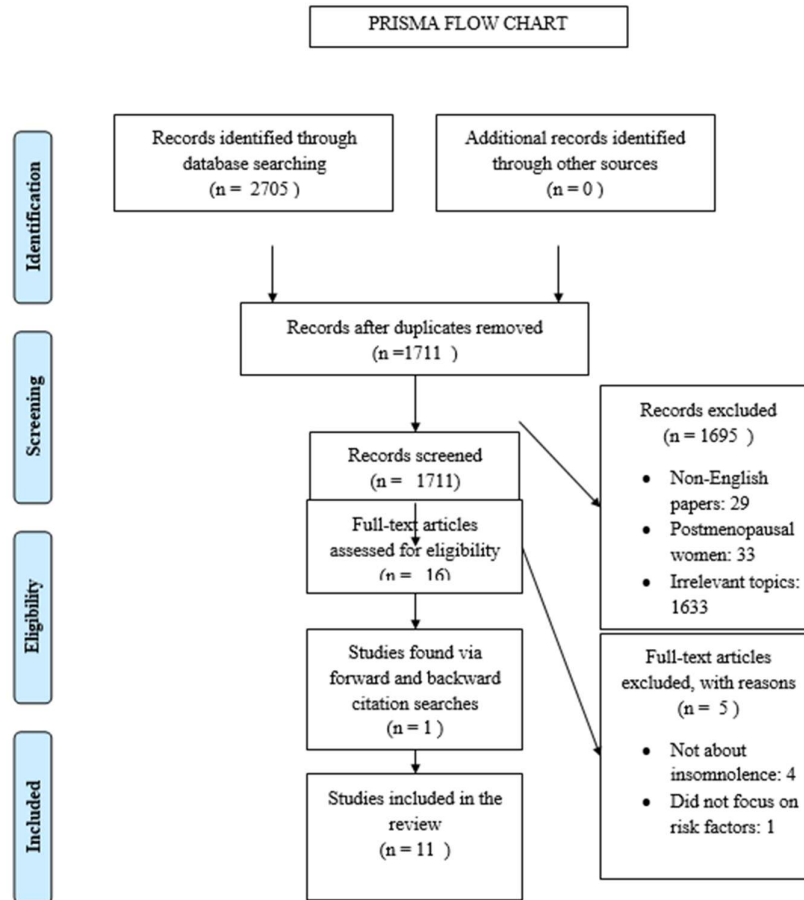
Based on the primary goals of this scoping review, data were retrieved and arranged. The focus of the studies was on insomnia and its associated risk factors in perimenopausal women.

Quality Assessment:

Based on the study design, the quality of the included studies was evaluated with the appropriate tools. Randomized controlled trials were conducted using the Risk of Bias method developed by the Cochrane Collaboration. For various sorts of studies, the Newcastle-Ottawa Scale was utilized. Two reviewers separately assessed the quality, and any differences were discussed and settled.

Data Analysis:

The results of the included research were compiled and presented using a narrative synthesis approach. Based on the risk factors related to insomnia in women going through menopause and its effect on the quality of life, conclusions were summarized



AN OVERVIEW:

Current Concepts:

Risk Factors	
Modifiable	Non-Modifiable
• Smoking	• Lack of Knowledge
• Mobile phone usage	• Hot flashes
• Alcohol consumption	• Noisy environment
• Caffeine consumption	• Temperature
• Uncomfortable bedding	• Estradiol levels

Lack of knowledge: Women tend to overlook sleep issues because they believe that having trouble sleeping is commonplace. To have a good night's sleep, they say that going to the doctor about sleep problems entails adjusting one's diet to include sleeping drugs. When it comes to using medicines for sleep, the women are highly apprehensive. The woman's quality of life declines as her sleep quality worsens due to her lack of awareness about various non-pharmacological therapy choices [5].

Hot flashes: Hot flashes are the result of dysfunction in the thermoregulatory centre located in the brain's hypothalamus. Women's sex hormones, such as progesterone and oestrogen, regulate body temperature; when oestrogen levels drop, the thermoregulatory system becomes unbalanced, causing excessive heat and perspiration, especially at night. This disrupts sleep and lowers quality of life [6].

Smoking: Aromatase is an enzyme that catalyses the conversion of androgens into oestrogens. Nicotine from smoking is known to impair its activity. As a result, women who smoke experience an early menopausal transition due to the reduction of circulating oestrogen levels. A disruption in the thermoregulatory region of the brain occurs when the concentration of oestrogen decreases, resulting in insomnia [7].

Mobile phone usage: The hormone that gets the body ready for sleep, melatonin, is suppressed by the screen light that mobile phones emit. Light with short wavelengths is most harmful to secretion of melatonin, the kind of light that cell phones emit. This leads to increased sleep latency causing insomnia [8].

Caffeine consumption: Adenosine receptors are blocked by caffeine, which has an effect on the brain. In waking hours, the brain produces adenosine, a neurotransmitter that promotes sleep. The longer an individual is awake, the more adenosine normally accumulates in the brain. The individual gets more and more tired as the accumulation intensifies. Caffeine prevents this process, keeping the individual vigilant and awake [9].

Alcohol consumption: Drinking alcohol can make the body less sensitive to stimuli that cause changes in body temperature and the release of the sleep hormone melatonin, such as daylight and darkness. The sleep-wake cycle depends on these oscillations, and when they are reduced or nonexistent, a person may feel alert when they want to be asleep and tired when they want to be awake [10].

Noisy environment: It has been demonstrated that nocturnal noise disrupts sleep, which results in a reallocation of the amount of time spent in each stage of sleep. This usually leads to a shallower sleep by raising wakefulness and lowering REM and slow wave sleep. In addition to disrupting the sleep architecture, nocturnal environmental noise also causes detectable metabolic and endocrine disruptions (increased production of cortisol, adrenaline, and noradrenaline) [11].

Temperature: The temperature environment is one of the most critical aspects that might influence human sleep. Heat or cold exposure can cause increased wakefulness, decreased rapid eye movement sleep, and slow wave sleep. The effects of the thermal environment on sleep stages are closely related to thermoregulation, which influences the system that regulates sleep. Exposing to humid heat during sleep might lead to increased thermal burden and disrupt sleep cycles and regulation. Cold exposure alters the cardiac autonomic response during sleep [12].

Uncomfortable bedding: A faulty mattress can be uncomfortable, making it difficult to fall asleep and even leading to many nighttime awakenings. Poor sleep quality has an impact on both physical and emotional wellbeing. Poor sleep has been linked to memory and attention issues, reduced immune system function, obesity, high blood pressure, diabetes, and cardiovascular disease. A mattress that does not give appropriate support or pressure alleviation may cause aches and pains the following day. This may be especially significant for people who experience chronic pain [11].

Estradiol levels: Hormone levels decline drastically as women reach the end of their reproductive years, throughout perimenopause and menopause. Lower estrogen levels might make some women irritated and unable to relax. This dip can also produce night sweats and hot flashes, which can jolt one awake from a sound sleep. Women with low estrogen have less deep sleep, and even if they obtain 8 hours of sleep, they may wake up feeling weary.

A woman reaches "menopause" one year after her menstrual cycles have fully ended, which is around age 51. During perimenopause, which occurs approximately 7-10 years before menopause, a woman's ovaries gradually decrease the production of the hormones estrogen and progesterone. These hormone-related sleep disorders frequently begin even before you are aware that you are approaching menopause. That tossing and turning is most likely due to perimenopause, and there is a solution. If left unaddressed, these sleep difficulties may persist through the post menopausal period as well, thus compromising the overall health. Women in perimenopause become more exhausted and wake up earlier in the morning resulting in less sleep overall. This also explains why perimenopausal women have a higher risk of sleeplessness. There is a direct link between estrogen

and sleep disruption. Menopause happens when women's ovaries produce less estrogen and progesterone as they get older. Both of these hormones affect sleep quality, sleep difficulties, sleep apnea, hot flashes, mood, appetite, and sexual drive. When estrogen and progesterone levels are low, you may suffer higher body temperatures, poorer sleep quality, anxiety, and depression. Estrogen helps to control neurotransmitters that influence our sleep-wake cycle. At the appropriate levels, estrogen can help maintain your body temperature low at night, reducing hot flashes and leading to more comfortable sleep [6].

LIMITATIONS:

There is a chance that clinically meaningful and pertinent research was missed despite best efforts to incorporate them in the database search. Article usage was limited by the utilization of four databases. We were unable to use publications that were not written in English due to a lack of translational resources.

FUTURE RESEARCH CONSIDERATIONS:

We anticipate that this scoping review will benefit future research investigations by offering supportive guidance in addressing the risk factors and mitigating insomnia symptoms. Yoga, aerobic exercise, and mindfulness meditation are examples of non-pharmacological therapies that help calm the mind and promote healthy circadian rhythm function, which improves the quality of sleep. Yoga is a body-mind science that aids in restoring circadian rhythm balance, which enhances the quality of sleep. Yoga therapy promotes psychological well-being and lowers stress levels by calming the mind and assisting in the release of the melatonin hormone, which regulates the sleep-wake cycle [13]. Aerobics has been linked to a decrease in symptoms such as insomnia, forgetfulness, hot flashes, sweats at night, and other connected issues. It promotes the functioning of the parasympathetic nervous system, which produces acetylcholine and has a relaxing impact on the mind, enhancing the quality of sleep [14]. Mindfulness meditation improves the ability to recognize and respond to reaction cues in a more neutral and impersonal manner, resulting in a new level of consciousness, detachment from mental patterns, and improved sleep [15].

CONCLUSION:

The risk factors indicated above have a direct impact on a woman's sleep quality, lowering her overall quality of life. Adapting to suitable changes and implementing lifestyle modifications will assist to reduce the negative impacts of these risk factors and enhance sleep quality. Incorporating non-pharmaceutical treatment methods such as yoga, aerobics, and meditation can assist to rectify the negative consequences of insomnia by regulating hormonal levels and relaxing the mind, resulting in better sleep and, ultimately, improved life quality.

DISCLOSURES

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have stated that they got no financial support from any organisation for the submitted work.

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