

Insomnia During Climacteric: an Integrative Review

REVIEW

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Keywords

Insomnia; Climacteric; Risk Factors; Literature review.

Abstract

Introduction: Climacteric is a stage in women's lives in which occurs the passage from reproductive period to non-reproductive, marked by menopause. This phase can be seen as something natural, free of complaints. However, some women complain with climacteric symptoms, especially with disorders that affect sleep.

Objective: Identifying the factors related to insomnia during climacteric, based on the analysis of scientific production.

Method: The method of integrative literature review was requested, using descriptors *insomnia*, *climacteric*, *menopause*; the databases consulted were PubMed, LILACS and SciELO, from 2004 to May 2014. The results were obtained by selecting 10 articles, by means careful reading, critical and reflective of the texts, followed by the organization of synoptic charts from the data obtained.

Results: The evidence were gathered and synthesized, pointing to a set of physiological changes that can affect the quality of sleep during climacteric, including vasomotor symptoms, psychogenic, hormonal changes and menopause transition.

Conclusions: The methodological designs of the studies analyzed were strong evidence for evidence-based practice. However, the data can be questioned, once the insomnia was self-reported. Therefore it needs that research be conducted approaching insomnia, with assessment by examinations which allow accuracy of the findings, such as polysomnography.

Introduction

The climacteric is a further stage in the life women, this is a biological process in which occurs the transition from the reproductive to the non-reproductive period, and the frame menopause this phase, only recognized after 12 months without interruption of menstrual absence^[1].

Many women face menopause as something natural, free of complaints and without drugs or interventions. Others may suffer sudden changes that alter their life cycle, requiring support, understanding, monitoring to prevent further harms and promoting quality of life^[2].

With the loss of reproductive function, other processes involving various organs and systems caused mainly by the decrease of estrogen resulting in different effects on women happen. Thus, the need for intervention is unique for each woman, since the resulting physiological changes over time and health conditions are individual^[3].

The physiological changes of menopause in women provoke an adaptation process characterized by hormonal instability culminating in the definitive amenorrhea. In turn, the signs and symptoms manifest themselves, depending on a few factors, from the decrease in hormones, lifestyle and the way this woman faces menopause. In this sense, actions that promote quality of life, like adequate food, physical activity, inclusion in social and cultural backgrounds, participation in leisure activities, can provide a better experience at any person regardless of their age^[2].

The symptomatology of menopause can range from mild to very severe. The signs and symptoms are divided into transient, including menstrual, neurogenic and psychogenic manifestations, and not transient, and urogenital disorders including metabolism. The prevalence of these symptoms varies among different age groups, ethnic, socioeconomic and cultural^[2].

Among the transient symptoms there are the neurogenic manifestations, which include hot flashes, accompanied by sweating, chills, weakness, headache, anxiety, most common at night, which causes most complaints of insomnia and contributes to a less efficient yield, decreased of concentration, irritability and other factors that reduce the commitment in the course of daily activities and influences the lives of women, and difficulties in personal and social relationships^[3].

Studies show that sleep disorders become more frequent in the climacteric, with more reported in perimenopausal, and that there was an increase of insomnia in postmenopausal due to higher latency to sleep and difficulty in keeping it, so observing a greater use of hypnotic drugs in this phase^[4].

Insomnia is characterized by difficulty falling asleep, frequent awakenings, reduced sleep. Normally sleepless people have excessive daytime sleepiness, insufficient sleep quality, especially women and are prone to physical or psychological disorders^[5].

Research addressing aspects of menopause are priorities in public health, as occurred increase in women's life expectancy and, according to the Brazilian Institute of Geography and Statistics, this increase tends to be increasing in the coming decades, meaning thereby that women in post menopause need public policies that strengthen the group and studies that provide a better quality of life in this phase^[2].

Emphasizing the importance to issues related to menopause and it is essential that they may create ways to prevent diseases and improve quality of life, the reason for conducting this study was to understand how research addressing insomnia during climacteric. The objective is to identify factors related to insomnia during climacteric, based on the analysis of scientific production.

Method

It was opted for the integrative literature review to organize this study, because it provides an approach that enables the analysis of data have a support helps in decision-making and improve clinical practice^[6]

The integrative review process includes six distinct stages, similar to conventional research stages of development:

1st) identification of the theme and selecting the search issue - begins with the definition of a problem and formulate a research hypothesis that has relevance to health. In this sense, when thinking about women's health during menopause and its symptoms with emphasis on insomnia, the central issue of this study was: What factors related to insomnia during climacteric?

2nd) Criteria for selection of the sample - on May 30th, 2014 was carried out the search of publications through research in the databases of the Virtual Health Library (BVS): LILACS (Latin American and Caribbean Health Sciences) and SciELO (Scientific Electronic Library Online) and international database PubMed (Medical Published - service of the US National Library of Medicine). We used the descriptors: insomnia, menopause, and climacteric. The inclusion criteria of articles were published in Portuguese, English and Spanish, with abstracts and full text available on the selected databases in the period between 2004 and May 2014; which they referred to healthy women; whose method adopted allowed to obtain strong evidence (level 1, 2 and 3), ie, systematic reviews, cohort and case-control/observational/transversal study.

These evidences were adopted considering the question that guided this review, because it is a risk factor/factor related^[7]. The strategies used to fetch the articles in the databases were adapted, because such bases present specific characteristics.

However, the research was guided by the question and inclusion and exclusion criteria, to maintain consistency in the search for articles and avoid possible biases. The search in PUBMED was done using the descriptors mentioned: insomnia, menopause and climacteric. In addition, they added other filters to further refine search. The first search using the above descriptors found 421 articles.

In order to refine the search, the filters were added: free full text, 10 years, humans, languages (Spanish, English), and totaling 47 articles. In LILACS found 82 articles using the descriptors insomnia, menopause and menopause, adding the aforementioned filters, were 24 articles. In SciELO, the search using descriptors insomnia and menopause was found only one article. To improve access to articles it used a keyword at a time. First it was used insomnia, resulting in 24 articles of which were short-listed only 4, after reading the titles. By applying the climacteric keyword emerged 80 articles, of which, after pre-selection, 10 resulted, totaling thus 14 articles.

3rd) Identification of pre-selected and selected studies - it was held at first reading the abstracts, selected and 27 articles in PubMed, 7 in LILACS and SciELO 7; later, it was carried out thorough reading of the pre-selected articles and verified their suitability for inclusion criteria of the study. Done it obtained the closing of bibliographic material and the consolidation of findings to facilitate reflection and conclusion of the study. After reading the pre-selected items, meeting the inclusion criteria, were selected only 10 articles from PubMed. This database presented a vast body with respect to those used descriptors. Is constantly updated and includes references to several articles published in numerous scientific journals and has published more data that LILACS and SciELO^[8].

4th) Categorization of studies - step is analogous to the collection of conventional survey data.

To collect data of articles we used a previously validated instrument^[9], containing the following items: identification of the original article, methodological characteristics of the study, assessment of the methodological rigor of measured interventions and findings. Through data collection instrument it was possible an individual assessment of the studies included, both methodologically and in relation to the synthesis of the results. Keeping in mind the issue problem, the findings were listed by reading and the inclusion criteria previously mentioned.

5th) Analysis and interpretation of results -

For the analysis and subsequent synthesis of the articles that met the inclusion criteria was used a summary table specially built for this purpose, which included the following aspects considered relevant: article title and factors related insomnia. Finally, analyzed descriptively in the light of scientific evidence.

6th) Presentation of synthesis of knowledge

- The evidence was gathered and synthesized and conclusions of studies questioned because of their limitations.

Results

Specifications of the selected articles

Frame 1 shows the articles, titles, periodicals and years for each analyzed item. Regarding the articles published by year of publication, are: 2006, 2007, 2012 and 2013 with one (1) item a year; 2008 with four (4) articles; 2009 with two (2) items.

Journals that published the articles were the Journal Sleep Medicine^[10], the Brazilian Journal of Gynecology and Obstetrics^[11], São Paulo Medical Journal/Evidence for Health Care^[19], American Journal of Obstetrics and Gynecology^[18] Magazine Maturitas^[12,17], The journal of Urology^[14], Journal Behavioral sleep medicine^[13] and Journal Sleep^[15,16].

Evidence on the factors relating to insomnia in climacteric

In response to the main question of this integrative review: "What are the factors related to insomnia during climacteric", the frame 2 presents a summary of the analyzed articles.

After reviewing the research, the factors related to insomnia, referred to by the authors were: vasomotor symptoms^[15,16,18-19]; depressive symptoms^[12,15,18]; hormonal changes^[15-17]; menopausal transition^[16]; aortic calcification^[10]; nervousness^[11]; nocturia^[14]; negative self-perception of health^[11]; anxiety^[15]; stress^[15]; Premenstrual Disorder - PMD^[15]; and decreased libido^[18]. All the evidence, as expressed in Frame 2, were statistically proven, through multivariate analysis with logistic regression model, except for one study^[15], whose analysis was bivariate.

Discussions

In the articles analyzed the authors showed no differences regarding factors related to insomnia during menopause. Regarding the language found was predominant English, considered border language through which knowledge is disseminated, affects diverse populations, serving as a key point for the construction, reconstruction and improvement of research^[20]. However, the investment is necessary in the search field at the national level (Brazil), by socio economic and cultural peculiarities.

In analysis of the journals subject of publications, stood out Periodicals of Sleep Medicine area^[10, 13, 15-16], the magazines of gynecology and obstetrics^[11-12, 17-18], and other areas of health^[13-14]. Most of the articles was developed with women in the United States^[10, 12-15, 17-18]; 02 articles investigated women in Brazil, 01 in Belo Horizonte^[11] and the other in Cuiaba^[19]; and a multi ethnic study that investigated women from countries in Europe, Africa and Asia ^[16].

The method used in all articles was the cohort stu-

Frame 1. Characterization of publications in PubMed database, in accordance with articles, title, journal, year, from 2004 to 2014.

Articles	Title	Journal, year
[10]	Do reports of sleep disturbance relate to coronary and aortic calcification in healthy middle-aged women?: Study of Women's Health across the Nation	Sleep Medicine, 2013 Mar.
[11]	Morbidities and associated factors in climacteric women: population-based study in women with 11 or more years of schooling	Brazilian Journal of Gynecology and Obstetrics, 2012 Apr.
[12]	Relations among Menopausal Symptoms, Sleep Disturbance and Depressive Symptoms in Midlife	Maturitas, 2009 Feb.
[13]	Marital Happiness and Sleep Disturbances in a Multi-Ethnic Sample of Middle-Aged Women	Behavioral sleep medicine, 2009 Jan.
[14]	Investigating the associations between nocturia and sleep disorders in perimenopausal women	The journal of urology, 2008 Nov.
[15]	Predictors of Sleep Quality in Women in the Menopausal Transition	Sleep, 2008 Feb.
[16]	Sleep Disturbance During the Menopausal Transition in a Multi-Ethnic Community Sample of Women	Sleep, 2008 Feb.
[17]	Endogenous hormones, participant characteristics, and symptoms among midlife women	Maturitas, 2008 Feb.
[18]	Night sweats, sleep disturbance, and depression associated with diminished libido in late menopausal transition and early post menopause: Baseline data from the Herbal Alternatives for Menopause Trial (HALT)	American journal of obstetrics and gynecology, 2007.
[19]	Climacteric complaints among very low-income women from a tropical region of Brazil	São Paulo Medical Journal Evidence for Health Care, 2006 Apr.

Source: Prepared by the authors. Database PubMed (2004-2014).

dy, highlighting: a prospective longitudinal^[10,14-15], longitudinal population-based^[13], cross-population-based study^[11-12,16-19], considered strong evidence, for when it comes to risk factors the cohort study is adequate to address the issue and considered the level of evidence II issue, second only systematic review of cohort (level I evidence)^[7].

Another strong point of the study was the sample size, revealing the representativeness; plus some are multicenter, analyzing various ethnic groups and applying analytical statistics, allowing generalizations about the studied object.

Among the approaches to the factors related to insomnia during menopause (Frame 02), it was as

vasomotor symptoms were the ones who stood out in the studies. Sleep-related problems reported by women during menopause have been identified as an important symptom of menopausal transition and in part has been attributed such symptoms^[21]

In turn, the interrelationship of vasomotor symptoms (hot flashes, sweating) with insomnia has been proven in several studies^[15-16, 18-19]. In this regard, in ovarian aging study analyzing the subjective quality of sleep was identified through self-reporting - measured by questionnaire (SMHSQ), which risk factors in a community-based cohort that included white women and African American, it was observed that the quality of sleep does not decline during

Frame 2. Characterization of publications according to the factors relating to insomnia in climacteric. PubMed (2004 a 2014)

Articles	Factors relating to insomnia in climacteric
[10]	Aortic calcification: - Model 1: Adjustments for age, location, race, body mass index and Framingham score. (= 1.09; CI: 95% 1.02-1.16). - Model 1 + fit for education, health awareness, use of hypnotic and alcohol (= 1.07; CI: 95% 1.00-1.14).
[11]	- Self-perception of health very bad/bad (= 2.3; CI: 95% 1.1-4.3; = 0.0002); - Nervousness (= 5.1; CI 95% 3.3-10.5; < 0.0001).
[12]	- Depressive symptoms (= 3.01; CI: 95% 2.02-4.49)
[13]	Marital dissatisfaction: - Caucasians (= 86; CI: 95% 76-97). - Africans (= 84; CI: 95% 69-103).
[14]	- Nocturia (= 1.13; CI: 95% 1.08-1.18)
[15]	- Heat waves (< 0.0001) - Anxiety (< 0.0001) - Humor more depressed (< 0.0001) - Stress (< 00001) - Severe symptoms of premenstrual disorder (PMD) (< 0.0001) - Lower levels of the reproductive hormone inhibin B (= 0.03).
[16]	- Menopausal transition and wake up several times (= 1.55; IC: 95% 1.30-1.86; < 0.001) and early morning awakenings (= 1.45; IC: 95% 1.17-1.79; = 0.001) - Reduction in levels of estradiol (= 1.08; IC: 95% 1.02, 1.14) and increased levels of the hormone tiroestimulant (= 1.11; IC: 95% 1.03, 1.19) - Vasomotor symptoms (hot flush) (=1.31; IC: 1.17, 1.47; p< 0,001).
[17]	- Highest concentration of estradiol free (= 106.1; IC: 95% 96.1-117.1; = 0.04) - Lower levels of globulin sexual hormone carrier (= 54.6; IC: 95% 50.8-58.7; = 0.05)
[18]	- Depression - Spearman's rank correlation coefficient (SCC) = 0.6 (p < 0.0001) - Night sweats (hot flush) - SCC = 0.2 (= 0.004). - Decreased libido - SCC= 3.3 ± 0.1 (=0.02)
[19]	- Heat waves (OR: 15.1 IC 95%: 8-29.4; p<0.05)

Source: Prepared by the authors. Database PubMed (2004-2014).

the menopausal transition. However, it was strongly affected by the specific symptoms of menopause, including hot flashes. Furthermore, in many menopausal transition in women who experience sleep problems were observed associated with other menopausal complaints such as depressive symptoms and psychological^[15].

In a study on treatments for insomnia it was noted that the highest prevalence occurred in women,

increasing at certain times of life: during pregnancy, postpartum and menopause; menopause occurs due to heat waves, and especially at night. Although self-reported nightly hot flashes correlate with subjective poor sleep quality, this association is less when used objective measures of sleep^[22].

The relationship of insomnia with depressive symptoms was also demonstrated in several studies^[12-14]. A significant number of women expe-

rience depressive symptoms during the menopausal transition and more often are reported in perimenopause; the study of women across the country (SWAN) multi-ethnic, with middle-aged women, found that 40.5% reported feeling depressed several times during the week. Depression is the second leading cause of disability in developed countries; the potential burden of this disease experienced by women in perimenopause is significant. So we need to be given due attention to this symptom^[12].

It has also been analyzed in previous studies that associations between depression, hot flashes, insomnia suggested that these symptoms are related or have a shared etiology or because the change in estradiol levels causes a cascade of symptoms, hot flashes, disturbing sleep, which results in depression^[23].

Among the articles that highlighted the hormonal changes as predisposing factors to insomnia, it was noted that the symptoms present during the menopausal transition refer to the hormonal changes that occur during this period; and insomnia was significantly associated with changes in levels of estradiol, for this relate to cortical stimulation, which, in turn, can result in difficulties in falling asleep^[17].

Other hormonal changes found, also associated with insomnia, were the lowest levels of the reproductive hormone inhibin B (early marker of early menopausal transition). The authors^[15] determined the associations between menopausal status, reproductive hormone levels and sleep quality. For hormonal tests blood samples were collected in fasting Entres day 1 of the menstrual cycle and 6 in two consecutive cycles, using a further measure of sleep quality and a longer time interval, during which many women reached phase's transition and late postmenopausal women. There was also that lower levels of inhibin B were a strong predictor of worse quality of self-reported sleep.

As another important factor, related to insomnia, was the climacteric transition, which has a great impact on the lives of women and is most prevalent

in pre and postmenopausal^[16]. In Brazil, also found that the prevalence of menopausal symptoms: hot flashes, sweating, palpitation, dizziness, anxiety, irritability, headache, depression and insomnia were high in this population. The interaction of symptoms showed that vasomotor (hot flashes and sweating) are interconnected and are associated with insomnia and were more prevalent in pre and postmenopausal women^[24].

Corroborating this statement, researchers^[25] realized that sleep disorders are common in the female population, especially during the menopausal transition. In this study women after menopause were more likely to report sleep problems and reported that sleep disruption can affect the quality of life, increase co-morbidities and mortality risk.

In this regard, it was also noted that sleep quality tends to deteriorate in peri and postmenopausal women^[26]. The assessment of menopausal women should take into account that these disorders tend to worsen the quality of life of this population, persistent insomnia can arise from a combination of predisposing and contributing factors. Thus, women who report sleep problems during the menopausal transition may be predisposed to develop sleep disturbances associated with hot flashes and other factors.

Some comorbidities were significantly associated with insomnia, highlighting nocturia^[14]. This problem impacts the quality of life and health of women, and its prevalence increases with age; Known risk factors are diabetes, cardiovascular disease and obstructive sleep apnea. The nocturia associated with insomnia occurs in perimenopausal women and can occur due to interruption of the circadian sleep cycle.

Elsewhere revised researchers^[10] evaluated the cross associations between sleep features self-reported, calcification of the coronary arteries and aortic calcification in black and white women, middle-aged. They found that sleep problems are a risk factor for cardiovascular disease morbidity

and mortality. The results showed that the sleep characteristics have relation with aortic calcification; the quality of sleep may be informative for the development of atherosclerosis and use of hypnotics was consistently associated with higher risk of aortic calcification, matching to other studies have shown that mortality increased with the use of hypnotics.

In turn, the perception of poor/very poor health and nervousness were associated with insomnia and may be related to greater presence of diseases and consequently more frequent use of medications to treat them^[11]. However, the use of some medications such as antidepressants can have a negative impact on sleep and often its cause^[27].

In Brazil, researchers analyzed a sample of menopausal women who claimed to be with any health problems and in them the quality of sleep was inefficient. So the self-perception of health problems was shown to be significant determinant of the quality of sleep^[28].

In the same perspective, other researchers^[13] studied a group of married women, in order to find out if marital happiness is an important factor associated with the self-reported sleep disorders. In their results they found that happier marital states had fewer sleep disturbances, in the adjusted model, controlled by previous factors demonstrated associations (age, ethnicity, medication use, depressive symptoms, and anxiety symptoms). The marital unhappiness persisted associated with sleep disorders.

Also they were highlighted factors that predispose to insomnia during menopause: the absence of regular physical activity, reduced sexual activity and negative attitudes about menopause^[29]. Thus, it appears that the transition of menopause is an experience that suffers strong influence of women's lifestyle.

Stress that stage becomes the most consistent predictor of psychosocial health and ultimately join the insomnia suffered by most menopausal women^[30].

The association of vasomotor symptoms, depression and sleep disorders with decreased libido, using chi-square test and multivariate analysis was investigated, and found important relationship between insomnia and decreased libido^[18]. A similar study to identify the risk factors for decreased libido, researchers^[31] found depression, anxiety, sleep disorders and vaginal dryness; point for further research in order to improve the quality of life of middle-aged women.

The results of the study in a cohort of community-based, quality of sleep was strongly affected by specific symptoms of menopause, including severe symptoms of premenstrual tension and anxiety, these results were obtained by adapting the questionnaire (SMHSQ), assessed by Zung anxiety scale^[15].

Regarding premenstrual complaints, the hormonal changes that occur during menopause in predisposed women, trigger anxiety symptoms, by the same mechanism that occurs in Voltage Pre Menstrual Syndrome (PMS) in premenopausal. Women who have PMS may develop some reactions and are more sensitive to the menstrual process. Thus they anticipate some symptoms when there is a change in their menstrual pattern. There are also some hormonal vulnerability in these women that can cause both premenstrual symptoms such as vasomotor symptoms^[32].

Overall, the climacteric is permeated by physiological changes, characterized by hormonal changes (notably: decrease in estradiol levels, increased follicle stimulating hormone and changes in inhibin B); vasomotor symptoms (hot flushes, sweating),

neuropsychiatric symptoms (anxiety, nervousness, depressive symptoms, depression); genitourinary symptoms (nocturia, decreased libido, dyspareunia). These changes have repercussions on the general health of the woman, altering longevity, self-esteem and quality of life^[2].

Synthesis of knowledge of the factors relating to insomnia in menopause

Insomnia is a subjective symptom difficult to measure characterized as a constant process, which combines the difficulty in initiating or maintaining sleep, waking during the night or waking up earlier than expected. As a result, it causes harm to the daily activities such as excessive fatigue, altered performance or emotional changes. Included in neuropsychiatric symptoms, insomnia is prevalent in menopause, and presents predisposing and contributing factors.

Among the predisposing factors include: hormonal changes (reduction in estradiol levels, inhibin B and sex hormone binding globulin carrier), the PMD syndrome, menopausal transition, vasomotor symptoms (hot flushes) and comorbidities (nocturia and aortic calcification).

Among the contributors or perpetuating factors for insomnia stand out behavioral (marital dissatisfaction and decreased libido) and neuropsychiatric problems (depression, nervousness, anxiety, negative perception on health).

Additionally, factors related to insomnia, which were highlighted, should not be seen in isolation but as a whole, in effect chain, need to be assessed and valued, attention to the climacteric woman, so you can enjoy healthy aging and a better quality of life.

Finally, while the methodological designs of the studies analyzed are strong evidence for evidence-based practice, the findings can be questioned, since insomnia was self-reported. So if you need that are carried out research addressing insomnia, with assessment through exams that allow accuracy of findings, such as the polysomnography.

Conclusion

The proposal to seek evidence in the literature about the factors that are associated with insomnia during climacteric is relevant because it provided greater knowledge on the subject and will help in decision making on the part of professionals, resulting in the improvement of health services and meeting women.

Studies point in their considerations to the need to understand the climacteric in wide scale, giving due attention to symptoms, with greater emphasis on sleep disorders, as well as the appropriate treatment for these women, to minimize damage and maximize quality of life.

Considering the lack of information, the difficulties and the symptoms that women have related to insomnia during climacteric, it is necessary to rethink the care that is provided, seeking to enhance the listening so you can actually promote a dignified and quality care.

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