

The Triad of Sleep Disturbance, Perimenopause, and Obesity: An Integrative Review of Current Evidence and Implications for Nursing Practice

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Abstract

Perimenopause is an intermediary phase characterized by hormonal instability that can substantially impact women's physical and psychological health. Sleep disturbances and weight gain are the most common and overlooked symptoms, both contribute to an elevated risk of chronic disease and obesity. Unfolding evidence shows that the declining levels of progesterone and estrogen interfere with sleep quality, changes metabolic regulation, and promote cortisol production to increase, causing a sequence of patterns that contributes to weight gain and adverse health outcomes. This article review examines current literature on the relationship between perimenopause, disturbance of sleep and obesity with focus on the physiological mechanisms linking these conditions and their effects on the health of women. The review also explores evidence-based management, modification of lifestyle, physical activity, nutritional strategies, cognitive behavioral therapy for insomnia, hormone therapy, and treatment options for pharmacologic. Implications for nursing practice are discussed, heightening the importance of early assessment, patient education, and individualized intervention plan, foster healthy weight management, improve sleep quality, and decrease the risk of long-term cardiometabolic complications. Increasing awareness of the interlinked nature sleep, hormonal changes, and obesity may improve the quality of clinical outcomes and support comprehensive treatment for women during the transition of menopausal.

Keywords: Perimenopause, Sleep disturbance, Obesity, Menopausal transition, Insomnia, Hormonal changes, Women's health, Nursing practice

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Introduction

Perimenopause is a natural transitional phase that women exemplified prior to menopause that is demonstrated by fluctuating hormone levels and progressive reproductive aging [1]. Women between the ages of 40 - 55 years typically experience perimenopause, this phase is connected with a wide range of physiological and psychological changes that can greatly affect the health and quality of life of women [2]. Even though vasomotor symptoms such as hot flashes and night sweats are well recognized and documented, other symptoms including sleep disturbances and weight gain are among the most common yet overlooked concerns experienced during the menopausal transition [3].

Sleep plays an essential role in maintaining cardiovascular, endocrine, metabolic and psychological health [4]. The declining progesterone and estrogen levels during perimenopause contributes to the alteration in neurotransmitter activity, thermoregulation, and circadian rhythm, increasing the chances of women experiencing insomnia, fragmented sleep, and poor sleep quality [5]. This disturbance often impacts well beyond nighttime symptoms, inducing daytime fatigue, impaired cognitive functioning, changes in mood, and the reduced the overall quality of life [5].

During perimenopause, many women simultaneously experience progressive weight gain and body fat redistribution from peripheral to central adiposity [6]. Higher risk of obesity and increased fat accumulation is contributed to fluctuations of hormones, reduced physical activity, decreased resting metabolic rate, and changes in appetite regulation [6]. Rising evidence implies that chronic sleep disruption further intensifies these metabolic changes through insulin resistance, increased cortisol secretion, altered leptin and ghrelin regulation, and systemic inflammation. As a consequence, obesity and sleep disturbance appear to harmonize within a complex, feedback loop in which each condition continuously contributes to the development and advancement of the other.

The synergistic effects of obesity, hormonal changes, and sleep disturbance have significant implications on women's health, including increased risk of depression, anxiety, metabolic syndrome, type II diabetes mellitus, cardiovascular disease and diminished quality of life [7]. Despite the developing recognition of these interlinked conditions, literature often independently examines perimenopause, obesity, and sleep disturbance, leaving a clear need for a rigorous synthesis of current evidence that analyzes their interrelationship.



Throughout the menopausal transition, healthcare professional especially nurses are uniquely positioned to identify women are at risk, implement early education, foster healthier lifestyle interventions, and coordinate multidisciplinary treatment. Increasing knowledge and understanding among hormonal changes, sleep disturbance and obesity can facilitate earlier identification of symptoms and improve evidence-based strategies for clinical management.

This article review examines the current evidence of the relationship between perimenopause, sleep disturbance, and obesity, and examines the physiological mechanisms that link these conditions, analyze evidence-based treatment, and discuss the implications for nursing practice and future research.

Hormonal Changes During Perimenopause

Perimenopause is defined as a natural biological transition for women exemplified by progressive aging of ovaries and the fluctuating of the hormone reproductive levels [1]. Perimenopause is characterized by irregular menstrual cycles, metabolic changes, sleep disturbance, vasomotor symptoms that may last for several years, unlike menopause which is defined as defined retrospectively after 12 consecutive months without menstruation[8]. Declining progesterone and estrogen levels not only affect the reproductive process but also affect numerous physiological processes. The fluctuating of these hormones impact glucose metabolism, energy expenditure, thermoregulation, mood and sleep regulation, increasing the vulnerability of women to chronic health conditions [9].

Estrogen plays an essential role in maintaining metabolic homeostasis by regulating insulin sensitivity, cardiovascular function and fat distribution [10]. Despite the minimal overall body weight changes, the declining of estrogen levels increases the risk for women to experience an increase in visceral adiposity and reduction in lean muscle mass [10]. Simultaneously, the declining progesterone production may contribute to sleep disruption, anxiety, and reduction in relaxation because of the effect it has on neurotransmitter activity within the central nervous system [11]. Collaborative of the changes of these hormones create a physiological environment that causes women to be predispose to both obesity and sleep disturbance [11]. The foundation is set for examining why the disturbance of sleep becomes most prevalence during menopausal transition by understanding of these hormonal changes.

Sleep Disturbance During Perimenopause

During perimenopausal transition sleep disturbance is one of the most chief complaint and distressing symptoms reported, but women in the menopausal transition only half are affected [12]. Even though insomnia has been identified as the most common chief complaint reported, the disruption in sleep comprises a range of symptoms including difficulty falling asleep, frequent nighttime awakenings, early morning awakening, and nonrestorative sleep [12]. These disturbances of sleep are often multifactorial, attributing from vasomotor symptoms, hormonal fluctuations, psychological stress, and aged -related changes in sleep architecture [13].

Decreased levels of estrogen have been linked with alterations in thermoregulations that attribute to hot flashes and night sweats, both which frequently sleep interruption [14]. In addition, decrease progesterone level may reduce the natural sedative effects of the hormone, effecting women ability to achieve restorative sleep [14]. Rising evidence also suggests melatonin secretion and circadian

rhythm regulation changes also contribute to poor quality of sleep during perimenopause.

Persistent disruption in sleep extends beyond nighttime symptoms and has been aligned with impaired concentration, fatigue, decrease work productivity, mood disturbances, and reduced quality of life [13]. As evidence continues to accumulate, sleep disturbance has been increasingly recognized by researchers as a contributor to metabolic dysfunction rather than simply a symptom of changes in hormones. Emerging evidence not only suggest that chronic sleep disruption during perimenopause affects daily functioning but also contributes to metabolically changes that increase the risk of obesity.

Obesity and Metabolic Changes During Perimenopause

Obesity has been deemed as an essential health concern with midlife menopausal women representing a period of increased vulnerability to weight gain and adverse metabolically changes [7]. Although chronological aging contributes to the progressive increase in body weight, hormonal changes associated with perimenopause appear to elevate the redistribution of adipose tissue toward visceral or central accumulation of fat [15]. This shift in body composition is clinically significant because visceral adiposity is strongly implicated with hypertension, cardiovascular disease, systemic inflammation, insulin resistance, and dyslipidemia [15].

There are several physiological mechanisms that contribute to weight gain during perimenopause. Decrease levels of estrogen reduces resting energy expenditure and causes alteration in lipid metabolism, while changes in appetite regulation cause a caloric intake increase [16]. Simultaneously reduction in lean muscle mass further decreases metabolic rate, making weight management progressively more challenging [16]. These changes together create an environment in which subtle modification in physical activity or diet may result in profound weight gain.

Literatures consistently highlights that during perimenopause, obesity is connected with increased risk of chronic disease and reduced quality of life, emphasizing the significant of early identification and preventive management. Researchers in recent years have shifted their focus from exploring perimenopause symptoms of sleep disturbance and obesity as separate conditions to understanding their complex and reciprocal relationship.

The Interrelationship Between Sleep Disturbance and Obesity

Current evidence corroborates a bidirectional relationship between obesity and sleep disturbance, indicating that each condition fosters the development and progression of the other [17]. During perimenopause, hormonal fluctuations exhibit to amplify this relationship by modifying metabolic, endocrine, and inflammatory pathways [17]. Consequently, many women experience chronic sleep disruption have a greater risk for gaining weight, while obesity itself may further impair the quality of sleep.

Sleep deprivation has been associated with increased impaired glucose metabolism, cortisol secretion, dysregulation of appetite-regulating hormones such as ghrelin and leptin [18]. Fat storage is promoted by elevated cortisol, especially within the abdominal region, while alteration in ghrelin and leptin increases hunger and caloric intake [19]. These physiological manifests contribute to chronic inflammation, insulin resistance, and escalating weight gain. In juxtaposition, obesity increases the risk of obstructive sleep apnea and



fragmentation of sleep, creating a cycle in which poor quality of sleep and metabolic dysfunction mutually reinforce one another [19].

Obesity and sleep disturbance should be viewed as interlink manifestations of physiological changes rather than representing isolated health concerns during perimenopause. Recognizing this relationship is important for the development of comprehensive strategies that focus both on management of symptoms and long-term disease prevention. In light of the multifactorial nature of these conditions, metabolic health, evidenced-based treatment management that address quality of sleep, and lifestyle behaviors are essential for improving outcomes perimenopausal women.

Evidence-Based Interventions

A multifaceted approach is supported by literature for managing obesity and sleep disturbance during perimenopause. Modification of lifestyle remains the foundational pillar of treatment and includes regular physical activity, weight management, stress reduction, balanced nutrition, and the adoption of healthier sleep habits [20]. Collaboratively, these interventions have been observed to improve the quality of sleep, reduce the risk of cardiometabolic, and amplify overall quality of life [20].

Physical activity, particularly resistance and aerobic training, has display positive effects on the body composition, sleep quality and insulin sensitivity [21]. Mediterranean style dietary is one of the nutritional strategies that have been associated with cardiovascular health and weight management [22].

In addition, cognitive behavioral therapy for insomnia is identified as first-line, evidenced -based management for chronic insomnia and may be predominately beneficially for women experiencing chronic sleep disturbance during perimenopause [23].

For women who experience moderate to severe symptoms, pharmacologic managements, including menopausal hormones therapy and selected nonhormonal therapies, may be classified based on clinical presentation and individualized risk factors [24]. Within the context of shared decision-making these individualized treatments should be implemented [24].

Implications for Nursing Practice

The role of nurses is essential in early assessment, identification and management of obesity and sleep disturbance among perimenopause women [25]. Nurses are considered as one of the frontline healthcare providers who have assess women reporting symptoms such as weight gain, insomnia, fatigue, mood changes, and vasomotor symptoms [25]. Identifying the interlinked nature of these concerns establishes an opportunity to timely implement, evidence-based interventions that promote overall quality of health and decrease the risk of long-term complications.

Comprehensive nursing assessment should include isolated symptoms along with holistic examination of body composition, physical activity, quality of sleep, stress levels, nutritional habits, mental health, and the impact of perimenopausal symptoms on activities on daily living [26]. The utilization of validated assessment tools for sleep quality, anxiety, depression and obesity risk can assist nurses in recognizing women who can benefit from a more extensive evaluation or referral [26]. Early identification of these symptoms is significant because metabolic changes and sleep disturbance often have a gradual development and maybe overlooked during a routine encounter with healthcare providers [26].

Educating patients remains a cornerstone of nursing practice. Nurses are educated and trained to counsel women regarding healthier lifestyle behaviors that support both metabolic and sleep health [26]. Evidence implicated that regular physical activity, weight management, reduction in stress, balanced nutrition, and good sleep habits can improve the quality of sleep and reduce cardiometabolic risk [20]. The focus of education should be patient-specific, culturally sensitive and customized to the woman's health status, preferences and readiness for treatment [26].

The collaboration of interdisciplinary team is equally essential in treatment of the complex health needs of perimenopausal women. The collaboration of nurses with primary healthcare providers, endocrinologists, gynecologists, behavioral health specialists, registered dietitians and specialists of sleep medication may deem necessary in some cases [26]. Such collaboration promotes a more comprehensive management of menopausal symptoms when managing associated conditions including insomnia, obesity, hypertension, diabetes, and cardiovascular disease [8].

Nurses also serve as an essential role in advocating for women's health by emphasizing awareness of perimenopausal symptoms and promoting preventive healthcare [25]. Standard screening, early intervention, and continuous follow-up may improve management of symptoms, decrease the progression of chronic disease and enhance the quality of life. The practice of nursing must evolve to manage the unique physiological and psychological challenges with perimenopausal women, as the midlife women population continues to grow.

Conclusion

Perimenopause represents a significant period of physiological alteration that impacts multiple factors of women's health. Current evidence reveals that hormonal fluctuations during perimenopausal transition influences metabolic dysfunction, sleep disturbance, and an increased risk of obesity. These conditions interconnected through complex inflammatory, endocrine, and behavioral pathways rather than independently occurrences that may adversely affect physical health, psychological well-being, and overall quality of life.

There is consistently documented literature that supports bidirectional relationship between obesity and sleep disturbance, with each condition leading to the advancement of the other. Hormonal fluctuations linked to perimenopause further amplifies this relationship by altering appetite regulation, glucose metabolism, thermoregulation, and body composition. As a consequence, women experiencing continuous sleep disruption are at a higher risk for obesity and cardiometabolic disease, while excessive body weight may further compromise the quality of sleep and perpetuate a cycle of declining quality of health.

Management of these triads requires a comprehensive, patient-centered strategy that aligns modification of lifestyles, evidence-based clinical management, and continuous education. Nurses are poised to identify early symptoms, provide individualized counseling, promote healthier behaviors, and coordinate interdisciplinary treatment that focus on both symptom management and chronic disease prevention. Nurses can foster improvement in health outcomes for perimenopausal women through utilization of comprehensive assessment and evidence-based practice.

While the body of evidence examines perimenopause, obesity and sleep disturbance continues to broaden, additional research is required to increase understanding of long-term effectiveness of interventions



and to determine strategies that are effective across culturally diverse populations. Continuous investigation will enhance clinical practice guidelines and reinforce the development of tailored interventions that improve the quality of health and life of women during this essential stage of life.

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Conflict of Interest

None.

References

1. Faubion SS, Crandall CJ, Davis L, El Khoudary SR, Hodis HN, et al. (2022) The 2022 hormone therapy position statement of The North American Menopause Society. *Menopause* 29: 767-794. <https://doi.org/10.1097/GME.0000000000002028>
2. World Health Organization (2024) Menopause. [<https://www.who.int/news-room/fact-sheets/detail/menopause>] [Accessed August 12, 2026]
3. Harvard Health Publishing (2022) Perimenopause: Rocky Road to Menopause. [https://www.health.harvard.edu/newsletters/Harvard_Womens_Health_Watch] [Accessed August 12, 2026]
4. Bian W, Cistulli PA, Chaput JP, Biswas RK, Koemel NA, et al. (2026) The role of sleep in cardiovascular health and disease risk. *Trends Cardiovasc Med* 2026. <https://doi.org/10.1016/j.tcm.2026.07.001>
5. Cunningham AC, Hewings-Martin Y, Wickham AP, Prentice C, Payne JL, et al. (2025) Perimenopause symptoms, severity, and healthcare seeking in women in the US. *NPJ Womens Health* 3: 1-8. <https://doi.org/10.1038/s44294-025-00061-3>
6. Davis SR, Castelo-Branco C, Lumsden MA, Nappi RE, Shah D, et al. (2012) Understanding weight gain at menopause. *Climacteric* 15: 419-429. <https://doi.org/10.3109/13697137.2012.707385>
7. Fenton A (2021) Weight, shape, and body composition changes at menopause. *J Midlife Health* 12: 187-192. https://doi.org/10.4103/jmh.jmh_123_21
8. Greendale GA, Sternfeld B, Huang M, Han W, Karvonen-Gutierrez C, et al. (2019) Changes in body composition and weight during the menopause transition. *JCI Insight* 4: e124865. <https://doi.org/10.1172/jci.insight.124865>
9. Shufelt CL, Brown V, Carpenter JS, Chism LA, Faubion SS, et al. (2023) The 2023 nonhormone therapy position statement of The North American Menopause Society. *Menopause* 30: 573-590. <https://doi.org/10.1097/GME.0000000000002200>
10. Patel P, Patil S, Kaur N (2025) Estrogen and metabolism: navigating hormonal transitions from perimenopause to postmenopause. *J Midlife Health* 16: 247-256. https://doi.org/10.4103/jmh.jmh_75_25
11. Berman K (2025) After Decades of Misunderstanding, Menopause is Finally Having its Moment. [<https://medicine.yale.edu/news-article/after-decades-of-misunderstanding-menopause-is-finally-having-its-moment/>] [Accessed August 12, 2026]
12. Patel SR, Hu FB (2008) Short sleep duration and weight gain: a systematic review. *Obesity* 16: 643-653. <https://doi.org/10.1038/oby.2007.118>
13. San L, Arranz B (2024) The night and day challenge of sleep disorders and insomnia: a narrative review. *Actas Esp Psiquiatr* 52: 45-56.
14. Zhang Z, DiVittorio JR, Joseph AM, Correa S (2021) The effects of estrogens on neural circuits that control temperature. *Endocrinology* 162: 1-12. <https://doi.org/10.1210/endo/bqab087>
15. Khan U, Wang D, Karvonen-Gutierrez CA, Khalil N, Ylitalo KR, et al. (2014) Progression from metabolically benign to at-risk obesity in perimenopausal women: a longitudinal analysis of study of women across the nation (SWAN). *J Clin Endocrinol Metab* 99: 2516-2525. <https://doi.org/10.1210/jc.2013-3259>
16. Chopra S, Sharma KA, Ranjan P, Malhotra A, Vikram N, et al. (2019) Weight management module for perimenopausal women: a practical guide for gynecologists. *J Midlife Health* 10: 165-172. https://doi.org/10.4103/jmh.jmh_155_19
17. Figorilli M, Velluzzi F, Redolfi S (2025) Obesity and sleep disorders: a bidirectional relationship. *Nutr Metab Cardiovasc Dis* 35: 1-8. <https://doi.org/10.1016/j.numecd.2025.104014>
18. Taheri S, Lin L, Austin D, Young T, Mignot E (2004) Short sleep duration is associated with reduced leptin, elevated ghrelin, and increased body mass index. *PLoS Med* 3: 210-217. <https://doi.org/10.1371/journal.pmed.0010062>
19. Manning ME, Stockman S, Zanni MV (2026) Perimenopause as an obesogenic sensitive period: contributions to elevated cardiovascular risk. *Am J Prev Cardiol* 26: 101398. <https://doi.org/10.1016/j.ajpc.2025.101398>
20. Salamon M (2025) Outsmarting Perimenopause. Harvard Health Publishing. [<https://www.health.harvard.edu/womens-health/outsmarting-perimenopause>] [Accessed August 12, 2026]
21. Korkutata A, Korkutata M, Lazarus M (2025) The impact of exercise on sleep and sleep disorders. *NPJ Biol Timing Sleep* 2: 1-10. <https://doi.org/10.1038/s44323-024-00018-w>
22. Dominguez L, Veronese N, Bella GD, Cusumano C, Parisi A, et al. (2023) Mediterranean diet in the management and prevention of obesity. *Exp Gerontol* 174: 112121. <https://doi.org/10.1016/j.exger.2023.112121>
23. Walker J, Muench A, Perlis ML, Vargas I (2022) Cognitive behavioral therapy for insomnia (CBT-I): a primer. *Klin Spec Psihol* 11: 123-137. <https://doi.org/10.17759/cpse.2022110208>
24. Madsen T, Sobel T, Negash S, Allen TS, Stefanick ML, et al. (2023) A review of hormone and non-hormonal therapy options for the treatment of menopause. *Int J Womens Health* 15: 825-836. <https://doi.org/10.2147/ijwh.s379808>
25. Periyakaruppan GM, Rajendran SS, Venkatachalam GP, Parasuraman A, Ramachandran M, et al. (2025) Effectiveness of nurse-led intervention on health risks in perimenopausal women: a mixed-methods study. *Bioinformation* 21: 2421-2424. <https://doi.org/10.6026/973206300212421>
26. Adrian A, Goodman ML, Broadway D, Shirley D, Smith W, et al. (2026) Menopause: a primer for advanced practice nurses caring for women. *J Nurse Pract* 22: 105619. <https://doi.org/10.1016/j.nurpra.2025.105619>