

Tinjauan Pustaka

Yoga for Sleep Quality in Menopausal Women: A Scoping Review

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Abstract

Introduction: Sleep disturbance is one of the most frequent complaints among menopausal women, strongly associated with hormonal decline and vasomotor symptoms. While pharmacological treatments such as hormone therapy and benzodiazepines are effective, they also carry significant risks, including cardiovascular events, cancer, and cognitive decline. This has led to growing interest in safe, non-pharmacological interventions such as yoga.

Method: This scoping review was conducted in accordance with the PRISMA-ScR guidelines. Literature searches were conducted in PubMed, ScienceDirect, and Google Scholar, encompassing publications from 2015 to 2025. Eligible studies included original research that investigated yoga interventions targeting sleep quality among menopausal or postmenopausal women. Randomized controlled trials (RCTs), quasi-experimental studies, and observational studies were considered if validated measures of sleep quality were reported.

Discussion: Yoga interventions, commonly practiced 2–3 sessions per week for 8–12 weeks, consistently demonstrated improvements in subjective sleep quality, sleep latency, and overall well-being. Some studies also reported reductions in anxiety, depression, and vasomotor symptoms. The underlying mechanisms are likely multifactorial, including regulation of the autonomic nervous system, reduction of sympathetic activity, promotion of parasympathetic balance, and hormonal modulation. When compared with other non-pharmacological interventions such as Tai Chi and Qigong, yoga showed comparable benefits. Hormone therapy remains the most effective for vasomotor-related insomnia, yet yoga offers a safer long-term alternative with no reported serious adverse effects.

Conclusion: Yoga is a safe, feasible, and effective non-pharmacological intervention to improve sleep quality in menopausal women and may serve as a complementary option alongside conventional treatments.

Keywords: Insomnia, Menopause, Non-Pharmacological Interventions, Sleep Quality, Yoga

1. INTRODUCTION

Sleep disorders, particularly insomnia, represent a significant public health concern globally, with a reported prevalence of 16.2% among adults and consistently higher rates in women across age groups.¹ The burden is notably greater in menopausal women, among whom approximately 26% meet diagnostic criteria for insomnia.² Evidence from Indonesia mirrors this pattern, showing higher prevalence in women than men in both urban and rural populations³, with additional risk factors including depression, low educational attainment, poor socioeconomic status, loneliness, physical dependence, and comorbidities such as arthritis.⁴

The menopausal transition is characterized by hormonal changes that increase vulnerability to sleep disturbances. Declining estrogen and progesterone levels are strongly implicated, as progesterone exerts sleep-promoting effects while estrogen regulates vasomotor symptoms such as hot flushes and night sweats that frequently disrupt sleep.^{5,6} Notably, even after accounting for vasomotor and mood symptoms, low estradiol levels and elevated follicle-stimulating hormone (FSH) remain independently associated with impaired sleep quality.⁷

Pharmacological management of menopausal sleep disturbances presents important limitations. Benzodiazepines, while effective in the short term, are associated with adverse cognitive effects with prolonged use, including deficits in processing speed and sustained attention⁸. Menopausal Hormone Therapy (MHT) is commonly prescribed to alleviate vasomotor symptoms; however, evidence regarding its effectiveness in improving sleep remains inconsistent, with population-based data showing no significant reduction in sleep disturbances after adjustment for confounders.⁹ These limitations have driven increasing interest in non-pharmacological approaches.

Non-pharmacological interventions, including mindfulness, cognitive behavioral therapy, relaxation techniques, physical exercise, and yoga, have demonstrated beneficial effects on sleep quality in several systematic reviews and meta-analyses.¹⁰⁻¹² The use of complementary and alternative medicine is also widespread, with approximately 25.1% of postmenopausal women reporting reliance on such approaches for managing menopausal symptoms.¹³ Nevertheless, evidence specific to yoga in menopausal women remains heterogeneous, with mixed findings, limited comparison with other

interventions such as Tai Chi, Qigong, or MHT, and insufficient exploration of underlying biological mechanisms. Therefore, this scoping review aims to map existing evidence on the effects of yoga on sleep quality in menopausal women, compare its outcomes with other interventions, and identify potential biological pathways underlying its impact.

2. METHOD

a) Protocol

This scoping review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines. The methodological framework proposed by Arksey and O'Malley was followed¹⁴, which consists of five stages: identifying the research question, identifying relevant studies, study selection, charting the data, and collating and summarizing the results.

b) Eligibility Criteria

The inclusion criteria were defined using the PCC (Population, Concept, Context) framework (see Table 1). The population comprised women undergoing the menopausal transition, including perimenopausal and postmenopausal women. The concept focused on yoga-based interventions, which included yoga

asana, pranayama, or structured yoga therapy programs, as long as yoga was the primary intervention. The context included both clinical and community settings, with no geographical restrictions. Only original quantitative studies published between January 2015 and August 2025, in English, with full-text availability, were included. Eligible designs were randomized controlled trials, quasi-experimental studies, cohort studies, and cross-sectional studies. Exclusion criteria included review articles, case reports, conference abstracts, and studies in which yoga was only an adjunctive component.

Table 1. PCC Framework

Criteria	Application
P	Women undergoing the menopausal transition, including perimenopausal and postmenopausal women
C	Yoga-based interventions (asana, pranayama, or structured yoga therapy programs) where yoga is the primary intervention
C	Clinical or community settings, with no geographical restrictions; studies published in English, 2015–2025, full-text available

c) Information Sources and Search Strategy

A comprehensive literature search was carried out in PubMed, ScienceDirect, and Google

Scholar to identify studies published between January 2015 and August 2025. The search strategy was developed using Boolean operators that combined three major domains: population, concept, and outcome. The search terms included "yoga" OR "yoga therapy" for the intervention, "menopause" OR "perimenopause" OR "postmenopause" for the population, and "sleep quality" OR "insomnia" OR "sleep disturbance" for the outcomes. An example of the PubMed search query was: ("yoga" OR "yoga therapy") AND ("menopause" OR "perimenopause" OR "postmenopause") AND ("sleep quality" OR "insomnia"). For Google Scholar, the search was conducted using Publish or Perish software, which allowed for the retrieval of up to 1,000 records. All results from the three databases were exported in RIS format and imported into Mendeley for reference management and deduplication.

d) Study Selection and Review Process

To enhance methodological rigor and reduce selection bias, the screening process was conducted by two independent reviewers across all stages (title/abstract and full-text screening). Discrepancies were resolved through discussion and consensus; when consensus was

not immediately achieved, a third reviewer was consulted. Screening decisions and reasons for exclusion at the full-text stage were documented systematically. This review did not perform a formal critical appraisal or risk-of-bias assessment, in accordance with the purpose of a scoping review, which aims to map existing evidence rather than evaluate study quality.

3. RESULT

a) Search Results

The database search yielded a total of 1,019 records: PubMed (n = 4), ScienceDirect (n = 136), and Google Scholar (n = 939). After removing 60 duplicates, 959 records were screened, and 976 were excluded at the title and abstract stage. A total of 43 full-text articles were assessed for eligibility, of which 31 were excluded due to irrelevant population (n = 4), irrelevant intervention (n = 8), irrelevant sleep outcome (n = 6), or unsuitable study design (n = 9). Finally, 12 studies met the inclusion criteria and were included in the review (Figure 1).

b) Study Characteristics

Across 12 studies, a total of 828 peri- and postmenopausal women aged 40–70 years were enrolled, with sample sizes ranging from 20 to 208. Nine studies used randomized controlled trial designs, while three applied

quasi- or pre-experimental approaches.

Most research was conducted in India ($n = 7$), with additional studies from the United States ($n = 2$) and one each from Indonesia, Brazil, and Turkey. Menopausal status varied: some trials enrolled only postmenopausal women, others enrolled perimenopausal women, and several included both groups.

Yoga interventions covered diverse modalities, including

Hatha Yoga, Vinyoga, Raja Yoga, Yoga Nidra, laughter yoga, and pranayama-based practices, with intervention lengths ranging from 2 to 20 weeks and frequencies of 1–6 sessions per week. Comparators included aerobic exercise, health education, counseling, sleep hygiene, usual care, and no treatment. Detailed characteristics are summarized in Table 2.

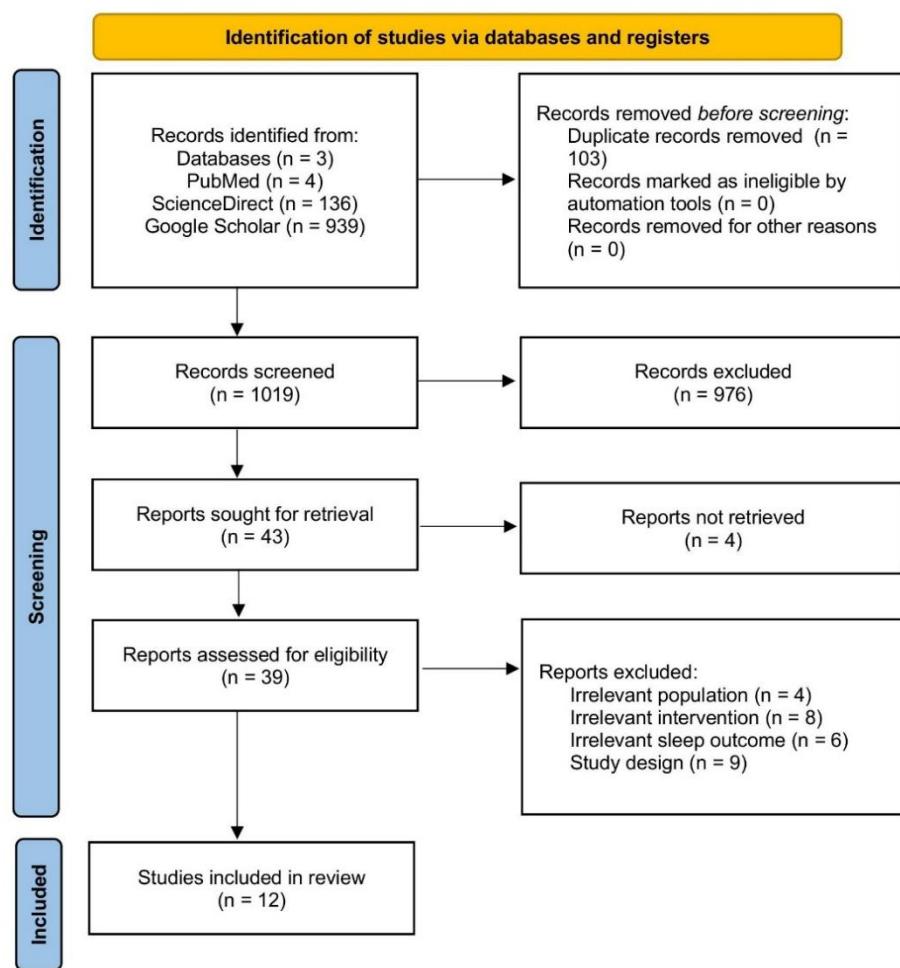


Figure 1. PRISMA Flowchart

c) Primary Outcomes

The primary outcome of this review was the effect of yoga-

based interventions on sleep quality among peri- and postmenopausal women. Across

studies, most yoga modalities demonstrated beneficial effects. Traditional Hatha Yoga and multimodal practices^{17,18} were associated with significant reductions in Pittsburgh Sleep Quality Index (PSQI) scores. Vinyoga¹⁹ showed limited improvement in objective actigraphy measures, though subjective sleep quality was enhanced. Raja Yoga²⁰ produced favorable effects on both sleep and psychological well-being, while Yoga Nidra^{21,22} improved the severity of insomnia and perception of restorative sleep.

Table 2. Study Characteristics

Authors (Year)	Country	Study Design	Sample (n)	Age (Mean/Range)	Menopausal Status	Comparator
Patel et al. (2015)	India	Pre-experimental	30	48-52+	Postmenopause	None
Jayadeepa & Muthulakshmi (2016)	India	Pre-experimental	20	45-60	Peri-/Post-	None
Buchanan et al. (2017)	United States	RCT	186	40-62 (mean 54.9)	Mostly Post (82%)	Aerobic exercise; Usual activity
Suchithra & Rekha (2018)	India	RCT	50	40-55	Perimenopause	Yoga subgroup comparison only
Arrant (2019)	United States	RCT	31	58-60	Postmenopause	Health education (attention control)
Portella et al. (2021)	Brazil	RCT	47	40-55	Menopausal transition	Sleep hygiene
Susanti et al. (2022)	Indonesia	RCT	208	45-60 (mean 52.5 ± 4.1)	Pre- 29%, Peri- 29%, Post- 42%	No intervention
Shankari & Selvalakshmi (2023)	India	RCT	30	45-55	Peri-/Post-	Usual care
Singh & Singh (2023)	India	RCT	60	45-55	Menopausal (not specified peri/post separately)	Counseling+diet
Aksoy-Can et al. (2024)	Turkey	RCT	36	40-60	Menopausal	Menopause school (education)
Mathew & Rangasamy (2024)	India	Quasi-experimental	30	60-70	Postmenopause	None
Badve et al. (2025)	India	RCT	100	40-55 (mean 46.5)	Perimenopause	No intervention

Table 3. Primary Outcomes

Authors (Year)	Type of Yoga	Duartion & Frequency	Outcome Measures	Main Findings
Patel et al. (2015)	Simple planned yoga	30 min/day, 15 days	Insomnia Rating Scale	Significant insomnia reduction (55.8% → 35.3%, $p<0.05$)
Jayadeepa & Muthulakshmi (2016)	Yoga therapy (asanas, breathing, meditation)	Not reported	Menopause Rating Scale	Significant improvement, but poor reporting
Buchanan et al. (2017)	Viniyoga	90 min/week + 20 min home, 12 weeks	Actigraphy, PSQI	No effect on objective sleep; modest subjective improvement in subgroup
Suchithra & Rekha (2018)	Pranayama ± Asanas	60 days + 30-day follow up	Insomnia severity scale	Both improved, yoga+asana superior
Arrant (2019)	Relaxation yoga	60 min/week + 3hr home, 8 weeks	PROMIS, sleep diary, salivary alpha-amylase	Subjective improvements + stress biomarker reduction
Portella et al. (2021)	Raja Yoga meditation	45/day, 8 weeks	ISI, PSQI, KMI	Both yoga+SH and SH improved; only yoga improved menopausal symptoms
Susanti et al. (2022)	Yoga (12 postures + relaxation)	75 min/session, 3x/week, 20 weeks	PSQI	Significant improvement in peri-/postmenopause; no effect in premenopause
Shankari & Selvalakshmi (2023)	Yoga + Yoga Nidra	60 min/session, 6x/week, 16 weeks	Sleep Quality Scale, Self-Regard	Significant improvements in sleep & psychological wellbeing
Singh & Singh (2023)	Asana + pranayama + Om chanting	60 min/day, 6x/week, 3–6 months	Sleep scale (1-4)	Improved from moderate–severe → none–mild; significant vs control
Aksoy-Can et al. (2024)	Laughter yoga (online)	40–45 min, 2x/week, 4 weeks	PSQI, VS	Improved sleep & vasomotor symptoms vs education control
Mathew & Rangasamy (2024)	Comprehensive yoga therapy (asana, pranayama, nidra, kriya)	60 min/session, 6x/week, 12 weeks	ISI	Significant insomnia reduction; also ↓ systolic BP
Badve et al. (2025)	Hatha Yoga	75 min/session, 5x/week, 12 weeks	PSQI	Large improvement ($d=0.76$), no change in control

Laughter yoga²³, yielded improvements in sleep outcomes alongside reductions in vasomotor symptoms.

Overall, the PSQI was the most commonly used assessment tool, supplemented by the Insomnia Severity Index (ISI), actigraphy, and related standardized measures. Improvements were observed in global PSQI scores, sleep latency, sleep efficiency, and a reduction in insomnia severity across multiple trials.^{14,15, 23} Although the magnitude of benefit varied, yoga interventions generally outperformed comparators, including usual care, health education, counseling, and aerobic exercise. A comprehensive summary of intervention protocols and outcomes is presented in Table 3.

4. DISCUSSION

The evidence from 12 studies consistently demonstrates that yoga improves sleep outcomes among peri- and postmenopausal women, though the strength of evidence varies across designs and contexts. Pre-experimental studies^{15,25} suggested notable short-term improvements, albeit without control groups. More robust RCTs^{16-18, 20} confirmed that yoga significantly enhances sleep quality, particularly among women with greater baseline sleep disturbance. Effects appeared more pronounced in peri- and

postmenopausal women than in premenopausal groups.¹⁶ Overall, although study quality was heterogeneous, the findings consistently favor yoga as a feasible and effective non-pharmacological intervention for sleep disturbances in midlife women.

a) Types and Dosage of Yoga Interventions

Yoga interventions for peri- and postmenopausal women were delivered in diverse formats, ranging from traditional postural and breathing practices to more novel approaches. Most programs combined asanas, pranayama, and relaxation or meditation, yet the frequency and duration varied considerably. Intensive regimens, such as those involving 75-minute sessions performed three to five times per week for at least 12 weeks, demonstrated significant improvements in sleep outcomes.^{16,17} In contrast, lower-frequency protocols, such as weekly 90-minute sessions supplemented by short home practice, yielded more modest or inconsistent effects.¹⁹ Distinctive modalities also emerged: laughter yoga improved both sleep and vasomotor symptoms²³, while Yoga Nidra contributed not only to better sleep but also psychological well-being.^{21,22} A head-to-head comparison further suggested that combining asanas with pranayama is more effective than

pranayama alone.²⁶ Taken together, these findings indicate that multimodal and higher-frequency yoga practices tend to yield greater and more sustained benefits. At the same time, minimalist or low-dose programs may not consistently lead to improved sleep.

b) Subjective vs. Objective Outcomes

A key theme is the discrepancy between subjective and objective measures of sleep. RCTs incorporating objective methods^{19,24} reported no significant changes in actigraphy or PROMIS® scores, despite participants' perceptions of improved sleep. In one trial, exploratory analyses indicated that yoga reduced variability in sleep duration among participants with poor baseline PSQI scores¹⁹, while another study reported improvements in subjective sleep without corresponding changes in standardized PROMIS® measures.²⁴ By contrast, studies relying on subjective indices (PSQI, ISI, sleep rating scales) consistently showed significant benefits.^{16-18,21} This divergence highlights a methodological challenge: yoga may influence perceived sleep quality and sleep-related well-being (stress, relaxation) more than objective sleep architecture. Future studies integrating both approaches are

necessary to clarify the extent of yoga's effects.

c) Physiological Mechanisms

Several physiological pathways may underlie yoga's effects on sleep. Yoga practices have been shown to reduce cortisol levels, modulate sympathetic activity, and enhance parasympathetic dominance, which can shorten sleep latency and improve sleep efficiency.^{27,28} Breathing and relaxation practices may influence melatonin secretion and regulate the circadian rhythm, while yoga's stress-reducing effects can indirectly improve vasomotor symptoms that otherwise disturb sleep.²⁹ These mechanisms align with broader models of mind–body interventions, suggesting overlapping pathways with other modalities such as tai chi and qigong.

d) Comparison with Other Interventions

When compared to usual care or no treatment, yoga consistently produced superior outcomes.¹⁶⁻¹⁸ In comparison to active behavioral comparators, yoga also demonstrated advantages. Raja Yoga meditation and sleep hygiene both improved insomnia, although the yoga intervention provided broader benefits on menopausal symptoms such as those measured by the Kupperman Index.²⁰ Another trial reported that yoga yielded greater

improvements in subjective sleep and stress-related biomarkers compared with health education.²⁴ Laughter yoga was also found to be more effective than menopause school education.²³ In contrast, a study comparing yoga with aerobic exercise observed no significant differences in objective sleep outcomes, though exploratory benefits were noted among participants with severe sleep problems.¹⁹

Beyond the included trials, yoga exhibits favorable comparisons with other non-pharmacological interventions. Tai chi and qigong have demonstrated modest improvements in sleep among midlife women, although these effects are often smaller and have less impact on psychological symptoms.^{30,31} Similarly, while mindfulness-based meditation has been associated with improved sleep quality, yoga may provide added physical and vasomotor benefits through its combined postural, breathing, and relaxation components. Compared with menopausal hormone therapy (MHT), yoga offers a safer alternative without the risks of thromboembolism or cancer.³² Thus, yoga not only outperforms passive controls but may also be as effective as other behavioral strategies, with unique holistic benefits for both sleep and climacteric symptoms.

e) Clinical Implications

The findings of this review carry practical significance for healthcare providers. Yoga can be considered as a safe and accessible complementary therapy to improve sleep quality in peri- and postmenopausal women, particularly for those reluctant or unable to use pharmacological treatments such as MHT. Importantly, yoga interventions may not fully substitute medical management in women with severe vasomotor symptoms or complex comorbidities, but can serve as an effective adjunct to standard care. From a public health perspective, yoga programs are relatively low-cost, culturally adaptable, and feasible to implement in community or clinical settings. Longer-term and more frequent engagement appears to produce the most significant benefits, suggesting that clinicians should encourage adherence and consistency when recommending yoga for menopausal sleep complaints.

5. CONCLUSION

Despite promising findings, this review highlights several limitations. Many studies had small sample sizes, short durations, or lacked rigorous randomization and blinding. Considerable heterogeneity existed in yoga styles, delivery methods, and outcome measures,

complicating direct comparison. Furthermore, objective sleep assessments were underutilized, and their results were often inconclusive. These gaps point to the need for larger, more standardized randomized controlled trials to establish more unmistakable evidence on efficacy, optimal yoga types, and practice dosages.

In conclusion, yoga demonstrates encouraging potential as a safe, non-pharmacological intervention for improving subjective sleep quality among peri- and postmenopausal women. While more robust evidence is needed, its integration into clinical and community-based menopausal care appears both feasible and beneficial.

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