

## THE EFFECT OF YOGA ON SLEEP QUALITY AND INSOMNIA IN WOMEN WITH SLEEP PROBLEMS : A SYSTEMATIC REVIEW

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### ABSTRACT

**Background:** With prevalence estimates ranging from 4% to over 20% of the adult population, insomnia is the most prevalent sleep complaint and a serious public health problem. Yoga has also been utilized therapeutically since it is thought that various styles of yoga might have distinct psychophysiological effects.

**Aims :** This systematic review is to review the effect of yoga on sleep quality and insomnia in women with sleep problem.

**Methods:** This study demonstrated compliance with all requirements by means of a comparison with the standards established by the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020. Thus, the specialists were able to guarantee that the research was as current as feasible. Publications released between 2014 and 2024 were considered for this search strategy. This was accomplished by utilizing a number of distinct online reference sites, including Pubmed, ScienceDirect, and SagePub. It was determined that reviews, previously published works, and partially completed works would not be included.

**Result:** In the PubMed database, the results of our search brought up 33 articles, whereas the results of our search on SAGEPUB brought up 416 articles, our search on SCIENCE DIRECT brought up 1107 articles. The results of the search conducted for the last year of 2014 yielded a total 26 articles for PubMed, 265 articles for SAGEPUB and 684 articles for SCIENCE DIRECT. In the end, we compiled a total of 7 papers, 4 of which came from PubMed, 1 of which came from SAGEPUB and 2 of which came from SCIENCE DIRECT. We included seven research that met the criteria.

**Conclusion:** In summary, when compared to non-active control settings, yoga intervention can help women manage their sleep issues in either pregnant women, worker, or women with disease.

**Keyword:** Yoga, sleep problem, women

## INTRODUCTION

The prevalence of sleep disorders rises with age, with an estimated 67% of the elderly reporting sleep-related complaints. Older adults have been linked to a number of sleep-related issues, such as difficulty falling asleep, sleep disturbances at night, and less attentiveness throughout the day. Poor sleep quality has been directly linked to higher rates of mental and physical illness, a deterioration in cognitive performance, and a lower quality of life (QOL), according to research.<sup>1</sup>

Sleep helps the body heal and rebuild itself, facilitating learning and memory consolidation. But a lot of individuals have trouble sleeping due to conditions including restless legs syndrome, sleep apnea, and insomnia. Physical activity is one way to improve sleep quality and reduce the risk of sleep disorders since there is a reciprocal association between physical activity and sleep quality.<sup>2</sup>

Sleep quality, which is defined by difficulty falling or staying asleep and the number of nighttime awakenings, is the most important predictor of sleep status. Insomnia, which is characterized as persistent dissatisfaction with sleep quantity or quality along with difficulties falling asleep, many awakenings during the night with difficulty going back to sleep, and/or getting up earlier than intended, is the most common sleep quality issue. According to studies, the prevalence of insomnia varies from 10% to 30%, and in certain situations, it can even reach 50% or 60%. This sleep problem is more common in women, elderly persons, and people with physical and mental health issues. Attention and memory are significantly impacted by sleep disorders and poor sleep quality, which has an adverse effect on social, psychological, and physical interactions.<sup>3-5</sup>

The impact of exercise on sleep is a topic of increasing interest for researchers. Regular physical exercise has been linked to longer and better-quality sleep, according to studies. According to scientific research, persons who worked out for at least half an hour every day slept for an average of fifteen minutes longer than those who did not. Physical exercise has been linked to a decrease in sleep problems, including sleep apnea, daytime drowsiness, and insomnia, according to other research. Studies have also shown that people with insomnia can get better-quality sleep when they engage in moderate-intensity exercise. It was shown that individuals suffering from insomnia who engaged in thirty minutes of physical activity three times a week for eight weeks had better-quality sleep. Additionally, those with insomnia benefit from moderate-intensity aerobic exercise in terms of sleep quality.<sup>6</sup>

## METHODS

### Protocol

The author of this study ensured that it complied with the standards by adhering to Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 guidelines. This is done to guarantee the accuracy of the results that are derived from the investigation. Thus, the specialists were able to guarantee that the research was as current as feasible. Publications released between 2014 and 2024 were considered for this search strategy. This was accomplished by utilizing a number of distinct online reference sites, including Pubmed, ScienceDirect, and SagePub. It was determined that reviews, previously published works, and partially completed works would not be included.

### Criteria for Eligibility

In order to complete this literature evaluation, we looked at published research that discusses the effect of yoga on sleep quality and insomnia in women with sleep problem. This is done to enhance the patient's therapy management and to offer an explanation. This paper's primary goal is to demonstrate the applicability of the issues that have been noted overall.

To be eligible to participate in the study, researchers had to meet the following requirements: 1) English must be used to write the paper. The manuscript must fulfill both of these conditions in order to be considered for publication. 2) A few of the examined studies were released after 2013 but prior to the time frame considered relevant by this systematic review. Editorials, submissions without a DOI, already published review articles, and entries that are nearly exact replicas of journal papers that have already been published are a few examples of research that are prohibited.

### Search Strategy

We used "yoga", "insomnia" and "women" out using the PubMed and SAGEPUB databases by inputting the words: (("yoga"[MeSH Terms] OR "yoga"[All Fields]) AND ("insomnia s"[All Fields] OR "sleep initiation and maintenance disorders"[MeSH Terms] OR ("sleep"[All Fields] AND "initiation"[All Fields] AND "maintenance"[All Fields] AND "disorders"[All Fields]) OR "sleep initiation and maintenance disorders"[All Fields] OR "insomnia"[All Fields] OR "insomnias"[All Fields]) AND ("sleep"[MeSH Terms] OR "sleep"[All Fields] OR "sleeping"[All Fields] OR "sleeps"[All Fields] OR "sleep s"[All Fields]) AND ("womans"[All Fields] OR "women"[MeSH Terms] OR "women"[All Fields] OR "woman"[All Fields] OR "women s"[All Fields] OR "womens"[All Fields])) AND ((clinicalstudy[Filter]) AND (2014:2024[pdat])) used in searching the literature.

### Data retrieval

After reading the abstract and the title of each study, the writers performed an examination to determine whether or not the study satisfied the inclusion criteria. The writers then decided which previous research they wanted to utilise as sources

for their article and selected those studies. After looking at a number of different research, which all seemed to point to the same trend, this conclusion was drawn. All submissions need to be written in English and can't have been seen anywhere else.

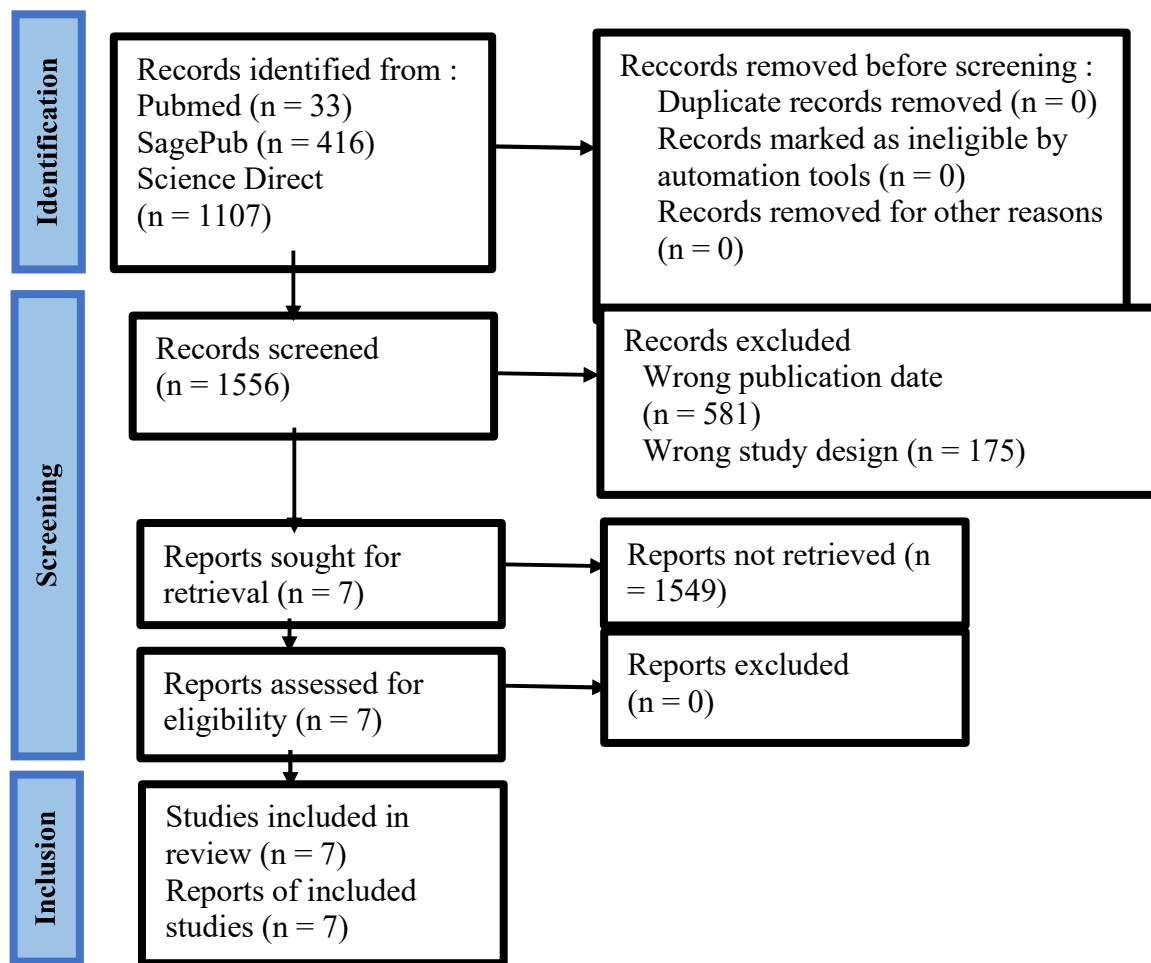


Figure 1. Prisma Flow Diagram

Only those papers that were able to satisfy all of the inclusion criteria were taken into consideration for the systematic review. This reduces the number of results to only those that are pertinent to the search. We do not take into consideration the conclusions of any study that does not satisfy our requirements. After this, the findings of the research will be analysed in great detail. The following pieces of information were uncovered as a result of the inquiry that was carried out for the purpose of this study: names, authors, publication dates, location, study activities, and parameters.

**Quality Assessment and Data Synthesis**

Each author did their own study on the research that was included in the publication's title and abstract before making a decision about which publications to explore further. The next step will be to evaluate all of the articles that are suitable for inclusion in the review because they match the criteria set forth for that purpose in the review. After that, we'll determine which articles to include in the review depending on the findings that we've uncovered. This criteria is utilised in the process of selecting papers for further assessment. In order to simplify the process as much as feasible when selecting papers to evaluate. Which earlier investigations were carried out, and what elements of those studies made it appropriate to include them in the review, are being discussed here.

**RESULT**

In the PubMed database, the results of our search brought up 33 articles, whereas the results of our search on SAGEPUB brought up 416 articles, our search on SCIENCE DIRECT brought up 1107 articles. The results of the search conducted for the last year of 2014 yielded a total 26 articles for PubMed, 265 articles for SAGEPUB and 684 articles for SCIENCE DIRECT. In the end, we compiled a total of 7 papers, 4 of which came from PubMed, 1 of which came from SAGEPUB and 2 of which came from SCIENCE DIRECT. We included seven research that met the criteria.

Buchanan, et al<sup>7</sup> (2017) showed that with the possible exception of maybe better sleep stability with yoga in women with low self-reported sleep quality, the treatments had no statistically significant benefits on actigraph measurements, despite minor effects on self-reported sleep quality having previously been documented.

Khalsa, et al<sup>8</sup> (2021) showed that at the 6-month follow-up, yoga, taught within a self-care framework with little teacher load, was linked to self-reported gains that went above and beyond an active comparison of sleep hygiene. Additional research is required to evaluate the results of actigraphy and polysomnography, as well as potential processes of change.

Newton, et al<sup>9</sup> (2014) showed that yoga had no impact on VMS frequency or annoyance in this randomized controlled study. Yoga did, however, somewhat alleviate the symptoms of sleeplessness, another significant menopausal symptom for midlife women. When compared to regular activity, a 12-week yoga class plus at-home practice did not enhance the frequency or annoyance of VMS in healthy women, but it did lower the symptoms of sleeplessness.

Basavegowda, et al<sup>10</sup> (2023) showed that during the COVID-19 epidemic, workplace yoga intervention seems to be a viable strategy to improve QoL and reduce sleeplessness among female nurses and healthcare professionals. Adopting customized yoga programs for the workplace may be quite beneficial in fostering the resilience and general well-being of healthcare personnel, which in turn can lead to a happier workplace and better patient outcomes.

**Table 1. The literature include in this study**

Author	Origin	Method	Sample	Result
Buchanan et al, 2017 <sup>7</sup>	USA	Randomized controlled trial	186 patients	The mean total sleep time (TST) for the entire sample was 407.5 ± 56.7 minutes, the mean wake after sleep onset (WASO) was 54.6 ± 21.8 minutes, the mean CV for WASO was 37.7 ± 18.7, and the mean CV for the frequency of protracted awakenings > 5 minutes was 81.5 ± 46.9. From the baseline to weeks 11–12, there were only minor changes in the actigraphic sleep outcomes, and there were no group differences. According to an exploratory study, TST-CV was substantially lower after yoga than after regular exercise for women whose baseline Pittsburgh Sleep Quality Index was higher than 8.
Khalsa et al, 2021 <sup>8</sup>	USA	Randomized controlled trial	157 patients	Numerous diary and questionnaire outcomes were improved by sleep hygiene; however, yoga produced significantly larger benefits, which corresponded to medium-to-large between-group effect sizes. While there were no changes in pre-sleep arousal (d = -0.30, P =.59), total sleep time rose gradually during the yoga therapy (d = 0.95, P =.002). Additionally, there were increases in sleep efficiency (d = 1.36, P <.001) and decreased sleep onset latency (d = -1.16, P <.001). When comparing yoga to sleep hygiene, remission rates were similarly higher; at the 6-month follow-up, more than

				80% of yoga participants reported an average sleep onset latency of less than 30 minutes and an average sleep efficiency of more than 80%. At the conclusion of therapy and throughout the follow-up, the insomnia severity index dropped by at least 8 points for more than 50% of yoga participants.
<b>Newton et al, 2014<sup>9</sup></b>	USA	Randomized controlled trial	249 patients	The 237 (95%) of the 249 randomized women finished the 12-week tests. In the yoga group, the mean baseline VMS frequency was 7.4/day (95% CI 6.6, 8.1), while in the normal exercise group, it was 8.0/day (95% CI 7.3, 8.7). Intent-to-treat analyses comprised all subjects (n = 237) for whose response data were available. The mean difference (yoga – usual activity) from baseline to 6 and 12 weeks was -0.3 (95% CI -1.1, 0.5) at 6 weeks and -0.3 (95% CI -1.2, 0.6) at 12 weeks (p=0.119 at both time periods), with no difference seen between the intervention groups in terms of change in VMS frequency. For VMS bother, the results were comparable. By week 12, the average difference between yoga and normal activities in terms of the Insomnia Severity Index was 1.3 (95% CI -2.5, -0.1)[p=0.007], suggesting that yoga was linked to a reduction in insomnia symptoms.
<b>Basavegowda et al, 2023<sup>10</sup></b>	India	Pre post interventional study	173 patients	The 57 people out of 173 were insomniacs. Higher QoL ratings were found in participants without considerable insomnia (P < 0.001). Both the subthreshold and moderate clinical insomnia groups reported a decrease in insomnia severity after the yoga intervention (P < 0.001). The physical, psychological, and environmental categories all showed substantial improvements in quality-of-life ratings (P < 0.05).
<b>Azward et al, 2021<sup>11</sup></b>	Indonesia	Randomized controlled study	60 patients	Results from statistical tests indicated that there were significant variations in the quality of sleep before and after the intervention in both

				the control group (p-value 0.001 < 0.05) and intervention group (p-value 0.001 < 0.05).
<b>Portella et al, 2021<sup>12</sup></b>	Brazil	Randomized controlled trial	47 patients	Both groups showed improvement over time in respect to the intensity of the insomnia symptom (M + SH p = 0.001) (SH p = 0.005). The KMI index significantly improved for the intervention group (p = 0.024). The PSQ overall score improved for the control group (p = 0.016). ANOVA two-way test results in a significant difference (0,026) in KMI between the groups, indicating that meditation may be useful in reducing climatic symptoms.
<b>Pasyar et al, 2019<sup>13</sup></b>	Iran	Randomized controlled trial	40 patients	Regarding role functioning of quality of life, there was a significant change between the groups four weeks after the intervention (P = 0.03). After eight weeks of the intervention, there was a substantial difference (P<0.05) in the groups' quality of life in terms of both physical and emotional functioning. Physical, role, emotional, and cognitive performance had all changed, and the intervention group's ratings on several measures—such as weariness, pain, sleeplessness, and financial difficulties—had decreased. On the fourth and eighth week following the intervention, there was no discernible difference in the amount of edema between the two groups (P > 0.05).

Azward, et al<sup>11</sup> (2021) showed that third-trimester pregnant women's sleep quality is improved by prenatal yoga workouts. Most pregnant women in their third trimester had poor quality sleep before receiving yoga exercises intervention. However, after receiving yoga exercises intervention four times, it was discovered that respondents found it easier to fall asleep due to complaints about their back pain and inability to breathe comfortably. This is because yoga exercises help to reduce pregnancy-related complaints by promoting relaxation and calmness in the body, mind, and soul. in order for the quality of each respondent's sleep to improve from inadequate to satisfactory.

Portella, et al<sup>12</sup> (2021) showed that working women's quality of life may be enhanced by Raja Yoga meditation, which may offer a non-pharmacological option for managing menopause-related symptoms and sleep quality throughout the late menopausal transition.

Pasyar, et al<sup>13</sup> (2019) showed that yoga exercise can be recommended as an intervention for women with lymphedema associated to breast cancer, as it has the potential to enhance physical, emotional, and role functioning of quality of life while also reducing pain, exhaustion, and sleeplessness.

**DISCUSSION**

With prevalence estimates ranging from 4% to over 20% of the adult population, insomnia is the most prevalent sleep complaint and a serious public health problem. Yoga is a complete system that combines a broad range of postures and

exercises, breathing exercises, relaxation methods, meditation, and mindfulness practices with the goal of attaining physical, psychological, and spiritual health and well-being. Yoga has also been utilized therapeutically (sometimes known as "yoga therapy") since it is thought that various styles of yoga might have distinct psychophysiological effects, and that these effects can be targeted to certain diseases. The study by Khalsa, et al in 157 women aged 25-59 year old with primary complaint of insomnia intervent with yoga with result that yoga associated with improvements and beyond an active sleep hygiene comaprison.<sup>8</sup>

In a study of 186 late transition and postmenopausal women age 40-62 year old in study by Buchanan, et al, women asked to do 12 weeks of yoga, and the result showed there is small effects on sleep quality and potentially improved the sleep quality with yoga in women.<sup>7</sup> The study of efficacy of yoga also studied by Newton, et al in 249 women, that devided into 107 patients with yoga, 106 patients did exercise and 142 patients in usual activity. The result of this study showed that among the healthy women, 12 weeks of yoga improve the sleep quality by reduced insomnia symptoms.<sup>9</sup>

Research has indicated that several categories of people often have lower psychological well-being. These categories include women, nurses, front-line healthcare professionals, those employed in "hot spots" for disease outbreaks, people with less social support, and people with poorer self-efficacy. The study by Basavegowda, et al that included 173 participants, with 57 of them had insomnia showed the results that yoga programs can promote the well being and resilience of the workers, and improved outcomes of insomnia in workers.<sup>10</sup> Pasyar, et al in their study also showed that in 40 women with breast cancer related lymphedema, yoga might improve the quality of life of patients as reduce fatigue, pain and insomnia.<sup>13</sup>

Azward, et al did study to profe the effect of prenatal yoga on sleep quality in pregnant women. This study with 60 pregnant women with gestational age 28 weeks and devided into 2 groups of control and the one who given prenatal yoga 4 times in 2 weeks. The result showed that yoga in pregnant women showed the increased of sleep quality.<sup>11</sup> Portella, et al in their study also showed that in 47 women between 40 and 55 year old worker, yoga may be a non pharmacological alternative for sleep quality and improve the working women's quality of life.<sup>12</sup>

## CONCLUSION

In summary, when compared to non-active control settings, yoga intervention can help women manage their sleep issues in either pregnant women, worker, or women with disease.

## REFERENCE

- [1] Bankar MA, Chaudhari SK, Chaudhari KD. Impact of long term Yoga practice on sleep quality and quality of life in the elderly. *J Ayurveda Integr Med.* 2013;4(1):28–32.
- [2] Kline CE. The Bidirectional Relationship Between Exercise and Sleep: Implications for Exercise Adherence and Sleep Improvement. *Am J Lifestyle Med.* 2014 Nov 26;8(6):375–9.
- [3] Štefan L, Sporiš G, Kristievic T, Knjaz D. Associations between sleep quality and its domains and insufficient physical activity in a large sample of Croatian young adults: A cross-sectional study. *BMJ Open.* 2018 Jul 1;8(7).
- [4] Levenson JC, Kay DB, Buysse DJ. The pathophysiology of insomnia. *Chest.* 2015 Apr 1;147(4):1179–92.
- [5] Wunsch K, Kasten N, Fuchs R. The effect of physical activity on sleep quality, well-being, and affect in academic stress periods. *Nat Sci Sleep.* 2017;9:117–26.
- [6] Kruk J, Aboul-Enein BH, Duchnik E. Exercise-induced oxidative stress and melatonin supplementation: current evidence. Vol. 71, *Journal of Physiological Sciences.* BioMed Central Ltd; 2021.
- [7] Buchanan DT, Landis CA, Hohensee C, Guthrie KA, Otte JL, Paudel M, et al. Effects of Yoga and Aerobic Exercise on Actigraphic Sleep Parameters in Menopausal Women with Hot Flashes. *J Clin Sleep Med.* 2017;13(1):11–8.
- [8] Khalsa SBS, Goldstein MR. Treatment of chronic primary sleep onset insomnia with kundalini yoga: A randomized controlled trial with active sleep hygiene comparison. Vol. 17, *Journal of Clinical Sleep Medicine.* American Academy of Sleep Medicine; 2021. p. 1841–52.
- [9] Newton KM, Reed SD, Guthrie KA, Sherman KJ, Booth-Laforce C, Caan B, et al. Efficacy of yoga for vasomotor symptoms: A randomized controlled trial. *Menopause.* 2014;21(4):339–46.
- [10] Basavegowda M, Umeshchandra SM, Duraisamy P, Thimmulappa RK, Manivasaga MS, Mallaiah C, et al. The effect of yoga on insomnia and quality of life among nursing professionals during COVID-19: A pre-post-test interventional study. *Indian J Psychiatry.* 2023 Nov 1;65(11):1143–50.
- [11] Azward H, Ramadhany S, Pelupessy N, Usman AN, Bara FT. Prenatal yoga exercise improves sleep quality in the third trimester of pregnant women. *Gac Sanit.* 2021 Jan 1;35:S258–62.
- [12] Portella CFS, Sorpreso ICE, de Assis A, de Abreu LC. Meditation as an approach to lessen menopausal symptoms and insomnia in working women undergoing the menopausal transition period: A randomized controlled trial. *Adv Integr Med.* 2021;8(4):278–84.

- [13] Pasyar N, Tashnizi NB, Mansouri P, Tahmasebi S. Effect of yoga exercise on the quality of life and upper extremity volume among women with breast cancer related lymphedema: A pilot study. *European Journal of Oncology*. 2019;42:103–9.