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Tinjauan Pustaka

Pengaruh Intervensi Yoga Terhadap Kualitas Tidur pada Wanita Dewasa dengan Masalah Tidur: Sebuah Tinjauan Sistematis

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Abstrak

Pendahuluan: Masalah tidur merupakan keluhan kesehatan yang umum dan lebih sering dialami oleh wanita dewasa dibandingkan pria. Gangguan tidur pada wanita dipengaruhi oleh berbagai faktor biologis dan psikososial serta berdampak negatif terhadap kualitas hidup dan kesehatan secara keseluruhan. Yoga sebagai intervensi non-farmakologis semakin banyak digunakan untuk mengatasi masalah tidur. Oleh karena itu tinjauan pustaka ini bertujuan untuk mengevaluasi secara sistematis efektivitas yoga terhadap kualitas tidur dan keparahan insomnia pada wanita dewasa.

Metode: Penelitian ini merupakan tinjauan pustaka sistematis yang disusun berdasarkan pedoman PRISMA. Pencarian literatur dilakukan pada basis data *PubMed, Cochrane Library*, dan *ScienceDirect*. Studi yang disertakan meliputi uji klinis terkontrol untuk menilai intervensi yoga pada wanita dewasa dengan masalah tidur. Data diekstraksi dan disintesis secara naratif.

Pembahasan: Hasil tinjauan menunjukkan bahwa sebagian besar studi melaporkan perbaikan kualitas tidur secara subjektif setelah dilakukan intervensi yoga terutama pada wanita dengan kualitas tidur awal yang buruk. Namun temuan terkait parameter tidur secara objektif menunjukkan hasil yang tidak konsisten. Variasi jenis yoga, durasi, intervensi, dan karakteristik populasi berkontribusi terhadap heterogenitas hasil.

Simpulan: Yoga berpotensi menjadi pendekatan non-farmakologis yang aman dan layak untuk meningkatkan kualitas tidur subjektif pada wanita dewasa. Penelitian lanjutan dengan desain yang lebih terstandar dan pengukuran tidur secara objektif masih diperlukan.

Kata Kunci: kualitas tidur; wanita dewasa; yoga; insomnia

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Effects of Yoga Interventions on Sleep Quality Among Adult Women with Sleep Problems: A Systematic Review

Abstract

***Introduction**: Sleep problems are common health complaints and occur more frequently in adult women than in men. These disturbances are influenced by biological and psychosocial factors and negatively affect quality of life and overall health. Yoga has emerged as a non-pharmacological approach for managing sleep problems. This systematic review aimed to evaluate the effectiveness of yoga in improving sleep quality and reducing insomnia in severity among adult women.*

***Method**: This study was conducted as a systematic literature review following PRISMA guidelines. Literature searches were performed in PubMed, Cochrane Library, and ScienceDirect. Included studies consisted of controlled clinical trials to assessing yoga interventions in adult women with sleep problems. Data were extracted and synthesized narratively.*

***Discussion**: The reviewed studies generally reported improvements in subjective sleep quality following yoga interventions particularly among women with poor baseline sleep quality. In contrast findings related to objective sleep parameters were inconsistent. Differences in yoga styles, intervention, duration, and study populations contributed to variability in outcomes.*

***Conclusion**: Yoga may serve as a safe and feasible non-pharmacological intervention to improve subjective sleep quality in adult women. Further high-quality studies with standardized protocols and objective sleep assessments are required to strengthen the evidence.*

Keywords: sleep quality; adult women; yoga; insomnia

1. INTRODUCTION

Sleep problems represent one of the most common health complaints worldwide and are closely associated with reduced work performance impaired daytime functioning and increased healthcare costs. Evidence consistently shows that sleep disturbances affect women more frequently than men with insomnia reported to be approximately 1.41 times more prevalent among women.[1] This increased vulnerability is particularly evident at specific stages of the female life course including adolescence pregnancy the postpartum period and menopause.[2,3] Hormonal fluctuations involving follicle stimulating hormone luteinizing hormone and progesterone are believed to play an important role in shaping sleep patterns during these periods.[4–6]

Despite the availability of multiple behavioral psychological and pharmacological approaches for managing insomnia with level of effectiveness differs widely across individuals. Cognitive behavioral therapy has demonstrated strong evidence of efficacy and that is recommended as a first line treatment in many guidelines.[7,8] However limited availability trained providers and accessibility barriers restrict its widespread use.[9] Consequently, pharmacological therapy remains the most commonly used treatment option despite well documented side effects including daytime drowsiness, cognitive impairment, tolerance dependence, and reduced long term effectiveness.[10]

Yoga has gained increasing attention as a complementary mind body intervention in both Eastern and Western contexts.[11,12] Yoga represents an ancient mind body discipline integrates by movement breathing techniques and meditation to improve holistic health. [13–15] Multiple styles of yoga exist including Hatha Iyengar and Tibetan yoga each emphasizing different components such as posture breathing or mindfulness. In Western practice yoga commonly incorporates asana, pranayama, and dhyana as its core elements.[16–20] Clinical trials have suggested that yoga is safe and may improve sleep quality alongside reductions in fatigue and depressive symptoms particularly among women with chronic conditions such as breast cancer.[21] As a mindful form of physical activity yoga may influence sleep by reducing hyperarousal regulating stress related autonomic responses and increasing melatonin secretion.[22]

Sleep quality itself is a multidimensional concept that is challenging to define and measure objectively. Sleep quality as a phenomenon encompassing multiple subjective and physiological components.[23,24] High quality sleep has been linked to better overall health improved psychological functioning and reduced daytime sleepiness.[25] More recent definitions emphasize satisfaction with the sleep experience including sleep initiation, maintenance duration, and feeling refreshed upon awakening.[26] According to the National Sleep Foundation good sleep quality includes quick sleep initiation limited awakenings and high efficiency though other features lack consensus.[27] Poor sleep quality is a defining feature of chronic insomnia and is associated with substantial health burden.[26]

Existing studies have focused on the use of yoga among particular female populations including prenatal depression and primary dysmenorrhea case evidence regarding the effectiveness of yoga for improving sleep quality and insomnia among adult women remains fragmented and

inconsistent. [28] Variations in study populations yoga styles and sleep outcome measures have contributed to mixed findings. Therefore, the aim of this systematic review is to comprehensively evaluate and synthesize available evidence on the efficacy and safety of yoga interventions for improving sleep quality and reducing insomnia severity in adult women.

2. MATERIAL and METHODS

Protocol

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines[29] and followed the methodological recommendations of the Cochrane Collaboration. [30] The review protocol was designed prior to study selection to ensure transparency consistency and methodological rigor throughout the review process.

Search Strategy

A systematic literature search was performed using the PubMed, Cochrane Library, and ScienceDirect databases. The search strategy combined keywords and Medical Subject Headings related to (“yoga” OR “yoga intervention” OR “yogic practice”) AND (“sleep quality” OR “sleep disturbance” OR “insomnia”) AND (“women” OR “adult women” OR “female”). Boolean operators were applied to integrate search terms appropriately and search syntax was adapted to meet the requirements of each database. Manual reference screening was performed and only English peer reviewed studies were considered. The search covered studies published between 2016 to 2026.

Selection Criteria

Participants

The population included adult women aged 18 years and older experiencing sleep problems. This encompassed women with self-reported sleep disturbances clinically diagnosed insomnia or poor sleep quality measured using validated instruments. Study populations included both healthy women and women with specific clinical conditions. Participants were recruited from diverse geographical regions and clinical or community settings.

Intervention

The intervention consisted exclusively of yoga programs delivered as a non-pharmacological approach to improve sleep outcomes. Yoga interventions included structured sessions incorporating physical postures breathing techniques relaxation and meditation. Various yoga styles were accepted. The frequency and duration of interventions varied across studies ranging from one to five sessions per week with session lengths between 45 to 120

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minutes and intervention durations from one to twenty-four weeks.

Comparison

Comparator groups received no active yoga intervention. These included usual care waitlist control standard daily activities health education stretching or social support programs. Comparators were selected to evaluate the effect of yoga beyond non yoga based or non-active interventions.

Outcomes

The primary outcomes were sleeping quality and insomnia severity. Sleep quality was assessed using subjective instruments such as the Pittsburgh Sleep Quality Index and objective measures including actigraphy or polysomnography where available. Insomnia severity was measured using validated tools such as the Insomnia Severity Index.

Screening and Reviewing Study

Eligible studies were restricted to systematic reviews randomized controlled trials and controlled experimental studies that evaluated yoga interventions with clearly defined comparison groups. Observational studies case reports cross sectional studies and non-comparative designs were excluded. After completion of the database search duplicate records were identified and removed using Mendeley Reference Manager software. An independent screening of titles and abstracts was conducted by five reviewers after which eligible full text articles were evaluated. Disagreements during the selection process were resolved through discussion and consultation with a second reviewer.

Data Extraction

Data extraction was performed independently by two reviewers using a standardized data extraction form. Extracted information included first author and year of publication country study design sample size participant characteristics type of yoga intervention frequency and duration of sessions sleep outcome measures and reported findings. Each study was assessed for relevance based on research objectives methodological quality and population characteristics. Any discrepancies in data extraction were resolved through discussion or consultation with an additional reviewer to reach consensus

3. RESULT and DISSCUSION

Result of Research

The study selection process is shown in the PRISMA flow diagram. The database search identified a total of 1,310 records from PubMed (n = 93), ScienceDirect (n = 1,021), and the Cochrane Library (n = 196). Before screening, 597 duplicate records were removed. An additional 142 records were

excluded for other reasons. As a result, 571 records were included for title and abstract screening. During the screening stage, 283 records were excluded because they were not relevant to the aims of this review. A total of 288 articles were then selected for full-text retrieval. However, 231 articles could not be retrieved. The remaining 57 full-text articles were assessed for eligibility. After full-text evaluation, 49 articles were excluded for specific reasons. These included lack of relevant yoga intervention, absence of sleep-related outcomes, non-research publication formats, unavailable full texts, abstract-only publications, and non-English language articles. Finally, 8 studies met all inclusion criteria and were included in the qualitative synthesis of this systematic review.

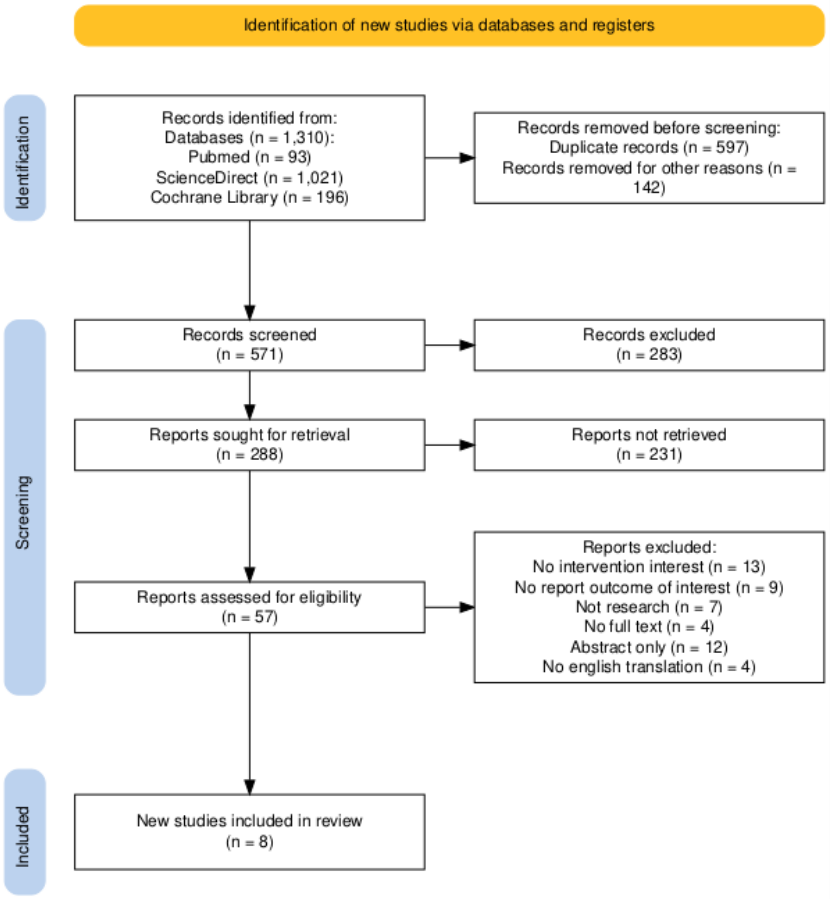

Fig 1. Prisma flow diagram.[31]

Result of Study Characteristic

The eight studies included in this systematic review were published between 2016 until 2020 and were conducted in the United States, Iran, India, and Taiwan using predominantly randomized controlled trial designs. The study populations consisted of adult women aged 18 years and older with sleep problems including menopausal symptoms, breast cancer, type 2 diabetes,

occupational stress, and general sleep disturbances. Sample sizes ranged from 33 to 227 participants in individual trials including 1,832 women. Yoga interventions varied in style, delivery, and included Viniyoga, Tibetan yoga, restorative yoga, mindful yoga, Mind Sound Resonance Technique, and integrated yoga programs combining physical postures, breathing, relaxation, and meditation. Intervention frequency ranged from one to five sessions per week with session durations between 30 until 120 minutes and intervention periods lasting from four to twelve weeks or longer. Sleep outcomes were mainly assessed using validated subjective instruments such as the Pittsburgh Sleep Quality Index and the Insomnia Severity Index with several studies also using objective measures including actigraphy and polysomnography. Comparator groups received usual care waitlist control stretching or non-yoga supportive programs.

Table 1. Characteristic of studies

Author/Year	Country	Study Design	Sample size/Age	Specific type of yoga	Yoga exercises frequency /week	Sleep outcome measures	Finding
Buchanan et al., 2017.[32]	United States	Randomized Controlled Trial	186 women in age 40 –62 years with late menopausal transition and post menopause	Viniyoga including restorative poses, inverted poses, twists, lateral and forward bends, and Yoga Nidra	One supervised class/week (90 minutes) for 12 weeks plus daily home practice 20 minutes on non-class days	Actigraphy measures with Total Sleep Time (TST), Wake After Sleep Onset (WASO), sleep onset latency, sleep efficiency, number of long awakenings (>5 min), and sleep variability (CV). Self-reported sleep assessed	No significant differences were observed in objective actigraphy sleep parameters between the yoga and usual activity groups. Exploratory analysis identified a significant reduction in night-to-night with total sleep time variability among women with baseline PSQI scores above 8 following the yoga intervention

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						using PSQI and ISI	
Chaoul et al. 2018.[33]	United States	Randomized controlled trial	227 women with breast cancer undergoing chemotherapy age ≥18 years	Tibetan Yoga Program including breathing, practices meditation, Tsa Lung movements, and compassion-based meditation	Four supervised sessions during chemotherapy plus encouraged home practice with optional booster sessions during follow up	Pittsburgh Sleep Quality Index daily disturbances sleep efficiency perceived sleep quality actigraphy measures including total sleep time wake after sleep onset sleep latency	No significant group differences were observed in total sleep disturbance scores across time. The Tibetan yoga group reported fewer daily sleep disturbances one week after treatment compared with stretching and usual care groups. Actigraphy showed shorter wake after sleep onset in the Tibetan yoga group compared with the stretching group at one week. No significant differences were observed for total sleep time or sleep latency across groups
Ebrahimi et al. 2017.[34]	Iran	Randomized controlled trial	39 women with type 2 diabetes mean age approximately 47 years	Integrated yoga program including asana, pranayama, surya namaskar, relaxation, and yoga nidra	Three supervised sessions per week for 12 weeks	Pittsburgh Sleep Quality Index including sleep quality latency duration efficiency disturbances medication use and	Significant improvement in overall sleep quality scores was observed after six and twelve weeks of yoga intervention. Aerobic exercise showed significant improvement after

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						daytime dysfunction	six weeks but not after twelve weeks. No significant changes were observed in the control group
Porter et al. 2019.[35]	United States	Randomized pilot-controlled trial	63 women with metastatic breast cancer mean age approximately 57 years	Mindful Yoga based on Kripalu Hatha yoga including gentle postures, breathing, meditation, and group discussion	Eight weekly group sessions each lasting 120 minutes with encouraged daily home practice	Pittsburgh Sleep Quality Index assessed at baseline post intervention and at 3 and 6 months follow up	Mean PSQI scores showed little change over time in both yoga and support group conditions. Sleep quality levels remained low at baseline and across follow up assessments. No clinically meaningful differences were observed between groups for sleep quality outcomes
Rao et al. 2017.[36]	India	Randomized controlled trial	60 female teachers aged 30 - 55 years	Mind Sound Resonance Technique as a mindfulness based yogic relaxation practice	Thirty minutes per day five days per week for one month	Pittsburgh Sleep Quality Index	The MSRT group showed significant improvement in sleep quality scores after one month. The control group showed a significant decline in sleep quality. Between group analysis demonstrated significant differences in sleep quality outcomes.
Ratcliff et al.	United	Randomized	163 women with	Integrated yoga program	Up to three supervised sessions	Pittsburgh Sleep Quality Index	Baseline sleep disturbance moderated mental

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2016 .[37]	States	controlled trial	stage 0–III breast cancer mean age approximately 52 years	including postures, breathing, relaxation, and meditation	per week during six weeks of radiotherapy with encouraged home practice		health related quality of life outcomes. Women with higher baseline PSQI scores in the yoga group showed higher mental health scores at three and six months compared with waitlist or stretching groups. No significant group differences were observed among participants with low baseline sleep disturbance.
Taylor et al. 2017 .[38]	United States	Randomized pilot-controlled trial	33 African American breast cancer survivors aged 33 to 64 years	Restorative yoga emphasizing supported postures, controlled breathing, meditation, and deep relaxation	One supervised session per week for eight weeks each session lasting 75 minutes	Insomnia Severity Index	No significant group differences were observed in insomnia severity scores between the yoga and waitlist control groups at follow up. Both groups showed similar changes in sleep quality from baseline to eight weeks.
Wang et al. 2020 .[39]	Taiwan	Randomized controlled trials	19 RCTs involving 1832 women aged ≥18 years with sleep	Various yoga styles including Hatha, Iyengar, Tibetan, Restorative Viniyoga, and integrated	One to five sessions per week with session duration ranging from 45 to 120 minutes	Pittsburgh Sleep Quality Index Insomnia Severity Index actigraphy polysomnography adverse	Meta analysis showed significant improvement in sleep outcomes measured by PSQI across 16 RCTs. No significant effects were observed for insomnia severity

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			problems	yoga programs	across studies	event reporting	measured by ISI in three RCTs. No significant improvements were found in sleep efficiency or total sleep time measured by actigraphy. No serious adverse events were reported.

This systematic review integrates findings from several studies examining the effects of yoga on sleep quality.[32–39] Overall, most studies agree that yoga is associated with improvements in subjective sleep quality, particularly when assessed using the Pittsburgh Sleep Quality Index.[32–37,39] Positive findings were commonly reported in studies involving women with poor baseline sleep quality, such as menopausal women and working populations. For example, improvements in perceived sleep quality were observed in menopausal women following yoga interventions[32] and among female teachers practicing mindfulness-based yogic relaxation.[36] These findings are supported by evidence demonstrating a significant overall improvement in PSQI scores across randomized controlled trials.[39]

In contrast, studies conducted among women with breast cancer showed more heterogeneous results. Several trials reported no significant differences between yoga and control groups for overall sleep quality or insomnia severity.[35,38] However, some studies identified improvements in specific sleep-related parameters, such as reduced wake after sleep onset or fewer daily sleep disturbances, without changes in total sleep time or sleep latency.[33] These mixed findings may be explained by the complex clinical context of cancer populations, where treatment-related symptoms, fatigue, pain, and psychological distress can substantially influence sleep and potentially limit the observable effects of yoga interventions.

A consistent pattern across studies was the discrepancy between sleep outcomes. Trials that included actigraphy or polysomnography often reported minimal or no changes in total sleep time or sleep efficiency despite improvements in self-reported sleep quality.[32,33] These findings suggest that yoga may primarily influence psychological and perceptual dimensions of sleep rather than physiological sleep architecture.

Differences in yoga style and intervention characteristics further help explain agreement and disagreement among studies. Interventions emphasizing relaxation, breathing techniques, and meditation, such as restorative yoga, Tibetan yoga, and Mind Sound Resonance Technique were more frequently associated with improvements in sleep quality.[33,36] In contrast, programs with a stronger focus on physical postures or shorter intervention durations tended to show weaker or nonsignificant effects.[35,38] This suggests that components targeting autonomic regulation and mental relaxation may be particularly relevant for sleep improvement.

Taken together, the evidence shows partial agreement across studies regarding the benefits of yoga for improving subjective sleep quality among adult women, while also highlighting important differences related to population characteristics, baseline sleep status, intervention content, and outcome measurement. Agreement is strongest among non-clinical populations and studies using subjective sleep measures. Inconsistent findings are more common in clinical populations and when objective sleep parameters are assessed. These relationships underscore the importance of contextual and methodological factors when interpreting the effects of yoga on sleep quality.

4. CONCLUSION

This systematic review indicates that yoga interventions are associated with improvements in sleep quality among adult women with sleep problems particularly among those with poorer baseline sleep quality. The findings are limited by heterogeneity in study populations yoga styles intervention duration and outcome measures as well as small sample sizes in several trials. Future research should focus on well-designed randomized controlled trials with standardized yoga protocols, larger samples, longer follow up periods, and the combined use of subjective and objective sleep assessments to clarify the effectiveness of yoga for improving sleep in women.

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