

Original Article

The effect of benson relaxation therapy on sleep quality among perimenopausal women: A pre-experimental study

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Abstract

Background: Sleep disturbances are commonly experienced by perimenopausal women due to hormonal fluctuations and psychosocial changes. Non-pharmacological interventions are increasingly recommended to manage sleep problems safely and effectively in this population. Benson relaxation therapy is a mind-body intervention that induces a relaxation response and has shown potential benefits for sleep regulation.

Objective: This study aimed to examine the effect of Benson relaxation therapy on sleep quality among perimenopausal women.

Methods: This study employed a quantitative pre-experimental design using a one-group pre-test and post-test approach. The study was conducted at Tulung Selapan Primary Health Center, Ogan Komering Ilir Regency, Indonesia, in November 2024. Participants were selected using purposive sampling based on inclusion criteria, including perimenopausal women aged 45–55 years who experienced sleep disturbances and were not using sleep-affecting medications. Benson relaxation therapy was administered for five consecutive days with a duration of 10 minutes per session. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). Data were analyzed using descriptive statistics and paired statistical tests.

Results: The results demonstrated an improvement in sleep quality following Benson relaxation therapy. The proportion of participants with good sleep quality increased, while no participants remained in the poor sleep quality category after the intervention. The mean sleep quality score decreased from pre-test to post-test, indicating improved sleep quality, and the difference was statistically significant ($p < 0.05$).

Conclusion: Benson relaxation therapy was effective in improving sleep quality among perimenopausal women. The intervention offers a simple, safe, and feasible non-pharmacological approach for managing sleep disturbances during the perimenopausal period.

Background

Perimenopausal women experience substantial hormonal fluctuations that significantly disrupt sleep quality and increase vulnerability to insomnia and psychological distress during midlife transitions (Santos et al., 2021; Shea et al., 2021; Zhang et al., 2025). Sleep disturbances in perimenopausal women negatively affect daily functioning, emotional regulation, and quality of life through complex neuroendocrine and psychosocial mechanisms (Kalmbach et al., 2019; Lin et al., 2022; Yang et al., 2022). Clinical and epidemiological studies consistently report a strong association between menopausal symptoms, vasomotor instability, anxiety, and impaired sleep patterns in this population (Aksu & Erenel, 2022; Koçak & Varişoğlu, 2022; Santos et al., 2021). Unmanaged sleep impairment during perimenopause further exacerbates somatic symptoms and increases the risk of chronic health conditions requiring non-pharmacological interventions (Shea et al.,

2021; Kang et al., 2021; Huang et al., 2020). Therefore, addressing sleep quality among perimenopausal women represents a critical priority in women's health (Kim & Kim, 2020; Koloski et al., 2020).

Building upon this concern, non-pharmacological mind-body interventions have gained increasing attention for improving sleep quality without medication-related adverse effects (Yona & Dahlia, 2020; Inoue et al., 2021). Progressive muscle relaxation demonstrates consistent effectiveness in reducing physiological arousal and improving sleep outcomes across diverse populations with chronic conditions (Amanda, 2019; Shirzadi et al., 2021; Indrayani et al., 2021). Complementary therapies integrating relaxation techniques and structured education significantly improve insomnia and vasomotor symptoms among perimenopausal and menopausal women (Aksu & Erenel, 2022; Duman & Timur Taşhan, 2018; Sugijantoro et al.,

2022). Mind-body interventions such as music therapy, hypnosis, and mindfulness-based movement further enhance sleep quality through autonomic nervous system modulation (Elkins et al., 2021; Norman, 2020; Surya Direja et al., 2021). These findings highlight the relevance of integrative relaxation-based approaches for addressing sleep disturbances in women undergoing hormonal transitions (Lin et al., 2022; Yang et al., 2022).

Among relaxation-based interventions, Benson relaxation therapy emphasizes diaphragmatic breathing, mental focus, and parasympathetic activation to elicit a relaxation response (Ferdin et al., 2023; Indra Frana Jaya & Hajati, 2022). Clinical trials demonstrate that Benson relaxation therapy significantly improves sleep quality, cortisol regulation, and psychological well-being in patients with cardiovascular and metabolic conditions (Bagheri et al., 2021; Mulyani et al., 2021; Robles et al., 2020). Studies in perimenopausal women indicate that Benson relaxation therapy positively influences sleep quality and estrogen-related physiological responses when applied alone or combined with physical activity (Ismail et al., 2022; Malandish et al., 2020). Complementary interventions integrating relaxation and exercise further strengthen sleep regulation and symptom control through neuroendocrine adaptation mechanisms (Rane et al., 2021; Huang et al., 2020; Kim & Kim, 2020). These findings position Benson relaxation therapy as a promising intervention for sleep disturbances in hormonally vulnerable populations (Bagheri et al., 2021; Yona & Dahlia, 2020).

Despite growing evidence, most existing studies employ randomized controlled designs or multicomponent interventions that limit applicability in resource-limited clinical settings (Aksu & Erenel, 2022; Lin et al., 2022; Cox et al., 2021). Quasi-experimental and pre-experimental designs offer practical alternatives for evaluating intervention effectiveness in practice environments (Anggraini et al., 2022; Inoue et al., 2021). However, empirical evidence specifically examining the effect of Benson relaxation therapy on sleep quality among perimenopausal women using pre-experimental designs remains limited (Ismail et al., 2022; Sugijantoro et al., 2022).

This methodological gap restricts the translation of evidence into community-based interventions targeting perimenopausal sleep disturbances (Ferdin et al., 2023; Yona & Dahlia, 2020). Consequently, further research using pragmatic study designs is necessary to strengthen sleep interventions for perimenopausal women (Shea et al., 2021; Santos et al., 2021).

In addition, cultural adaptability and simplicity of relaxation interventions enhance adherence and feasibility in women-centered health programs (Taufiq & Apriyani, 2021; Norman, 2020). Interventions combining structured breathing and mental focus demonstrate high acceptability and minimal risk among women with diverse health backgrounds (Bagheri et al., 2021; Elkins et al., 2021). Benson relaxation therapy aligns with holistic care models emphasizing self-regulation and empowerment (Ferdin et al., 2023; Indra Frana Jaya & Hajati, 2022). Evidence from complementary therapy research underscores the importance of addressing sleep quality as a determinant of overall quality of life in women during menopausal transition (Santos et al., 2021; Koçak & Varişoğlu, 2022).

Thus, evaluating Benson relaxation therapy within a focused perimenopausal context remains a clinically and scientifically relevant endeavor (Ismail et al., 2022; Zhang et al., 2025).

Therefore, this study aims to examine the effect of Benson relaxation therapy on sleep quality among perimenopausal women using a pre-experimental study design.

Methods

Study Design

This study employed a quantitative research approach using a pre-experimental design with a one-group pre-test and post-test framework. The selected design was considered appropriate to evaluate the short-term effect of Benson relaxation therapy on sleep quality among perimenopausal women in a primary healthcare setting where randomization and control groups were not feasible. The one-group pre-test and post-test design enabled the measurement of changes in sleep quality before and after the intervention within the same participants, thereby allowing each participant

to serve as her own control. This design was chosen to minimize inter-individual variability and to provide preliminary empirical evidence regarding the effectiveness of the intervention. The study was conducted at Tulung Selapan Primary Health Center, Ogan Komering Ilir Regency, Indonesia, during November 2024, reflecting a real-world community healthcare context.

Sampling

The sampling technique used in this study was purposive sampling, which allowed the selection of participants based on predefined inclusion criteria aligned with the study objectives. The target population consisted of perimenopausal women registered at the primary health center who reported sleep disturbances. Inclusion criteria were women aged 45–55 years, currently in the perimenopausal phase, experiencing subjective sleep disturbances, willing to participate as respondents, and not consuming medications known to affect sleep patterns, particularly benzodiazepines and antihistamines. Exclusion criteria included women with diagnosed psychiatric disorders, severe chronic illnesses, cognitive impairment, or those undergoing other complementary sleep interventions during the study period. The purposive approach was justified to ensure that the selected participants had homogeneous characteristics relevant to the intervention and outcome, thereby enhancing the internal validity of the study.

Instruments

Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), a standardized self-report questionnaire widely used to assess sleep quality over a one-month period. The PSQI consists of 19 items grouped into seven components, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each component is scored on a scale ranging from 0 to 3, resulting in a global PSQI score ranging from 0 to 21, where higher scores indicate poorer sleep quality. The PSQI was selected due to its comprehensive

assessment of multiple dimensions of sleep and its suitability for use in community-based and clinical research. In this study, the instrument was administered in an interviewer-assisted format to ensure comprehension and consistency among participants.

Intervention

The intervention implemented in this study was Benson relaxation therapy, a structured mind-body relaxation technique designed to elicit a relaxation response through controlled breathing, muscle relaxation, and focused attention. The intervention was delivered over a period of five consecutive days, with each session lasting approximately 10 minutes. Participants were instructed to assume a comfortable sitting or lying position in a quiet environment, close their eyes, relax their muscles progressively, and perform slow diaphragmatic breathing while silently repeating a calming word or phrase. The intervention protocol was standardized and delivered by trained healthcare personnel to ensure consistency in implementation. The duration and frequency of the intervention were determined based on feasibility considerations within the primary healthcare setting and the objective of evaluating short-term effects on sleep quality. A post-test assessment was conducted on the sixth day following completion of the intervention.

Data Collection

Data collection was conducted in two phases: pre-intervention and post-intervention. Prior to the intervention, eligible participants were identified and provided with a detailed explanation of the study objectives, procedures, and potential benefits. After obtaining informed consent, baseline data were collected using a demographic questionnaire and the PSQI as the pre-test measure of sleep quality. The Benson relaxation intervention was then administered daily for five days. On the sixth day, the PSQI was re-administered as a post-test measure to assess changes in sleep quality following the intervention. All data collection procedures were carried out in a private and comfortable setting within the primary health center to

ensure participant privacy and reduce external disturbances that could influence responses.

Data Analysis

Data analysis was performed using statistical software. Descriptive statistics were used to summarize participants' demographic characteristics and baseline sleep quality scores. Normality of the PSQI score distribution was assessed to determine the appropriate inferential statistical test. To evaluate the effect of Benson relaxation therapy on sleep quality, a paired sample statistical test was employed to compare pre-test and post-test PSQI global scores. The level of statistical significance was set at $p < 0.05$. This analytical approach was selected to identify within-group differences attributable to the intervention and to determine the magnitude of change in sleep quality following the relaxation therapy.

Ethical Consideration

Ethical approval for this study was obtained from the relevant institutional ethics committee prior to data collection. Permission to conduct the study was also secured from the

management of Tulung Selapan Primary Health Center. All participants were informed about the voluntary nature of participation, their right to withdraw at any time without consequences, and the confidentiality of their data. Written informed consent was obtained from each participant before enrollment. Participant anonymity was maintained by assigning unique identification codes, and all collected data were used solely for research purposes. The study adhered to ethical principles of respect for persons, beneficence, and justice throughout the research process.

Results

This section presents the descriptive findings related to changes in sleep quality among perimenopausal women before and after the implementation of Benson relaxation therapy. Sleep quality was assessed using categorical classification derived from the Pittsburgh Sleep Quality Index (PSQI), comparing pretest and posttest conditions to illustrate the distributional changes following the intervention.

Table 1. Sleep Quality of Perimenopausal Women Before and After Benson Relaxation Therapy

Sleep quality	Pretest		Posttest	
	n	%	n	%
Good	4	13.3	12	40
Moderate	23	76.7	18	60
Poor	3	10	0	0
Total	30	100	30	100

Table 1 demonstrates a clear improvement in sleep quality among perimenopausal women following the administration of Benson relaxation therapy. Before the intervention, the majority of participants were classified as having moderate sleep quality (76.7%), while a smaller proportion experienced good sleep quality (13.3%) and poor sleep quality (10.0%). After the intervention, the proportion of women with good sleep quality increased substantially

to 40.0%, indicating a positive shift toward healthier sleep patterns. Concurrently, the proportion of participants with moderate sleep quality decreased to 60.0%, suggesting an overall improvement in sleep status. Notably, no participants remained in the poor sleep quality category after the intervention, reflecting the potential effectiveness of Benson relaxation therapy in alleviating sleep disturbances among perimenopausal women.

Table 2. Effect of Benson Relaxation Therapy on Sleep Quality Scores among Perimenopausal Women

Variables	Mean	Mean Difference	Mininum	Maximum	p-value
Before Intervention	1.97	0.37	1	3	0.012
After Intervention	1.60		1	2	

Table 2 shows a statistically significant improvement in sleep quality scores among perimenopausal women after receiving Benson relaxation therapy. The mean sleep quality score decreased from 1.97 before the intervention to 1.60 after the intervention, indicating an overall improvement in sleep quality. The observed mean difference of 0.37 reflects a meaningful reduction in sleep disturbance levels following the intervention. The minimum and maximum scores also demonstrated a narrower range after the intervention, suggesting more consistent sleep quality among participants. The statistical analysis revealed a p value of 0.012, which is below the predefined significance level of 0.05, confirming that the observed improvement in sleep quality was statistically significant

Discussion

This study demonstrated that Benson relaxation therapy significantly improved sleep quality among perimenopausal women, as indicated by the descriptive shift from poor and moderate sleep quality toward better sleep categories and by the statistically significant reduction in mean sleep quality scores after the intervention (Ismail et al., 2022; Bagheri et al., 2021). The findings showed that participants experienced a measurable improvement in sleep quality following five consecutive days of Benson relaxation therapy, reflecting positive changes in sleep patterns during the perimenopausal period (Aksu & Erenel, 2022; Sugijantoro et al., 2022). The absence of participants with poor sleep quality in the posttest assessment highlighted the potential effectiveness of this intervention in addressing sleep disturbances in this population (Santos et al., 2021; Shea et al., 2021). The statistically significant p value supported the conclusion that the observed improvement was not attributable to random variation (Yona & Dahlia, 2020; Lin et al., 2022). These results align with previous evidence indicating that relaxation-based interventions contribute to better sleep regulation during menopausal transitions (Koçak & Varişoğlu, 2022; Zhang et al., 2025). Therefore, the findings emphasize the relevance of Benson relaxation therapy as an effective non-pharmacological approach for improving sleep

quality among perimenopausal women (Yang et al., 2022; Elkins et al., 2021).

The improvement in sleep quality observed in this study can be explained by the physiological relaxation response elicited through Benson relaxation therapy, which activates parasympathetic nervous system pathways and reduces sympathetic arousal (Bagheri et al., 2021; Ferdi et al., 2023). The intervention facilitates slow diaphragmatic breathing and focused attention, which lower physiological tension and support sleep initiation and maintenance (Robles et al., 2020; Indra Frana Jaya & Hajati, 2022). Reduced autonomic hyperactivity directly contributes to shorter sleep latency and fewer nighttime awakenings among perimenopausal women (Duman & Timur Taşhan, 2018; Amanda, 2019). Hormonal fluctuations characteristic of perimenopause increase vulnerability to sleep disturbances, making relaxation-based interventions particularly beneficial for this group (Santos et al., 2021; Shea et al., 2021). The present findings are consistent with research demonstrating that mind-body interventions effectively counteract sleep problems associated with menopausal changes (Lin et al., 2022; Yang et al., 2022). Thus, the physiological mechanisms of Benson relaxation therapy provide a plausible explanation for the observed improvements in sleep quality (Ismail et al., 2022; Malandish et al., 2020).

In addition to physiological mechanisms, psychological pathways also contribute to improved sleep quality following Benson relaxation therapy, particularly through stress and anxiety reduction (Aksu & Erenel, 2022; Koçak & Varişoğlu, 2022). The intervention promotes mental calmness and emotional regulation, which alleviate psychological distress commonly experienced during perimenopause (Shirzadi et al., 2021; Santos et al., 2021). Psychological stress has been strongly associated with sleep disturbances during the menopausal transition, highlighting the importance of interventions targeting emotional stability (Shea et al., 2021; Kalmbach et al., 2019). The repetitive focus component of Benson relaxation therapy helps interrupt intrusive thoughts that interfere with sleep

onset (Elkins et al., 2021; Norman, 2020). Improved cognitive-emotional regulation supports sustained sleep improvements beyond immediate physiological relaxation effects (Yang et al., 2022; Inoue et al., 2021). Consequently, psychological benefits complement physiological effects in enhancing overall sleep quality (Yona & Dahlia, 2020; Ferdi et al., 2023).

The findings of this study are consistent with prior research demonstrating the effectiveness of relaxation and progressive muscle relaxation techniques in improving sleep quality across different populations (Amanda, 2019; Bagheri et al., 2021). Studies involving menopausal and perimenopausal women have reported similar improvements in sleep outcomes following structured relaxation-based interventions (Aksu & Erenel, 2022; Sugijantoro et al., 2022). Comparative research has also shown that mind-body therapies achieve outcomes comparable to other non-pharmacological sleep interventions, including sleep hygiene education and music-based approaches (Duman & Timur Taşhan, 2018; Koçak & Varişoğlu, 2022). The present study extends existing evidence by demonstrating that a short-duration Benson relaxation program can yield meaningful improvements in sleep quality within a community health context (Ferdı et al., 2023; Indra Frana Jaya & Hajati, 2022). The use of a pre-experimental design further supports the feasibility of implementing relaxation-based interventions in real-world settings (Anggraini et al., 2022; Inoue et al., 2021). Therefore, the results reinforce the growing body of evidence supporting relaxation therapy as an effective approach for managing sleep disturbances (Yang et al., 2022; Santos et al., 2021).

The reduction in variability of sleep quality scores after the intervention suggests increased consistency in sleep patterns among participants (Lin et al., 2022; Sugijantoro et al., 2022). This consistency indicates that Benson relaxation therapy may stabilize sleep architecture disrupted by hormonal and psychosocial changes during perimenopause (Ismail et al., 2022; Shea et al., 2021). Stabilized sleep patterns contribute to improved daytime functioning and overall quality of life in midlife

women (Kalmbach et al., 2019; Kang et al., 2021). Poor sleep quality has been linked to an increased risk of chronic health conditions, emphasizing the importance of early intervention during the perimenopausal period (Kim & Kim, 2020; Koloski et al., 2020). By improving sleep quality, relaxation-based interventions may indirectly support broader physical and psychological health outcomes (Malandish et al., 2020; Rane et al., 2021). Consequently, sleep-focused interventions represent an important preventive strategy in women's health care (Shea et al., 2021; Santos et al., 2021).

The simplicity and low-resource nature of Benson relaxation therapy enhance its applicability in community and primary care environments (Ferdı et al., 2023; Indra Frana Jaya & Hajati, 2022). The intervention requires minimal equipment and can be delivered with brief instruction, increasing its accessibility for wide implementation (Yona & Dahlia, 2020; Anggraini et al., 2022). Holistic care models emphasize self-regulation and patient empowerment, which align closely with the principles underlying Benson relaxation therapy (Inoue et al., 2021; Cox et al., 2021). Empowering perimenopausal women with practical relaxation skills may enhance adherence and long-term effectiveness of sleep improvement strategies (Lin et al., 2022; Yang et al., 2022). The findings of this study support the integration of relaxation therapy into routine health promotion programs targeting sleep quality (Ferdı et al., 2023; Santos et al., 2021). Thus, relaxation-based interventions offer a practical and evidence-informed option for addressing sleep disturbances in perimenopausal women (Shea et al., 2021; Yona & Dahlia, 2020).

Despite the positive findings, this study has limitations related to its pre-experimental design and absence of a control group, which may restrict causal inference (Anggraini et al., 2022; Inoue et al., 2021). The short duration of the intervention limits conclusions regarding the long-term sustainability of sleep quality improvements (Lin et al., 2022; Yang et al., 2022). Nevertheless, the statistically significant results provide preliminary evidence

supporting the effectiveness of Benson relaxation therapy in this population (Ismail et al., 2022; Bagheri et al., 2021). Future studies should employ randomized controlled designs to strengthen causal validity and generalizability (Aksu & Erenel, 2022; Shea et al., 2021). Longer follow-up periods are also needed to assess the durability of intervention effects on sleep quality (Kalmbach et al., 2019; Santos et al., 2021). Overall, this study contributes valuable evidence to the growing literature on non-pharmacological sleep interventions for perimenopausal women (Yang et al., 2022; Zhang et al., 2025).

Conclusion and Recommendation

This study concludes that Benson relaxation therapy effectively improves sleep quality among perimenopausal women, as indicated by improvements in sleep quality categories and a significant reduction in mean sleep quality scores following the intervention. The findings demonstrate that short-term implementation of Benson relaxation therapy produces meaningful changes in sleep patterns during the perimenopausal transition. Physiological relaxation responses and psychological stress reduction mechanisms appear to contribute to the observed improvements in sleep quality.

The intervention shows practical feasibility and acceptability within community health settings due to its simplicity and minimal resource requirements. Although the pre-experimental design limits causal inference, the results provide preliminary evidence supporting the effectiveness of Benson relaxation therapy as a non-pharmacological approach to managing sleep disturbances among perimenopausal women. Therefore, Benson relaxation therapy represents a promising intervention for improving sleep quality in perimenopausal populations and warrants further investigation using more rigorous research designs.

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Declaration of conflict of interest

The authors declare no competing interests.

Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

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