

ARTICLE INFORMATION

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Effectiveness of prenatal yoga in reducing low back pain among pregnant women: A systematic literature review

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Abstract

Background: Low back pain is one of the most common musculoskeletal complaints experienced during pregnancy, particularly in the second and third trimesters. Physiological and biomechanical changes during pregnancy may impair maternal mobility, daily activities, sleep quality, and overall well-being. Prenatal yoga has been increasingly recommended as a safe non-pharmacological intervention to alleviate pregnancy-related back pain; however, comprehensive evidence regarding its effectiveness remains necessary.

Purpose: To systematically identify, evaluate, and synthesize the available evidence regarding the effectiveness of prenatal yoga in reducing low back pain among pregnant women.

Method: This study employed a systematic literature review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Literature searches were conducted in PubMed, ScienceDirect, Google Scholar, and Garuda databases. Articles published between 2021 and 2025 in English or Indonesian were screened according to predefined inclusion and exclusion criteria. Studies involving pregnant women receiving prenatal yoga interventions with back pain as an outcome were included. Ten eligible studies consisting of randomized controlled trials, quasi-experimental studies, and systematic reviews were analyzed narratively.

Results: The findings consistently demonstrated that prenatal yoga effectively reduced the intensity of low back pain among pregnant women. The intervention improved muscle flexibility, posture, balance, and physical function while decreasing muscle tension. In addition to pain reduction, prenatal yoga contributed to better sleep quality, lower stress and anxiety levels, enhanced relaxation, and improved maternal quality of life during pregnancy.

Conclusion: Prenatal yoga is an effective, safe, and feasible complementary intervention for reducing low back pain during pregnancy, particularly in the second and third trimesters. Incorporating prenatal yoga into routine antenatal care may improve both physical and psychological well-being among pregnant women.

Keywords: Low Back Pain; Pregnancy; Pregnant Women; Prenatal Yoga; Systematic Literature Review.

INTRODUCTION

Pregnancy is a physiological process that causes various changes in the mother's body, including anatomical, physiological, and psychological changes. As the pregnancy progresses, particularly during the second and third trimesters, pregnant women often experience physical discomfort in the form of back pain. Back pain in pregnant women is generally caused by changes in body posture, weight gain, ligament stretching due to the effects of the

hormone relaxin, and a shift in the body's center of gravity toward the front (Rahmawati et al., 2021). Back pain during pregnancy is one of the most common complaints experienced by pregnant women and can interfere with daily activities, sleep quality, and the mother's quality of life. This complaint usually occurs in the lumbosacral region and intensifies as the pregnancy progresses. If not properly managed, back pain can lead to physical activity limitations,

mobility issues, and increased stress and anxiety in pregnant women (Holden et al., 2019).

One non-pharmacological approach that can be used to reduce back pain in pregnant women is prenatal yoga. Prenatal yoga is a form of physical exercise that combines stretching techniques, breathing control, relaxation, and meditation tailored to the condition of the pregnant woman. This practice helps improve muscle flexibility, correct body posture, reduce back muscle tension, and enhance comfort during pregnancy (Corrigan et al., 2022). Several studies indicate that prenatal yoga is effective in reducing the intensity of back pain in pregnant women.

Another studies states that prenatal yoga can help reduce lower back pain in pregnant women through stretching and muscle relaxation exercises (Rahmawati et al., 2021). Additionally, the results of a systematic review conducted indicate that prenatal yoga provides significant benefits in reducing back pain complaints during pregnancy (Mardiyana, 2023). Prenatal yoga also offers additional benefits, such as improved body balance, sleep quality, and psychological well-being for pregnant women. Safe and structured yoga movements help women relax, thereby reducing both physical and emotional tension during pregnancy (Ginting, 2024).

RESEARCH METHOD

This study employed a systematic literature review design to evaluate the effectiveness of prenatal yoga in reducing low back pain among pregnant women. The review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure a systematic, transparent, and reproducible article selection process.

A comprehensive literature search was performed using four electronic databases: PubMed, ScienceDirect, Google Scholar, and Garuda. The search was conducted using combinations of the keywords "prenatal yoga," "pregnant women," "pregnancy," "low back pain," "back pain," and "effectiveness," combined with Boolean operators (AND/OR). Articles published between 2021 and 2025 in English or Indonesian were considered for inclusion.

The inclusion criteria were: (1) original research articles or systematic reviews evaluating prenatal yoga interventions; (2) studies involving pregnant women, particularly during the second or third trimester; (3) studies reporting low back pain as the primary or secondary outcome; (4) full-text articles published in peer-reviewed journals; and (5) articles written in English or Indonesian. The exclusion criteria included conference abstracts, editorials, case reports, duplicate publications, review articles without a systematic methodology, and studies with incomplete outcome data.

The study selection process consisted of identification, screening, eligibility assessment, and final inclusion according to the PRISMA flow diagram. Titles and abstracts were screened initially, followed by full-text assessment of potentially eligible studies. Data extracted from each included study comprised the author, publication year, country, study design, sample characteristics, intervention, outcome measures, and principal findings related to prenatal yoga and low back pain. The findings from the selected studies were synthesized narratively to identify consistent evidence regarding the effectiveness of prenatal yoga in reducing low back pain among pregnant women.

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RESEARCH RESULTS

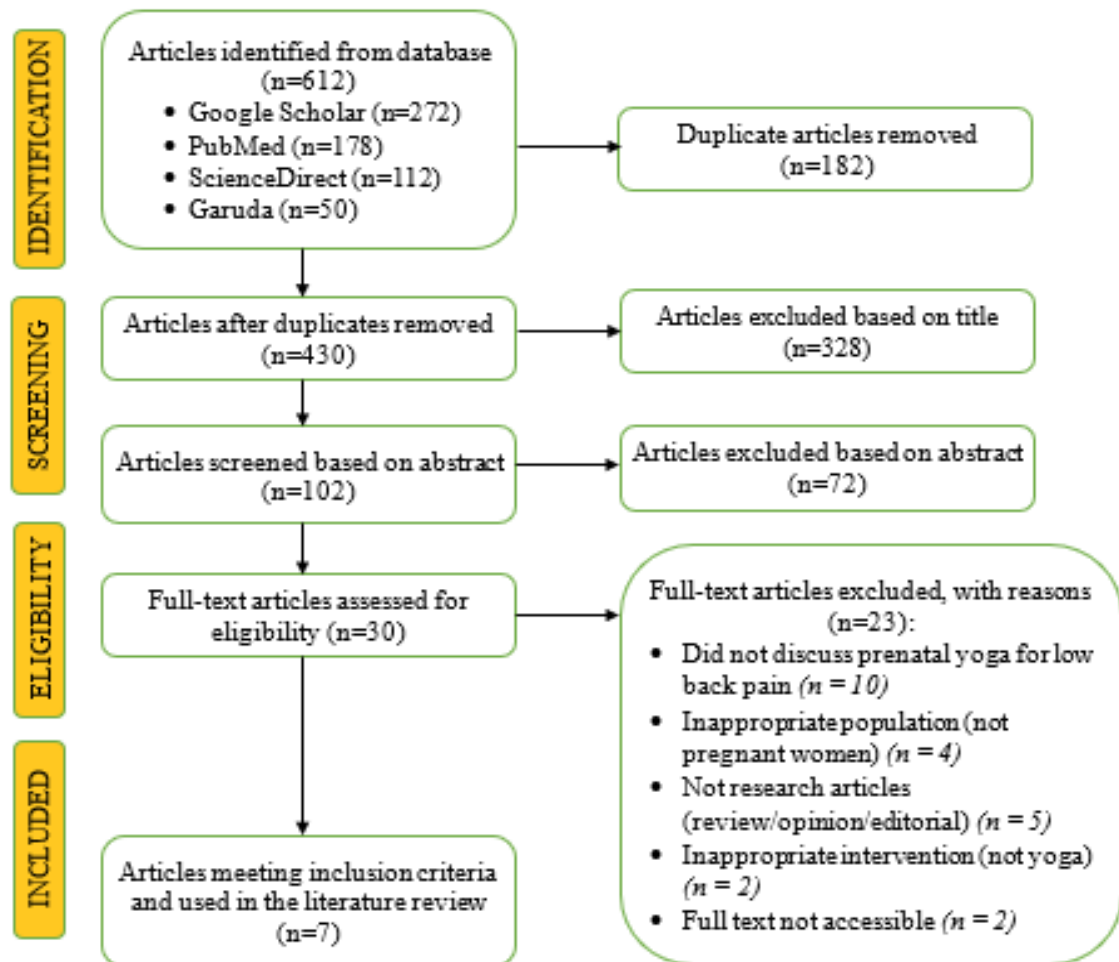


Figure 1. Study identification and inclusion process (PRISMA flow chart)

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Table Summary of Selected Articles

(Author, Year)(Country)	Purpose	Design & Method	Results
(Corrigan et al., 2022) (Ireland)	To examine the characteristics and effectiveness of pregnancy yoga interventions, incorporating the FITT principles (frequency, intensity, time/duration, and type) in exercise prescription.	Nine electronic databases were searched: MEDLINE, PsycINFO, EMBASE, CINAHL, WHOLiS, AMED, ScieLo, ASSIA and Web of Science. Randomised control trials and quasi-experimental studies examining pregnancy yoga interventions were eligible. Covidence was used to screen titles, abstracts, and full-text articles. Outcomes of interest were stress, anxiety, depression, quality of life, labour duration, pain management in labour and mode of birth. The Cochrane Collaboration's Risk of Bias Assessment tool was used to assess methodological quality of studies and GRADE criteria (GRADEpro) evaluated quality of the evidence. Meta-analysis was performed using RevMan 5.3.	Prenatal yoga significantly reduces back pain and improves mobility in pregnant women.
(Beddoe et al., 2021) (California)	To examine the feasibility and level of acceptability of a mindful yoga intervention provided during pregnancy and to gather preliminary data on the efficacy of the intervention in reducing distress.	Baseline and post-treatment measures examined state and trait anxiety, perceived stress, pain, and morning salivary cortisol in a single treatment group. Postintervention data also included participant evaluation of the intervention.	Yoga is effective in reducing back pain and improving sleep quality in pregnant women.
(Ginting et al., 2024) (Indonesia)	to examine the potential of prenatal yoga in reducing anxiety and back pain in pregnancy through a systematic literature review.	A systematic literature review method. The articles analyzed were articles published in international scientific journals and in English with the following inclusion criteria: Research conducted on pregnant women in the second or third trimester, Research	Prenatal yoga provides significant benefits in reducing back pain and anxiety in pregnant women.

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		using prenatal yoga as an intervention, Research using outcome measures for anxiety and/or pain back.	
(Holden et al., 2022) (USA)	to assess the feasibility of a prenatal yoga randomized controlled trial (RCT) for gestational low back pain (LBP), mobility, and maternal well-being.	In this pilot, women aged 18 to 39 years with uncomplicated pregnancies at 12 to 26 weeks were randomized, stratified by presence of LBP, to attend a weekly yoga class or a time-matched educational support group for 12 weeks. Sample size was based on anticipated enrollment of 2 subjects per month. Primary outcomes were measures of feasibility and acceptability. Secondary outcomes included LBP disability, pregnancy symptom burden, childbirth self-efficacy, instrumented gait, balance, and falls at baseline, every 4 weeks, and 6 weeks postpartum.	Prenatal yoga is recommended as a safe, non-pharmacological therapy for back pain in pregnant women.
(Mustofa et al., 2023) (Indonesia)	To determine the effectiveness of prenatal gentle yoga in reducing the intensity of back pain in pregnant women.	The research design was a quasi-experimental design with a non-equivalent control group. The population of this study was all pregnant women in their third trimester who experienced back pain at the Denik and Dotyk Independent Midwife Practice. The research sample consisted of 40 respondents selected using a random allocation technique. Respondents were divided into 2 groups, namely 20 people in the intervention group and 20 people in the control group. Pain measurement used a numeric rating scale (NRS). Data analysis used the Mann Whitney statistical test.	There is a difference so that statistically it can be concluded that prenatal gentle yoga can reduce the intensity of back pain in pregnant women ($p_1 = 0.208$; $p_2 = 0.000$; $p_3 = 0.027$; $p_4 = 0.000$). Prenatal gentle yoga is a movement that targets stiff, weak and untrained body parts so that there is an increase in mobility, strength and body posture which has an impact on reducing pain.

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(Sandy& Mariana, 2025) (Indonesia)	To determine the effectiveness of 3 Prenatal Yoga Poses to Reduce Back Pain in Pregnant Women in the Third Period	The pre-experimental design is a one-group pretest-posttest design where one group of subjects and observations were carried out before and after treatment. The population in this study were all pregnant women in the third trimester with sample criteria being pregnant women who had a gestational age of 28-40 weeks and without any complications during pregnancy as many as 20 people. Data analysis used normality tests, univariate analysis and bivariate analysis using the Wilcoxon test.	Prenatal yoga movements are effective in reducing back pain in pregnant women in the third trimester.
(Mardliyana., 2024) (Indonesia)	To determine the effectiveness and benefits of prenatal yoga or pregnancy exercises for back pain in pregnant women.	A systematic review. Research sources were obtained from searching scientific articles via the internet with the Google Scholar database from 2012-2023 using PICO" pregnant women and prenatal yoga and back pain," resulting in 1,500 pieces after identification, screening, and eligibility through inclusion and exclusion criteria. Five articles that fit the inclusion criteria.	The five journal articles discuss the benefits and effectiveness of complementary therapy, namely prenatal yoga or pregnancy yoga, to reduce the intensity of back pain experienced by pregnant women. One article compares the point of pregnancy exercise and pregnancy yoga, proving that pregnancy yoga is more effective in reducing back pain than pregnancy exercise.

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DISCUSSION

Lower back pain is one of the most common complaints experienced by pregnant women, especially in the third trimester. This condition occurs due to physiological and biomechanical changes during pregnancy, such as weight gain, changes in body center of gravity, hormonal changes, and increased lordosis of the lumbar spine, which puts pressure on the spine and pelvic muscles. Prenatal yoga is one of the evidence-based non-pharmacological interventions that can help reduce these symptoms through stretching, breathing techniques, relaxation, and meditation (Beddoe et al., 2009).

The results of the literature review indicate that prenatal yoga is not only effective in reducing back pain in pregnant women but also has a positive impact on the physical and psychological health of mothers during pregnancy. Prenatal yoga provides a relaxing effect that can reduce muscle tension and increase comfort for pregnant women. Breathing techniques in yoga help improve tissue oxygenation, thereby reducing tension in the lower back. Additionally, meditation practices in prenatal yoga also help pregnant women manage stress and anxiety during pregnancy (Beddoe et al., 2009).

The effectiveness of prenatal yoga can also be explained by Melzack and Wall's gate control theory of pain, which states that stimulation through stretching and relaxation movements can inhibit the transmission of pain impulses to the brain, thereby reducing pain perception. The results of this study are also consistent with another studies who found that prenatal yoga movements help improve blood circulation and reduce muscle tension in the lower back and pelvic regions, thereby enhancing the physical comfort of pregnant women in the third trimester (Franisia et al., 2022).

Pregnant women who regularly practice prenatal yoga have lower levels of back pain compared to those who do not engage in physical activity during pregnancy. These findings align with another research which states that prenatal yoga can improve pelvic joint flexibility and reduce lower back muscle stiffness, thereby helping to alleviate lower back pain in pregnant women. Additionally, another research indicates that prenatal yoga is effective in improving physical comfort for pregnant women in the third trimester. The reduction in back pain occurs because

yoga movements help improve blood circulation and reduce muscle tension in the lower back and pelvic regions (Franisia et al., 2022).

Another studies also found a significant difference in the intensity of back pain before and after prenatal yoga sessions. The stretching and relaxation movements in prenatal yoga help reduce muscle spasms and improve mobility in pregnant women (Windayanti, 2024). Findings from another study indicate that prenatal yoga is a safe, natural method to help alleviate pregnancy-related discomfort, particularly back pain. Prenatal yoga can help maintain body stability and improve posture in pregnant women, thereby reducing pressure on the spine (Khalifatunnisak et al., 2024). According to another studies practicing prenatal yoga regularly twice a week can reduce the intensity of lower back pain in third-trimester pregnant women. This indicates that the frequency of prenatal yoga practice influences the effectiveness of back pain relief (Fatriani et al., 2024).

Prenatal yoga is effective as a complementary therapy for reducing lower back pain in pregnant women. Yoga movements performed gradually help strengthen the back and pelvic muscles, making it easier for pregnant women to perform daily activities. In addition to physical benefits, prenatal yoga also provides psychological benefits (Rofita et al., 2025). Prenatal yoga can help improve the quality of life for pregnant women by reducing anxiety and improving sleep quality.

These findings are supported research which states that prenatal yoga can improve the physical and mental readiness of pregnant women for childbirth. Pregnant women who regularly practice yoga tend to have lower stress levels and better physical condition compared to those who do not practice prenatal yoga. Based on these various research findings, it can be concluded that prenatal yoga is an effective, safe, and easy-to-implement non-pharmacological intervention to help reduce back pain in pregnant women. The benefits of prenatal yoga are not limited to reducing back pain but also include improving physical and psychological health, as well as the quality of life for mothers during pregnancy (Anggraeni et al., 2022).

Prenatal yoga provides physical benefits and influences the psychological state of pregnant

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women. According to psychoneuroimmunology theory, psychological stress can increase muscle tension and worsen pain perception. Prenatal yoga combines breathing techniques and meditation to relax and reduce the body's stress response. The relaxation techniques in prenatal yoga can relieve muscle tension and improve maternal comfort (Beddoe et al., 2021).

CONCLUSION

Prenatal yoga effectively reduces back pain in pregnant women, particularly during the second and third trimesters. It helps reduce muscle tension, improve posture, increase flexibility, and promote relaxation, thereby alleviating back pain. It also improves sleep quality, reduces stress and anxiety, and enhances comfort during pregnancy. Therefore, prenatal yoga can be recommended as a safe, nonpharmacological intervention to reduce physical discomfort in pregnant women.

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Sandy, P. S. U. I. P., & Mariana, A. (2025). Effectiveness Of 3 Prenatal Yoga Poses To Reduce Back Pain In Pregnant Women Tm Iii At Bpm Midwife Susi Grogol Sukoharjo. *Journal for Quality in Public Health*, 8(2), 144-149.

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