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THE EFFECT OF YOGA ON BACK PAIN, ANXIETY AND SLEEP QUALITY OF PREGNANT WOMEN: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT
Pregnant women often experience various physical and psychological discomforts, such as back pain, anxiety, and sleep disorders that adversely affect maternal and fetal health. One approach that has to widely studied is yoga, which is believed to be able to reduce discomfort.Objective: To analyze and evaluate the literature regarding the effects of yoga on back pain, anxiety and sleep quality in pregnant women.Methods: This study used the Systematic Literature Review (SLR) method with the PRISMA approach. The articles analyzed were obtained from the Google Scholar, PubMed, and ResearchGate databases with the keywords "pregnancy, yoga, anxiety, low back pain, and sleep quality." Inclusion criteria used the PICOS framework and resulted in 15 relevant articles.Results: An analysis of 15 articles showed that yoga is consistently effective in reducing back pain, reducing anxiety, and improving sleep quality in pregnant women, especially in the second and third trimesters.Conclusion: Yoga is a safe and effective intervention for pregnant women to reduce back pain, reduce anxiety and improve sleep quality so it can be used as an alternative to improve the overall well-being of pregnant women.

Keywords: anxiety; back pain; pregnant women; sleep quality; yoga

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INTRODUCTION

Women often experience physical and psychological changes during pregnancy. These conditions will cause discomfort and pain, accompanied by thoughts about the labor process and the condition of the baby after birth. Changes that occur in pregnant women in the second and third trimesters cause anxiety and discomfort such as back pain, tooth and gum problems, fatigue, difficulty sleeping, cramps and swelling. (S. Wulandari and Wantini 2021)In line with the growth of the fetus that pushes the diaphragm upwards causing the shape and size of the chest cavity to change, because the shape of the chest cavity changes, breathing becomes faster, so that around 60% of pregnant women complain of shortness of breath. The increasing height of the uterine fundus accompanied by an enlarged stomach, makes the body weight lean more forward, causing discomfort in pregnant women. As an effort to adjust to the excessive weight, the spine pushes back, forming a lordosis posture. This causes back pain, varicose veins, and leg cramps. (Perdoman, Utami, and Ramadhaniati 2022) .

In primigravida, the pain felt due to contractions during the labor process is more pronounced at the beginning of labor, while in multigravida conditions the pain will increase when entering the second stage of labor. (Anita, Nafratilova, and Islami Zalni 2023) Labor pain that is not handled properly can cause stress which will then increase the release of excess hormones such as steroid hormones and catecholamine hormones in pregnant women. These hormones cause excessive smooth muscle tension and blood vessels will experience

vasoconstriction. If this happens, it will reduce the work of the uterus in contracting, reduce uteroplacental circulation from mother to baby, reduce oxygen and blood flow to the uterus which can cause uterine ischemia so that pain impulses increase in pregnant women. (Rahayu and A 2021) .Back pain is common in pregnant women in the third trimester. Back pain experienced by pregnant women in the third trimester before yoga treatment ranges from mild, moderate, to severe pain. Meanwhile, back pain after treatment on average decreased from severe, moderate, to mild pain. Some even no longer feel pain. Yoga is effective in reducing back pain in pregnant women in the third trimester (Talita Putri Idasa Richa Nur Pratama and Nur Azizah Indriastuti 2023) .

As pregnancy progresses, sleep quality will decrease and pregnant women will have difficulty sleeping because they often wake up at night, but the overall sleep duration does not change. (Monday 2022)In the first trimester, and early second trimester, most women have a total sleep duration of more than 8 hours (Zhang et al. 2021) The impact of decreased sleep quality in pregnant women if it occurs for a long period of time during pregnancy is feared to cause babies to be born with low birth weight (LBW), unbalanced nerve development, premature birth, and weakened immune system of the baby. (Lamawuran, Tokan, and Ratumakin 2023) .Sleep disorders can also cause depression and stress that affect the fetus. Mild stress causes the fetus to experience an increase in heart rate, but severe and prolonged stress will make the fetus more hyperactive. Efforts that can be made to overcome the decline in sleep quality in pregnant women in the second and third trimesters are by doing light exercise, hypnotherapy, providing health education on how to maintain sleep quality, and relaxation exercises. (Maharani et al. 2023) In addition, yoga therapy is also effective in overcoming sleep disorders in pregnant women.Prenatal yoga is beneficial for fitness, improving health, helping to lose weight, and improving sleep quality. Based on the description above, researchers are interested in conducting a literature review on the effect of yoga in reducing anxiety, back pain, and sleep quality during pregnancy. This study aims to analyze and review journals related to the effect of yoga in reducing anxiety, back pain, and sleep quality during pregnancy.

METHOD

This study used the Systematic Literature Review (SLR) method with the PRISMA approach to analyze articles related to prenatal yoga and its effects on anxiety, back pain, and sleep quality in pregnant women. The articles analyzed were obtained from the Google Scholar, PubMed, and ResearchGate databases using keywords such as "pregnancy," "yoga," "anxiety," "low back pain," and "sleep quality." Article selection was carried out based on inclusion criteria established through the PICOS framework. These criteria include Population/Problem that focuses on pregnant women in the second and third trimesters, Intervention in the form of prenatal yoga and pregnancy exercises, Comparison that does not compare with other interventions, Outcome that includes effects on anxiety, back pain, and sleep quality, and Study Design that includes quasi-experimental and pre-experimental research. From this selection process, 15 relevant articles were selected for further analysis.

RESULT

This study uses the Systematic Literature Review method. The type of data used in this study is secondary data, namely data obtained from the results of research that has been conducted by previous researchers. Literature searches and secondary data sources were obtained in the form of national and international journal articles, using the Google Scholar, PubMed and Research Gate databases. The keywords used in searching for articles or journals use the keywords Pregnancy, yoga, anxiety, lower back pain, and sleep quality. Furthermore, it was

reviewed using inclusion criteria using PICOS (population: second and third trimester pregnant women, intervention: physical activity of yoga and pregnancy gymnastics, comparison: none, outcome: there is an effect of physical activity of pregnancy gymnastics and yoga on anxiety, back pain and sleep quality, research design: quasi-experimental and pre-experimental), duplication and relevance to the topic and feasibility. The final search results obtained 15 articles, as in the table below:

Table 1.
Characteristics of literature findings articles (n= 15)

Title and Researchers	**Research Design**	**Tasting**	**Results**
Implementation of Yoga for Pregnant Women to Overcome Anxiety During the Covid 19 Pandemic in Oi Ni'u Hamlet, Bima City in 2022. (Qamarya and Riskiah 2022)	This study is a quasi-experimental study without a control group using a direct observation method in the implementation of yoga exercises.	Pregnant women in Oi Ni'u Hamlet attend a yoga practice session	The results of the study showed that yoga exercises performed 4 times (twice a week) received a positive response from pregnant women. Participants felt more relaxed, refreshed, and experienced decreased anxiety and physical complaints.
The Effect of Combination of Prenatal Yoga and Lavender Aromatherapy Inhalation on Anxiety in Third Trimester Pregnant Women. (Adnyani et al. 2023)	Experimental Design Pretest-Posttest Control Group Design, the treatment group was given a combination of prenatal yoga and lavender aromatherapy inhalation, the control group received pregnancy education without intervention.	The research sample consisted of 30 pregnant women in their third trimester who met the inclusion criteria, namely having no history of pregnancy complications, experiencing anxiety and being willing to be respondents.	In the control group, the pre-test results showed that most respondents experienced mild (46.7%) and moderate (33.3%) anxiety. After the post-test, the changes that occurred were not significant, with a p value of 0.705 indicating that there was no significant effect between pregnancy education alone on anxiety levels. In the treatment group, the posttest results showed a significant decrease in anxiety. Most respondents in the treatment group were at the "not anxious" level after the intervention (73.3%), compared to 53.3% who experienced moderate anxiety in the pretest. The p value obtained was 0.000 (<0.005) which indicates that the combination of prenatal yoga and lavender aromatherapy inhalation is effective in reducing anxiety in pregnant women in the third trimester.

The Effect of Prenatal Yoga in Reducing Anxiety Levels in Primigravida Pregnant Women. (Mothers and Primigravida nd)	Pre-Experimental with a single-group pretest-posttest design, the anxiety levels of the subject groups were measured before and after attending a prenatal yoga session.	10 primigravida pregnant women aged 20-35 years who regularly attend prenatal yoga sessions at the Bidan Kita Klaten clinic.	The data shows that prenatal yoga significantly reduces anxiety levels in primigravida pregnant women based on the results of the paired sample t-test which produced a p value = 0.000 (significant at a 95% confidence level). The average anxiety score before participating in prenatal yoga was 29, while after the prenatal yoga intervention it decreased to 23.9. This decrease in anxiety can be seen in the distribution of anxiety levels, where before yoga there were 60% of respondents who were at a moderate level of anxiety, while after yoga there were 70% of respondents who were at a low level of anxiety.
The Effect of Prenatal Gentle Yoga on Maternal Anxiety During Pregnancy. (Malinda 2024)	Quasi Experimental with One Group Pre and Post Test Design	Total sampling of pregnant women from the first to third trimester at the Gampong Gedubang Health Center, East Java, totaling 25 people.	The results showed a significant decrease in the level of anxiety of pregnant women after attending a prenatal gentle yoga session, based on the paired dependent t-test with a p value <0.005. Based on the results table, the proportion of pregnant women experiencing severe anxiety decreased from 20% to 4% after the intervention, and the proportion experiencing mild anxiety increased from 32% to 72%. This shows that prenatal gentle yoga provides a significant relaxation effect in reducing anxiety in pregnant women.
The Effect of Prenatal Yoga on Anxiety Levels of Third Trimester Pregnant Women in Depok City. (Dewi and Purnani 2019)	Experiment with the One Shot Case Study approach.	36 pregnant women in the third trimester	The study showed a significant decrease in anxiety levels. Before yoga, 72% of participants experienced anxiety, whereas after yoga, only 22% remained anxious. This shows a significant improvement in the

			participants' mental state.
The Effect of Pregnant Yoga on Sleep Quality in Third Trimester Pregnant Women at the Pratama Asih Waluyo Jati Clinic Bantul Yogyakarta. (Kumorojati, Alfie, and Warseno 2021)	Experimental design with pre-test post-test on one group	34 pregnant women in their third trimester who participated in Yoga at least three times	The results showed a significant improvement in sleep quality after the yoga intervention. Before yoga, 59.5% of respondents experienced poor sleep quality, while after the intervention, 73% of respondents reported good sleep quality.
The effect of prenatal yoga on the sleep quality of pregnant women in the third trimester. (Ismiyati and Faruq 2020)	Pre-experiment One Group pre-test-post-test	Pregnant women with a gestational age of 28 weeks, as many as 32 people, were selected using the total sampling technique.	The results of the study showed that there was a positive effect of prenatal yoga on the sleep quality of pregnant women, with a decrease in the PSQI score indicating an increase in sleep quality after doing yoga.
Prenatal Yoga Class on Sleep Quality for Pregnant Women. (Rika Widianita 2023)	Quasi Experimental with pretest-posttest design approach	30 pregnant women in their second and third trimesters who attended prenatal yoga classes	The study showed a significant decrease in sleep quality scores from an average of 9.47 to 4.03 after the intervention, providing evidence that prenatal yoga classes can be an effective intervention in improving the sleep quality of pregnant women, especially in the last trimester of pregnancy.
The Effectiveness of Prenatal Yoga on Sleep Quality of Pregnant Women. (Mastryagung, Dewi, and Januraheni 2022)	Pre-experimental with one group pretest-posttest method.	20 pregnant women with a gestational age of 36-40 weeks were selected based on certain criteria and did not experience complications during pregnancy.	The results showed a significant increase in the quality of sleep of pregnant women after participating in prenatal yoga for 4 weeks, with a p value of 0.02. Before the intervention, the majority of participants (90%) had poor sleep quality, but after yoga, 70% of them showed an increase in sleep quality to good.
The Effectiveness of Prenatal Massage and Prenatal Yoga on Sleep Quality of Pregnant Women in the Third Trimester. (Zulaida, Astuti, and Renny	Quasi-experiment with Nonequivalent Control Group Design approach	30 pregnant women in the third trimester were selected using purposive sampling technique.	Analysis using Spearman correlation test showed a significant value of p <0.005 indicating that there is a significant relationship between the implementation

2023)			of massage therapy and yoga with the sleep quality of pregnant women in the third trimester. This study found that most respondents experienced an increase in sleep quality, especially those who received interventions in the form of prenatal massage and yoga.
Prenatal Yoga to Reduce Back Pain in Third Trimester Pregnant Women. (DA Wulandari, Ahadiyah, and Ulya 2020)	Quasi Experimental with pre-test post-test without control group	18 pregnant women in the third trimester (28-36 weeks)	The results showed a significant reduction in back pain after the intervention, with a decrease in the mean pain score from 5.11 (before intervention) to 3.83 (after intervention).
The Effect of Prenatal Yoga on Reducing Back Pain in Third Trimester Pregnant Women. (Setyoputri and Ismiyati 2023)	Pre-experiment with one-group pre-test and post-test design.	30 pregnant women from the Krakatau clinic, Bandar Lampung were selected using accidental sampling technique.	Analysis showed a clear reduction in back pain after the intervention, with the mean pain score decreasing from 0.367 (post-test) compared to the pre-test level. The confidence interval for this change ranged from 0.137 to 0.596 indicating that the effect of prenatal yoga on back pain reduction was significant.
The Effect of Yoga on Back Pain in Third Trimester Pregnant Women. (Tono 2022)	Quasi-experimental with control group and pre-test and post-test design.	A total of 40 pregnant women in their third trimester were divided equally into two groups, each group consisting of 20 people. The selection was done non-randomly, namely by dividing pregnant women into two groups based on availability.	The results showed a significant decrease in back pain in the group receiving yoga intervention, compared to the control group. Based on the NRS and VAS scales, the average pain level in the intervention group decreased from 7.1 to 2.35 with ($p = 0.000$) on the NRS. And from 69.5 to 23.5 on the VAS.
The Effect of Prenatal Yoga on Back Pain in Third Trimester Pregnant Women. (Dewi Rosita, Purbanova,	Pre-experimental with one group pre-test post-test design	Simple random sampling of 20 pregnant women in the third trimester	This study showed a decrease in back pain after participating in prenatal yoga. Before participating in prenatal yoga, the majority of

and Siswanto 2022)			pregnant women experienced mild pain (50%), followed by moderate pain (30%) and severe pain (20%). After participating in prenatal yoga, the proportion of pregnant women experiencing mild pain increased to 60%, while those experiencing moderate pain remained at 30% and those experiencing severe pain decreased to 10%.
The Effect of Prenatal Gentle Yoga in Reducing Back Pain in Third Trimester Pregnant Women. (Leandra 2021)	Pre-experimental design with non-equivalent pre-test post-test design of one group without control.	A total of 25 pregnant women in the third trimester were selected using purposive sampling.	The results of the study showed that before prenatal gentle yoga, the majority of respondents, 44%, experienced moderate back pain on a scale of 4-6. After the intervention, most experienced mild pain on a scale of 1-3, which was 52%.

DISCUSSION

Based on the literature review that has been conducted, prenatal yoga consistently shows significant effectiveness in reducing back pain, anxiety, and improving sleep quality in pregnant women, especially in the second and third trimesters. Several studies have proven that by doing prenatal yoga regularly, pregnant women experience increased flexibility, reduced pressure on the waist muscles, and improved sleep quality. In addition, prenatal yoga that is done with the right technique also provides a relaxing effect that helps overcome anxiety related to pregnancy and childbirth.As a safe and beneficial exercise for the physical and mental condition of pregnant women, prenatal yoga not only contributes to optimal preparation for childbirth, but also reduces the risk of complications associated with stress and physical discomfort. These findings support the recommendation that prenatal yoga can be an effective and accessible intervention to maintain maternal well-being during pregnancy.

The psychological condition of the mother who is filled with anxiety during pregnancy, be it anxiety about her pregnancy, the labor process, other anxiety problems, can affect the life of the fetus in the womb and the abnormalities that arise depend on the time of the occurrence of anxiety burden on the psychological condition of the pregnant mother. If psychological disorders in the form of anxiety arise in early pregnancy, then it can affect the condition of fetal growth in the womb so that it can cause premature birth, miscarriage, fetal growth retardation or intrauterine growth restriction (IUGR), even to fetal heart rate disorders. (Hapisah, Dasuki, and Prabandari 2010)One of the treatments to reduce discomfort during pregnancy is by exercising, for pregnant women the recommended exercise is prenatal yoga. Prenatal yoga is a sport that functions to prepare for childbirth because the exercise technique emphasizes the flexibility of the birth canal muscles, breathing techniques, relaxation and peace of mind of the mother during pregnancy and facing childbirth. (Machmudah et al. 2018)

Prenatal yoga is a mind processing skill, in the form of a technique to develop personality as a whole, both physically, psychologically, and spiritually, with one of the benefits of improving

sleep quality. (Widiyarti, Situmorang, and Sari 2024) Yoga is a combination of exercises and stretching with deep breathing and yoga meditation designed to stretch muscles and maintain flexibility of the spine and joints. (Perdoman, Utami, and Ramadhaniati 2022)Yoga is a type of physical activity that if done routinely, pregnant women will get benefits including reducing the risk of anxiety and depression during pregnancy, childbirth, and postpartum. (Newham et al., 2014) Yoga can lower systolic blood pressure and stabilize the fetal heart rate in primigravida mothers. (Siregar et al. 2021).

CONCLUSION

Based on the results of the literature review conducted, it can be concluded that prenatal yoga is an effective intervention in reducing back pain in pregnant women, especially in the third trimester, reducing anxiety levels related to pregnancy and childbirth, and improving the quality of sleep of pregnant women. Therefore, prenatal yoga can be recommended as a non-pharmacological method that has the potential to improve the quality of life of pregnant women during pregnancy.

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