



## THE EFFECTS OF YOGA ON BACK PAIN IN PREGNANT WOMEN AT THE EKA SRIWAHYUNI MATERNITY CLINIC

Desi Handayani Lubis<sup>1</sup>, Yesi Ardila Fatma<sup>2</sup>, Rahmi Mutia Ulfa<sup>3</sup>, Dilla Kurnia<sup>4</sup>, Eka Sriwahyuni<sup>5</sup>

<sup>1,2,3,4</sup>Sekolah Tinggi Ilmu Kesehatan Flora, Medan, Indonesia

<sup>5</sup>Institut Kesehatan Deli Husada Deli Tua

Email: [desihandayanilubis84@gmail.com](mailto:desihandayanilubis84@gmail.com), [ardilafatmayesi@gmail.com](mailto:ardilafatmayesi@gmail.com),  
[mutiaskb@gmail.com](mailto:mutiaskb@gmail.com), [dilla.kurnia0602@gmail.com](mailto:dilla.kurnia0602@gmail.com), [begentlemidwife@gmail.com](mailto:begentlemidwife@gmail.com)

### ABSTRACT

**Background:** One of the most common musculoskeletal problems experienced by pregnant women, especially in the third trimester, is back pain. Back pain can develop due to weight gain, changes in posture, stretching of ligaments, and changes in the body's center of gravity during pregnancy. According to a recent meta-analysis, 40.5% of pregnant women worldwide experience back pain, with the third trimester having the highest frequency at 47.8%. A safe and effective non-pharmacological treatment for pregnancy-related discomfort, particularly back pain, is prenatal yoga. The purpose of this study was to determine how prenatal yoga affects back pain in third-trimester pregnant women at the Eka Sriwahyuni Maternal and Child Health Clinic. Research Methods: Data were collected from a single cohort without a comparison group using a pre-experimental approach that included a single case study. Purposeful sampling was used in the sampling process, meaning that study participants were individuals who met the inclusion and exclusion criteria according to the objectives. The study sample consisted of 58 third-trimester pregnant women with gestational ages between 28 and 40 weeks. This study used univariate and bivariate data analysis, with the bivariate analysis using the Wilcoxon test. Research Results: According to the study findings, most respondents experienced mild back pain (19 people, or 32.8%) and moderate back pain (39 people, or 67.2%) before participating in prenatal yoga. Most respondents reported mild back discomfort (49 participants, or 84.5%) and moderate back pain (9 participants, or 15.5%) during prenatal yoga. Prenatal yoga significantly reduced the severity of back pain in pregnant women in the third trimester, according to the Wilcoxon test findings, which showed a p value of 0.000 ( $p < 0.05$ ).

**Keywords:** Prenatal Yoga, Back Pain, Third-Trimester Pregnant Women



## INTRODUCTION

The fetus grows and develops inside the uterus for around 40 weeks, or 280 days, throughout pregnancy, a physiological process that begins at conception and lasts until birthing. Lower back pain is one of the many physical discomforts that can result from the anatomical, physiological, hormonal, and biomechanical changes that a woman's body experiences during pregnancy in order to promote fetal growth (Carvalho et al., 2017).

One of the most prevalent musculoskeletal problems during pregnancy, especially in the third trimester, is lower back discomfort. Lower back discomfort can develop as a result of changes in the body's center of gravity, weight increase, ligament stretching brought on by the hormone relaxin, and altered posture during pregnancy. According to a systematic review and meta-analysis, 40.5% of pregnant women worldwide have lower back pain, with the third trimester having the highest frequency at 47.8% (Koukoulithras et al., 2021).

According to a study conducted in Malawi by Manyozo et al. (2019), 62% of pregnant women reported having lower back discomfort, which was linked to difficulties with everyday activities. Additionally, a research by Carvalho et al. (2017) found that between 50 and 80 percent of pregnant women have varied degrees of lower back discomfort. Unmanaged back discomfort can negatively affect a pregnant woman's quality of life by impeding her ability to exercise, sleep, and maintain her mental health.

Just 64% of women worldwide who give birth to a live child have four or more antenatal care (ANC) appointments, according to the World Health Organization (WHO, 2016). The numbers are 16,000 in Southeast Asia, 179,000 in North Africa, and 9,300 in the United States. Southeast Asian nations have the following rates of maternal mortality: 214 per 100,000 live births in Indonesia, 170 per 100,000 live births in the Philippines, 160 per 100,000 live births in Vietnam, 44 per 100,000 live births in Thailand, 60 per 100,000 live births in Brunei, and 39 per 100,000 live births in Malaysia. Maternal mortality rates are 230 per 100,000 newborns in underdeveloped nations and 16 per 100,000 births in wealthy nations. According to the WHO (2016), of the 800 maternal fatalities that take place every day, 500 take place in sub-Saharan Africa, 190 in South Asia, and 6 in high-income nations. 99% of all maternal fatalities occur in underdeveloped nations due to mortality and morbidity among pregnant and childbearing women (Gutierrez et al., 2007).

The growing weight of the fetus can alter body posture and exert strain on the spine, resulting in back discomfort (in the lower back and back) in pregnant women (Kurnia, 2009). Back discomfort affects over 80% of pregnant women at some stage. Changes in the back muscles account for 70% of back discomfort during pregnancy. The remaining 30% of back discomfort during pregnancy may be brought on by pre-existing spinal problems; weak back muscles exacerbate ligament tension, which results in bad posture (Shim, 2012). European, American, Australian, Chinese (particularly rural and hilly areas of Taiwan), African, and upper-class Nigerian women have all been found to have a high prevalence of lower back discomfort during pregnancy (Kristiansson, 2015). The prevalence of back pain has increased significantly over the past 14 years in Latin America, from 3.9% in 1992 to 10.2% in 2006, according to research (Garcia, 2013).

According to statistics reviewed from Indonesia, back discomfort affects 60–80% of



pregnant women in various regions of the country (Ruliati, 2019). There are 5,298,285 pregnant women in Indonesia, according to the 2015 Indonesian Health Data Profile report. In Indonesia, 95.25% of K1 prenatal care visits and 86.85% of K4 prenatal care visits were covered in 2013. The national K1 coverage rate was 95.75% and the K4 coverage rate was 87.48% in 2015, according to data from the Indonesian Demographic and Health Survey (SDKI). K1 coverage increased by 0.76% (from 94.99%) and K4 coverage slightly increased by 0.78% (from 86.70%) compared to 2014. According to research on pain prevalence in Indonesia, 32% of pregnant women experience mild back pain and 68% experience significant back pain (Sinclair, 2010). Indonesian Minister of Health Regulation No. 369/MENKES/SK/III/2007, which outlines professional standards for midwives in providing high-quality antenatal care to optimize health during pregnancy, outlines government efforts to address pain in pregnant women. These standards include early detection, non-pharmacological pain relief, and referral for certain pregnancy and childbirth complications (Indonesian Ministry of Health, 2010).

This aligns with Article 13 of Indonesian Minister of Health Regulation No. 1416/MENKES/PER/X/2010, which regulates the licensing and practice of midwives. Under this regulation, midwives are required to provide integrated antenatal care, which includes specialized interventions for specific diseases or chronic conditions, under the supervision of a physician. Collaborating in prenatal care with other medical specialists, including physicians, nutrition programs, laboratories, and physiotherapists, is known as integrated prenatal care. Through promotive, preventive, curative, and rehabilitative methods, midwives are crucial to the government's efforts to improve maternal and child health (Indonesian Ministry of Health, 2010). The goal of treating low back pain in pregnant women is to help them learn how to cope with the discomfort. Several alternative therapies for managing low back pain can reduce the need for medical intervention (Watson et al., 2012). Both pharmaceutical and non-pharmacological approaches, including prenatal exercise, yoga, frequent rest, physical activity, warm compresses, kinesiotaping, massage, acupuncture, Transcutaneous Electrical Nerve Stimulation (TENS), aromatherapy, relaxation techniques, and herbal remedies, can be used to treat lower back pain. According to (Pennick et al., 2007), drugs like paracetamol are occasionally also utilized.

Prior to the yoga intervention, 10 respondents (71.4%) had moderate back pain, 3 respondents (21.4%) had mild back pain, and 1 respondent (7.1%) had severe back pain, according to the research findings (Resmi, D.C., 2017). The respondents' pain levels decreased following the yoga intervention, as evidenced by the following changes: 9 respondents (64.3%) reported mild pain, 4 respondents (28.6%) reported moderate pain, and 1 respondent no longer reported back pain. 28 pregnant women were enrolled based on information gathered in February from the antenatal yoga program at TPMB Eka Sriwahyuni. Of these 28, 14 suffered back discomfort, 6 had numbness or tingling in their hands and legs, and 8 had trouble falling asleep. Four primiparous women experienced light back pain (painful but acceptable), and five multiparous women reported moderate back pain (pain that was annoying and required effort to manage), according to interviews I performed with eleven pregnant women experiencing symptoms in the third trimester.

## METHODS

## Research Design

The research design serves as a framework for the relationships among research variables (Sastriasmoro & Ismail, 2008). Data was gathered from a single group without a comparison group utilizing a pre-experimental design and a one-shot case study methodology.

## Research Location and Time

The location or subject of this study is at TPMB Eka Sriwahyuni. The research was conducted from February 3 to September 18, 2025, encompassing the planning, data collection, and report preparation phases

## Population and Sample

### Population

The population is the domain of generalization consisting of objects or subjects possessing specific qualities and characteristics defined by the researcher for study, from which conclusions are subsequently drawn (Sugiyono, 2019). The population in this study consists of all pregnant women experiencing back pain with a gestational age of 28–40 weeks at TPMB Eka Sriwahyuni.

### Sample

According to Notoatmodjo (2012), a sample is a subset of the overall population being studied that is thought to be representative of the full population. Purposive sampling was the sampling strategy employed in this study, which means that the participants were those who satisfied the inclusion and exclusion criteria in line with the study's goals. There were 58 pregnant women in the sample, all of whom had gestational ages between 28 and 40 weeks.

To ensure that the characteristics of this sample remain accurate, it is essential to establish both inclusion and exclusion criteria prior to sampling. Inclusion criteria are the characteristics that every member of the population selected for the sample must possess. Exclusion criteria, on the other hand, are the characteristics that disqualify individuals from being included in the sample.

### Criteria

In this study, two criteria are required: inclusion criteria and exclusion criteria for the research sample.

#### a. Inclusion Criteria

1. Pregnant women in their third trimester
2. Pregnant women experiencing back pain and other complaints (numbness in the hands and feet, and difficulty sleeping)
3. Pregnant women experiencing back pain rated as mild or moderate
4. Pregnant women with no history of preterm delivery or low birth weight (LBW)

#### b. Exclusion Criteria

1. Expectant mothers who have previously had vaginal hemorrhage
2. Placenta previa in pregnant women
3. Expectant mothers who had previously had preterm membrane rupture
4. Expectant mothers who have previously experienced anemia (pressure)

## Operational Definitions of Variables

### Variables

An attribute, quality, or value of a person, thing, or activity that shows certain changes specified

by the study for analysis and subsequent conclusion-drawing is called a research variable (Sugiyono, 2019:68).

A variable that affects or causes changes in the dependent (bound) variable is known as the independent variable, sometimes called the free variable. Prenatal yoga is therefore the study's independent variable.

The dependent variable, also known as the bound variable, is a variable that is affected by or results from the independent variable. Back discomfort in third-trimester pregnant women is the dependent variable in this research.

**Table 1. Operational Definitions of Research Variables**

| Variable                                                             | Operational Definition                                                                                                                                                                                                                                                    | Measuring Instruments                                   | Parameters                                                            | Scale    |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|----------|
| INDEPENDENT<br>Prenatal yoga                                         | A balancing technique designed to maintain emotional well-being and physical, mental, and social calm, practiced regularly 2–3 times a week during pregnancy at the private midwifery practice of Eka Sriwahyuni, Independent Midwife, Jl. Bromo Ujung, Gang Salam, Medan | Using leaflets and SAP                                  | 0: before doing prenatal yoga<br>1: after doing prenatal yoga         | Nominal  |
| <b>RELATED</b><br>Back pain in pregnant women in the third trimester | Spontaneous response with a fairly high level of pain that interferes with daily activities and posture among pregnant women in their third trimester at the private midwifery practice of Eka Sriwahyuni, Jl. Bromo Ujung, Gang Salam, Medan                             | Using an observation sheet (questionnaire/checkboxlist) | 1: 1–3 (mild pain)<br>2: 4–6 (moderate pain)<br>3: 7–10 (severe pain) | Internal |

#### **Variable Measurement Aspects**

##### **a. Measurement of Independent Variables**

Prenatal yoga

Measurement tool: Using leaflets and SAP

Measurement scale: Nominal

0: before doing prenatal yoga

1: after doing prenatal yoga

**b. Measurement of Dependent Variables**

Back pain in third-trimester pregnant women

Measurement tool: Using an observation sheet (questionnaire/checklist)

Measurement scale: Internal

1: 1–3 (mild pain)

2: 4–6 (moderate pain)

3: 7–10 (severe pain)

## **Data Collection Methods**

### **Data Collection Tools**

#### **Research Instruments**

The research instrument used in this study was an observation sheet (questionnaire/checklist) to determine whether yoga exercises have an effect on back pain in pregnant women in their third trimester. The questionnaire used was a closed-ended questionnaire with pre-determined answers, so respondents simply had to select the appropriate response. In practice, the questionnaires were distributed in person because they pertained to the respondents themselves. The test format used was a checklist, where respondents simply placed a check mark (✓) in the appropriate column.

#### **Data Collection Techniques**

1. Prepare supporting materials and theoretical concepts
2. Conduct a preliminary study
3. Consult with the supervisor
4. Obtain permits for data collection
5. Align perceptions with research assistants as needed
6. Conduct an orientation session before implementing the intervention
7. Collect data through sample or respondent selection (pre-test)
8. Conducting the antenatal yoga intervention
9. Collecting data (post-test)
10. Then collecting data from respondent
11. Processing the research data by editing, coding, and scoring.

## **Data Analysis**

### **Univariate Analysis**

The type of data analysis used in this study is univariate analysis, which aims to explain or describe each independent and dependent variable.

### **Bivariate Analysis**

Back pain in pregnant women is the dependent variable, while prenatal yoga is the independent variable. Bivariate analysis is a cross-tabulation of two variables. The purpose of this investigation was to see if third-trimester pregnant women's back discomfort differed before and after engaging in prenatal yoga. A statistical test utilizing the "Wilcoxon" test was

carried out to see if there was a statistically significant difference between the independent and dependent variables.

## RESULTS AND DISCUSSION

The purpose of this one-time case study is to ascertain how yoga affects back pain in third-trimester pregnant women. 58 pregnant women with back discomfort were included in the study, which was carried out by TPMB Eka Sriwahyuni.

### Univariate Analysis

Based on the results of a study conducted by TPMB Eka Sriwahyuni, in 2025, the following findings were obtained through univariate data analysis:

**Table 2 Frequency distribution of back pain in pregnant women before and after antenatal yoga at the practice of TPMB Eka Sriwahyuni.**

|               | Before Yoga |      | After Yoga |      |
|---------------|-------------|------|------------|------|
|               | N           | %    | N          | %    |
| Back pain     |             |      |            |      |
| Mild pain     | 19          | 32,8 | 49         | 84,5 |
| Moderate pain | 39          | 67,2 | 9          | 15,5 |
| Severe pain   | 0           | 0    | 0          | 0    |
| number        | 58          | 100  | 58         | 100  |

Table 4.1 shows that of the 58 respondents, 39 (67.2%) experienced moderate pain before participating in antenatal yoga, and this number decreased to 9 (15.5%) after participating in the program; while 19 pregnant women (32.8%) experienced mild pain before yoga, and after participating in antenatal yoga, the number of those experiencing mild pain increased to 49 (84.5%).

### Bivariate Analysis

**Table 3. Differences in back pain among pregnant women before and after antenatal yoga by TPMB Eka Sriwahyuni.**

| Variabel          | M     | Sum    | Sig   |
|-------------------|-------|--------|-------|
| Before Doing Yoga | 00    | 00     | 0.000 |
| After Doing Yoga  | 13.00 | 325.00 |       |

Table 4.2 indicates that the alternative hypothesis ( $H_a$ ) is accepted since the Asymp. Sig. value is 0.000, which indicates that the significance value is smaller than the  $\alpha$  value of 0.05. We may infer that third-trimester pregnant women at TPMB Eka Sriwahyuni benefit from prenatal yoga in terms of their back discomfort.

### Differences in back pain scores before and after antenatal yoga

According to the Wilcoxon test, the respondents' back pain intensity measurements yielded Sig. = 0.000, which indicates that the significance value is below the  $\alpha$  value of 0.05. This suggests that back pain scores were different before and after prenatal yoga. The aforementioned shows how prenatal yoga affects the severity of back pain, as demonstrated by a decrease in the

severity of back pain among pregnant women.

This is in line with the notion put out by Shindu (2009), which claims that regular yoga practice (1-2 times per week) is advised to guarantee a healthy pregnancy; the frequency of yoga practice also influences back pain in pregnant women. Pregnant women in their third trimester with a gestational age of  $\geq 28$  weeks participated in this study and practiced prenatal yoga at least twice or three times a week. The pelvis is stretched and strengthened with karetasana, a pose in which the body is bowed upward and arched inward from a crawling position. This helps relieve back strain, stretch the anterior pelvic muscles, and strengthen the lower back muscles. When done in a kneeling position with arms extended forward, mudhasana helps relax the internal abdominal organs and back muscles, reduces tension, eases nausea and back discomfort, and re-establishes comfort. The pregnant woman's back is relieved of some of the strain by adopting this resting position.

Similar results were also shown in a study by Sun et al. (2010), which revealed that yoga helps women feel more agile and nimble, manage weight changes and adjust to changes in body weight distribution during pregnancy, and lessen and alleviate some pregnancy-related discomforts. It also increases muscle strength, which is especially helpful in preventing back pain. In addition to strengthening the legs and upper back muscles, the yoga poses used in this study also assisted in achieving good posture, which can reduce back discomfort in expectant mothers. This study supports Mediaarti's (2014) study on the impact of prenatal yoga on lowering back pain in third-trimester pregnant women, which found a significant difference between prenatal yoga and back pain in pregnant women with a p-value of 0.005.

With a p-value of 0.004, which indicates a significant correlation between antenatal yoga and the reduction of back pain and stress in pregnant women, this study is consistent with a study by Field et al. (2012) on the effect of antenatal yoga on reducing back pain and stress in third-trimester pregnant women. This study is in line with a study by Official (2017) on the impact of prenatal yoga on back pain in third-trimester pregnant women at the Kali Kajar I Community Health Center in Wonosobo Regency. The study found a significant correlation between prenatal yoga and back pain in pregnant women, with a p-value of 0.000 (where  $p < 0.05$ ).

The researchers hypothesise that yoga is a type of exercise that pregnant women can do; doing so can increase the clients' general physical fitness, improve back muscular flexibility, and encourage blood circulation throughout the body. Pain, especially in the back, can be avoided by doing yoga positions that stretch and activate the back muscles. The brain can be stimulated by smooth blood flow, which biologically lowers the pain scale.

## CONCLUSION

### Conclusion

The following conclusions may be made in light of the research results and debate around the impact of prenatal yoga on back pain scores among third-trimester pregnant women at the private midwifery practice of TPMB Eka Sriwahyuni:

1. Regarding back pain scores before antenatal yoga among the 58 respondents, 39 individuals (67.2%) reported moderate pain, which decreased to 9 individuals (15.5%)

after practicing yoga; while 19 pregnant women (32.8%) experienced mild pain before yoga, and after practicing antenatal yoga, 33 women (84.5%) experienced mild pain.

2. The analysis results showed a difference in pain scores among third-trimester pregnant women before and after practicing antenatal yoga.

### Recommendations

1. For the owner of TPMB Sriwahyuni,  
It is recommended that she maintain the quality of midwifery services, particularly for pregnant women, by incorporating antenatal yoga as an alternative method to alleviate back pain and other discomforts experienced by women in their third trimester.
2. For pregnant women Pregnant women are encouraged to practice antenatal yoga regularly to help reduce the risk of discomfort during pregnancy, particularly back pain.
3. For Future Researchers
  - a. Future researchers are encouraged to increase the sample size to enhance the study's statistical power.
  - b. When conducting experimental research, researchers should pay attention to the time interval between the pretest and posttest to ensure the time gap is not too long, as this can affect the study's results.

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