



The Effect of Prenatal Yoga on Discomfort in the Third Trimester of Pregnancy

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Abstract. Pregnancy is a period where pregnant women experience physiological and psychological changes. There are several factors that influence the emergence of discomfort in pregnant women, for example gestational age, hormones, and the mother's condition during pregnancy. The discomfort of pregnant women in the third trimester can be overcome by doing pregnancy exercises, which play a role in strengthening contractions and maintaining the flexibility of the muscles in the pelvic floor area, making the mind relaxed and providing a sense of comfort and making the mother more prepared and calmer to face the birthing process. The purpose of the study is to know the effect of yoga prenatal on discomfort in third trimester pregnant women. This study was a cohort, true experimental study with pre-test and post-test one group design to identify the effectiveness of yoga on discomfort in pregnancy. Research subjects were observed twice, namely before the intervention and after the intervention. The intervention was carried out with 30 minutes of prenatal yoga. The research participants were 39 pregnant women. Prenatal yoga activities for 30 minutes carried out in one week showed a 5.789 reduction in the potential risk of third trimester pregnancy discomfort (p -value = 0.0008- CI = 1.796 – 20.359). Complaints that decreased significantly were vaginal discharge, swelling in the battery and shortness of breath. Prenatal Yoga can be one of the recommended physical activity options to reduce discomfort in the third trimester.

Keywords: Pregnancy, Yoga Prenatal, Third Trimester.

1 Introduction

Pregnancy is a phase characterized by physiological and psychological transformations experienced by expectant mothers. These changes encompass not only the reproductive organs but also affect various bodily systems including cardiovascular, respiratory, renal, integumentary, musculoskeletal, neurological, digestive, and endocrine systems, often leading to discomfort. Physiological alterations may manifest as symptoms such as nausea, vomiting, sleep disturbances including insomnia, gum inflammation and tooth mobility, breathlessness, increased frequency of urination, pelvic pressure and discomfort, back pain, constipation, swollen veins, fatigue, sporadic contractions known as Braxton Hicks, leg cramps, and swelling of the ankles [1]. There are several

factors that influence the emergence of discomfort in pregnant women, for example gestational age, hormones, and the mother's condition during pregnancy. One example of discomfort during pregnancy is back pain. Several factors that can influence the occurrence of back pain complaints during pregnancy include changes in body posture, weight gain and redistribution of ligaments [2][3].

Several preventive measures that can be carried out during pregnancy so that the mother and fetus are healthy and a normal delivery process occurs, namely light exercise, morning walks, aerobics, pregnancy exercises, static cycling, dancing and yoga [4]. According to a study conducted by Rafika in 2018 involving 32 pregnant women in their third trimester, divided into 16 participants in the intervention group and 16 in the control group, there was a notable variance in the average physical discomfort reported by the respondents. Those who received prenatal yoga intervention for 30 minutes exhibited a distinct difference compared to the control group, which solely received discomfort reduction strategies for the third trimester. Prenatal yoga sessions can be considered as a viable approach provided to expectant mothers for alleviating discomfort [5]. This study aims to determine the effectiveness of prenatal yoga in reducing discomfort in third trimester pregnant women.

2 Method

The study's design adopted a cohort, true experimental approach employing a randomized pre-test and post-test single group design to evaluate the impact of prenatal yoga on third-trimester pregnancy discomfort. Participants underwent observation twice: once before the intervention (referred to as the pre-test) and again after the intervention (referred to as the post-test). The intervention involved a 30-minute session of prenatal yoga.

The question of this study was "Does prenatal yoga effect on discomfort in the third trimester of pregnancy?". Sample size in this research were 39 pregnant women attending the obstetrics and gynecology clinic in Aisyiyah Islamic Hospital and Muhammadiyah Islamic Hospital, Pekajangan, the inclusion criteria were: pregnant women with gestation week ≥ 28 weeks, had no hearing difficulty, had no pregnancy complication, had discomfort in their pregnancy, living in Pekalongan Regency area, can attend three times to get prenatal yoga, and agree to participate this study. While the exclusion criteria were: unhealthy pregnant women, had complication, and those who dropped out the program

The researchers obtained ethical approval from the Health Research Ethics Committee of Komisi Etik Penelitian Kesehatan (KEPK) Universitas Pekalongan (No. 1 93i8.02.0 1 IKEPK/XIII 2022 The researcher took data from 20 December 2022 until 30 May 2023. Upon ethical approval, a hospital partner approach was carried out to permit sampling. After obtaining permission from the hospital, the team collaborates with the obstetrics polyclinic to provide recommendations to patients who meet the inclusion criteria to take part in the prenatal yoga program by providing prior informed consent. The patient is explained the research procedures that will be carried out in accordance with standard operating procedures that have been prepared by the research

team. Then patients who are willing to take part in the prenatal yoga program are invited to sign the informed consent form and join the WhatsApp group. Researchers and enumerators do not force patients to take part in the prenatal yoga program. Patients who are willing to take part in training activities are directed to join the WhatsApp Group to find out the schedule for prenatal yoga training. After joining the WhatsApp Group, clients who are willing to become respondents will be given technical instructions for implementing prenatal yoga classes. Training is held every Friday with scheduling of participation data collection in advance with a quota per class of 5-10 people so that prenatal yoga guidance is more optimal.

Prior to engaging in prenatal yoga sessions, the data collectors provided concise descriptions regarding the research objectives and the intervention process to potential participants. They were also briefed about the advantages and potential risks associated with the research. Upon agreement to participate, the researcher presented an informed consent form for the participant to sign. Participation in the study was entirely voluntary, with no coercion whatsoever. This ensured that potential participants could decline or retract their involvement freely and at any point in time.

Every time a prenatal yoga and mindfulness class is carried out, an anamnesis is carried out regarding the mother's complaints, the intensity and duration of the complaints and the mother's knowledge in dealing with complaints. Then an initial screening is carried out to ensure that the condition of the mother and fetus is normal by examining the Vital Signs of the Pregnant Mother and Fetus. The examination is carried out by a midwife with a diploma III degree in Midwifery. The class begins with a 30-minute prenatal yoga practice. The prenatal yoga class was held three times in a row with a different theme for each meeting. Each meeting presents 10 movements to form a square to overcome the discomfort of pregnant women. Do this in the afternoon. Prenatal yoga classes are repeated every 1-2 weeks according to the patient's willingness to attend again. In the next class there will be follow up and subsequent training activities up to the third class with the same mechanism. The instructor of yoga and mindfulness training is registered midwife who is certified as facilitator prenatal yoga by Indonesian Holistic Care Association (IHCA). In case of any discomfort arising during treatment, the researchers halted the procedure, conducted an assessment, and provided patients with adequate time to recuperate.

Moreover, the researchers ensured the confidentiality of data by refraining from mentioning any names during data collection. All collected data is securely stored on the researcher's personal laptop and will solely be utilized for academic purposes. The equipment which used in study was mats, yoga blocks, strapping, gym balls and pillows. Apart from the training room, an ANC room is provided for TTV and DJJ examinations using a mercury meter, oximetry, Doppler and stopwatch. Each patient is given a prenatal yoga module and a mindfulness module so they can read it again at home so they can practice it at home.

To assess demographic data, researchers used a patient screening questionnaire containing name, age, history of current and previous pregnancies, as well as health history and activity history and ANC during this pregnancy. The instrument for measuring complaints of discomfort was carried out using a check list followed by filling in a knowledge questionnaire about handling discomfort in the third trimester. In order to

maintain the validity and reliability of research data, researchers tested research instruments Before using them in research, especially the knowledge questionnaire which consists of six questions. Validity and reliability tests were carried out on 24 similar respondents with a Cronbach's alpha value of 0.760. Meanwhile, the third trimester demographic and discomfort checklist were only carried out for content validity by one Indonesian language expert. Data were analyzed using an independent t test with a confidence level of 95%. The author uses Stata version 14.2.

3 Result and Discussion

During the initial phase of data analysis, a normality test was conducted using the Kolmogorov-Smirnov method at a confidence level of 95%. Univariate analysis involved presenting categorical data using frequency distribution in frequencies (n) and percentages (%), while numerical variables with non-normal distribution were depicted using median values along with the range (minimum-maximum).

Table 1. Frequency distribution of respondent characteristics

Variable	Amount (n) Percentage (%)		p-value*
Age	27.5 (21- 33)		0.730
Gravida status			
Primigravida	18	46.15%	0.179
Multigravida	21	53.85%	
Source of information to resolve complaints			0.727
From the internet	6	7.69%	
Results of doctor and midwife consultations	27	69.23%	
Ask family, friends or relatives	9	23.00%	
History of previous yoga class participation during this pregnancy			0.000
Once	20	51.28%	0.000
Never	19	48.72%	
Experience attending classes for pregnant women			0.000
Once	35	89.74%	0.000
Never	4	10.26%	
Physical Activity Habits			
Never	16	41.03%	
Soldem	10	25.64%	
Sometimes	13	33.33 %	
Complaints of discomfort			
Vaginal discharge			0.111
No	12	30.77%	
Yes	27	69.23%	
Swollen foot			0.137
No	22	56.41%	
Yes	17	43.59%	
Frequent urination			0.131
No	17	43.59%	

Variable	Amount (n)	Percentage (%)	p-value*
Yes	22	56.41%	
Constipation			0.107
No	33	84.62%	
Yes	6	15.38%	
Hot Flash			0.102
No	12	30.77%	
Yes	27	69.23%	
Out of breath			0.070
No	17	43.59%	
Yes	22	56.41%	

*Normality test

Table 2. Analisis discomfort intensity before and after prenatal yoga exercise

Variable	Mean ± SD		P-Value	Δ mean	CI 95%
	Pre	Post			
Discomfort Intensity	1.00±0.506	0.487±0.506	0.000	0.512	1.323-1.651
Vaginal discharge	0.435±0.502	0.692±0.467	0.031	-(0.256)	-(0.488)-(-0.024)
Swollen foot	0.435±0.502	0.435±0.502	1.000	0	-(0.246)-0.246
Frequent urination	0.564±0.502	0.435±0.502	0.023	0.128	0.018-0.237
Constipation	0.153±0.365	0.435±0.512	0.000	-0.282	-(0.429)-0.134
Hot Flash	0.692±0.467	0.437±0.501	0.000	0.255	-(0.038)-0.551
Out of breath	0.564±0.502	0.435±0.506	0.359	0.128	-(0.151)-0.408

From the results of the univariate analysis in Table 1, it can be seen that the average age of clients who took part in the research was 27 years. Showing that clients who took part in the study did not have age risk factors. According to several studies, the optimal productive age for healthy reproduction is between 20-35 years [6]. The risk escalates for individuals below 20 years of age or above 35 years of age. Women who conceive at a young age face numerous risks, including miscarriage, premature delivery, low birth weight (LBW), congenital abnormalities, heightened susceptibility to infections, pregnancy-induced anemia, preeclampsia, and mortality [7]. Similarly, women who conceive after the age of 35 are at risk of encountering elevated risks during childbirth, such as delivering a baby with intellectual disabilities or Down syndrome [8].

Meanwhile, the parity of clients taking part in primigravida is 50% and multigravida is 50%, multigravida in this activity is a maximum of the third pregnancy. This is to reduce potential risks that occur after the activity is carried out. Pregnant women with primigravida are looking for more information related to their pregnancy, including pregnancy exercise, compared to multigravida mothers. For multigravida mothers who have experience of pregnancy and childbirth, a mindset is formed that places pregnancy and childbirth as normal things and what they have experienced, this influences the behavior of multigravida mothers. According to Green and Lawrence (2005), human behavior is one of the predisposing factors for health [9].

Apart from anamnesis screening, screening is also carried out with examinations to ensure the well-being of the mother and fetus. Examinations carried out include checking blood pressure, pulse and oxygen saturation in pregnant women and checking the fetal heart rate. From the results of the analysis in Table 2, it shows that there are differences in complaints felt by pregnant women after carrying out prenatal yoga three times every 1-2 weeks with a duration of 30 minutes, p-value 0.000 (CI: 1.323-1.651). This shows that prenatal yoga practice can reduce the intensity of discomfort in the third trimester of pregnancy. Some studies suggest that light Hatha Yoga can repair muscle damage, but it can produce an inflammatory response that affects blood viscosity. Inflammation produces excess reactive oxygen species (ROS) and reactive nitrogen species (RNS). These highly reactive molecules are electronegative (electron withdrawing) molecules. It is expected that the negative charge on the surface of red blood cells will be lowered during and after exercise, so that the blood becomes thicker than usual. It was also hypothesized that a Yoga routine would prevent this increase in inflammation and possibly reduce inflammation levels in the body [10].

In addition, prenatal yoga activities directly influence human bioelectricity which is related to the work of the liver, brain, and immune and endocrine systems regulated by internal bioelectric signals. They are intimately involved in countless body processes. They allow atoms to bond with other atoms and form molecules. Redox reactions involve the transfer of one or more electrons from one atom or molecule to another molecule [11]. This is associated with a more perfect metabolic process, thereby reducing the potential for discomfort such as overheating, shortness of breath and back pain.

ChatGPT

Hatha Yoga (pashimottanasana) demonstrates notable alterations in the indicators of electrical activity at key points representing the meridians in the human body. There is an observed increase in electrical activity within these meridians, which are believed, according to existing literature, to play pivotal roles in the operation of the respiratory, lymphatic, and immune systems, as well as the liver, kidneys, bladder, stomach, small intestine, and large intestine. Additionally, analysis of the findings indicates that Hatha Yoga (pashimottanasana) reduces the activity of the cardiovascular system and gallbladder, both of which are associated with the aforementioned functions [12]. In several studies, it was found that the weight of babies born to pregnant women who did exercise/exercise during pregnancy was heavier than those who did not exercise. Exercise can be understood as it boosts blood circulation to the uterus, which serves as the primary pathway for providing nutrients and supporting fetal metabolism. A correlation exists between the weight of the placenta and the birth weight, indicating a positive association [13].

Varney (2007) explains several benefits of pregnancy exercise in pregnancy, namely reducing heart rate, umbilical cord and meconium abnormalities, reducing energy use, reducing pain, and improving fetal APGAR and psychomotor scores. Natural and smooth childbirth can be achieved if the muscles can continue to contract properly, rhythmically and strongly. Pregnancy exercises that are done regularly will strengthen the abdominal wall muscles, ligaments, pelvic floor muscles and surrounding muscles[14].

4 Conclusion

Engaging in prenatal yoga sessions lasting 30 minutes per week led to a significant decrease of 5.789 in the potential risk of third trimester pregnancy discomfort (p-value = 0.0008- CI = 1.796 – 20.359). Noticeable reductions were observed in complaints such as vaginal discharge, battery swelling, and shortness of breath. Prenatal yoga emerges as a viable recommendation for alleviating discomfort during the third trimester.

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