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The Effect Of Prenatal Yoga On Length Of Labor In The Active Phase Of Primigravida

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ABSTRACT

Introduction: *Labor begins with the process of opening and effacement of the cervix. Opening and thinning depends on the contraction that occurs. More frequent contractions will speed up labor. If the contractions slow down, the length of labor will be slower. One effort to improve contractions is by doing body movements or light exercise through prenatal yoga. Prenatal yoga is an exercise program for healthy pregnant women to prepare the mother's physical condition by maintaining the condition of the muscles and joints that play a role in the birthing process.*
Objectives: *the type of research carried out is quantitative research, with an experimental research design. The research design is in the form of a two group pre test and post test design. The population consisted of 50 primigravida pregnant women. The research sample was 40 respondents. With a sampling technique in the form of purposive sampling. The 40 respondents were divided into two groups, namely the RND control group and the Prenatal Yoga experimental group.*
Methods: *Data analysis using univariate techniques in the form of frequency distribution and bivariate using the Shapiro Wilk test and independent T test*
Results: *Data analysis using frequency distribution showed that the age of the research subjects ranged from 18-30 years, where the average age of the Prenatal Yoga group was slightly older than the RND group. Bivariate data analysis shows that the Independent Sample Test Results are ρ=2.11. Prenatal Yoga effective in labor duration.*
Conclusions: *There is a significant difference in the length of the first stage of labor in the active phase in primigravida between Prenatal Yoga and RND. So the use of prenatal yoga needs to be developed and given to mothers who are about to give birth.*

Introduction

Childbirth is the process of expelling the fetus and placenta from the uterus through the vagina, which physiologically usually occurs after nine months of pregnancy. This process begins with the effacement and opening of the cervix, which is the result of contractions. These contractions will become more frequent, longer, and stronger as time goes by. Uterine contractions during labor are a unique phenomenon, because they are physiological muscle contractions that can cause pain (S Rejeki, 2020) (Kartikasari, 2019)

One of the problems that can interfere with the labor process is prolonged labor, which is characterized by the absence of opening of the cervix within two hours and the absence of fetal descent within one hour. Prolonged labor contributes to maternal mortality rates, with WHO noting that worldwide, cases of prolonged labor reach 289 per 100,000 live births. In Indonesia, this figure is higher, namely 359 per 100,000 live births which cause maternal death due to

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prolonged labor (Ministry of Health of the Republic of Indonesia, 2022). In East Java, in 2021, the incidence of prolonged labor reached 5% of the total 575 maternal deaths (East Java Provincial Health Office, 2022). In Surabaya, in 2022, 34 cases of maternal death were recorded from 42,822 live births. The MMR has met the target, but in the future it is expected to decrease further (Surabaya Health Office, 2022). And for the initial survey at the research site, of 10 cases of normal labor, two of them experienced prolonged labor (Survey Data, 2022)(Mitra 2021).

The government's efforts to reduce maternal mortality (MMR) due to complications such as preeclampsia/eclampsia, bleeding, prolonged labor, abortion complications and infections include holding workshops to strengthen the role of local governments in supporting the reduction of MMR, as well as collaboration from all parties, including midwives. This aims to improve delivery assistance by trained medical personnel and primary health services as well as optimal referrals during the pre-pregnancy, pregnancy, delivery and post-natal periods. (Jaringan Nasional Pelatihan Klinik-Kesehatan Reproduksi, 2017). Additionally, non-conventional efforts such as prenatal yoga can help overcome prolonged labor. Prenatal yoga is a modification of hatha yoga which is adapted for pregnant women and can be a solution to speed up the labor process and overcome prolonged labor. Women who exercise regularly or have regular sexual intercourse tend to have a more flexible birth canal (Sri Rejeki, 2020). Research by Alfadewi et al. (2023) showed that gentle prenatal yoga during pregnancy had a positive effect on the duration of phase I of labor, with the duration being shorter for those who participated in prenatal yoga.(WHO, 2020)

Apart from that, non-conventional efforts can be made to overcome prolonged labor through the implementation of prenatal yoga. Prenatal yoga is a type of movement modification from hatha yoga which has been adapted to the conditions of pregnant women. Prenatal yoga is one solution to speed up labor and overcome prolonged labor. The birth canal will become flexible in women who exercise regularly or have regular sexual intercourse(Waroh, 2019). Based on research conducted by Alfadewi, et al 2023, it was stated that prenatal gentle yoga during pregnancy had an effect on the length of the first stage in mothers giving birth. The duration of the first stage in mothers who did prenatal gentle yoga showed that the duration of the first stage was faster, with an average of around 2-5 hours compared to those who did not do prenatal gentle yoga, whose average duration of the first stage was around 8-10 hours.(Sri Rejeki, 2020).

Yoga is one sport that can be done by pregnant women. Yoga exercises during pregnancy can help balance the body, mind and spirit. During pregnancy you should try to stay physically healthy and emotionally balanced, and this can help to produce calming beliefs (Andarwulan, 2020). The postures in yoga can also increase flexibility in the hips, pelvis and spine, apart from that it will also strengthen the entire body so that it can help mothers become flexible, strong and emotionally steadfast. (Yuliani, 2022).

Through yoga exercises for pregnant women, participants are taught various postures that are tailored to their needs and fitness levels. The physical benefits of yoga include increased strength, muscle tone, posture, balance, and better blood flow and circulation, in addition to better breath control. This yoga class also aims to reduce complaints during pregnancy, strengthen the muscles around the birth canal, improve posture, and train concentration which is important in the labor process (Ariyanti et al., 2019). Research in Saudi Arabia shows that prenatal yoga can significantly reduce the number of caesarean sections, reduce discomfort during pregnancy, and accelerate postpartum recovery (Szaszkó B, 2023). Another study in Taiwan also found that prenatal yoga can reduce stress in pregnant women and improve the immune system (Corrigan, 2020). This study aims to explore the effect of prenatal yoga on the duration of labor in the active phase for first-time pregnant women. The average duration of

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phase I of labor for mothers who do prenatal yoga ranges from 2-5 hours, while for those who do not do yoga, the duration ranges from 8-10 hours. Prenatal yoga is a form of exercise that can be done by pregnant women, helping to balance the body, mind, and soul. During pregnancy, it is important to maintain physical health and emotional balance, which can provide a sense of calm (Andarwulan, 2020). Yoga postures can also increase flexibility in the hips, pelvis, and spine, and strengthen the entire body, helping mothers become more flexible, strong, and emotionally stable.(Ariyanti et al., 2019)

Methods

The design of this study was experimental with a pre-experimental approach. The design used was a two-group pre-post design. This study involved two groups, namely the control group and the intervention group. Inclusion criteria included first-time pregnant women with a gestational age of more than 36 weeks, . healthy pregnant women without complications, and those who were willing to participate in prenatal yoga exercises until delivery. Exclusion criteria included pregnant women with a gestational age of less than 36 weeks, pregnant women with complications, and those who were unwilling to participate. The research instrument used standard procedures for prenatal yoga and observation sheets. The total study population was 41 respondents, divided into the prenatal yoga group (21 respondents) and the deep breathing relaxation group (20 respondents). Data analysis was carried out using univariate tests for the frequency distribution of respondent characteristics and bivariate tests using the Shapiro-Wilk normality test and the T-Test. This study was conducted in Surabaya by TPMB Yefi Marliandiani and TPMB Winda between May and August 2023.

Results

a. Characteristics of Research Subjects

Table 1. Demographic Characteristics of Research Subjects

Characteristics	Prenatal Yoga n=21	Relaksasi Nafas Dalam (RND) n=20	ρ value
Age			
Mean±SD	24,05±2,59;	23,53±3,03;	0,37*
Median;Min-Max	22,5 (18-30)	23,5 (18-32)	
Education			
- **Junior High School**	3 (14,29%)	4 (20%)	0,54**
- **Senior High School**	16 (76,19%)	13 (65%)	
- **Diploma**	2 (9,52%)	3 (15%)	
Employement			
- **Housewife**	16 (76,19%)	16 (80%)	0,40**
- **Self employed**	1 (4,76%)	2 (10%)	
- **Private**	4 (19,05%)	2 (10%)	
Gestational Age			
Mean±SD	38,36±0,95;	38,08±0,82;	0,50***
Median;Min-Max	39,0 (37-40)	39,0 (37-40)	

*Uji t-tidak berpasangan
***Uji Fisher-exact*

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****Uji Mann-Whitney*

The data in table 1 shows that the average age of the research subjects in the Prenatal Yoga group was slightly older, namely 24.05 (SD=2.59) years compared to the RND group, namely 23.53 (SD=3.03) years. The results of statistical tests show that this difference is not significant (ρ=0.37). The educational level of most research subjects was high school. The results of statistical tests show that this difference is not significant (ρ=0.54). The most common type of work is housewife (IRT), statistical test results show that this difference is not significant (ρ=0.40). The mean gestational age of the Prenatal Yoga group was slightly older, namely 38.36 (SD=0.95) weeks compared to the RND group, namely 38.08 (SD=0.82) months. The results of statistical tests show that this difference is not significant (ρ=0.50).

b. Length of Labor in First Stage of Active Phase

Table 2 Analisis statistic test Uji Independent T. Test

Uji Independent Sample T Test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Prenatal Yoga n RND	1.00000	.60999	.09196	.81454	1.18546	10.874	43	2,11

Based on table 2, the value of the data analysis test results using the independent T Test is 0.580. This means that there is a significant influence in providing prenatal yoga therapy compared to RND.

Table 3. Length of labor in the active phase of the first stage (minutes) in the Prenatal Yoga group and the RND group

Group	Group Length of Labor in First Stage		Total	Mean±SD Median;Min-Mak	ρ value*	
	Normal < 360 menit	Abnormal >360 menit				
Prenatal Yoga	12 (57%)	9 (33%)	21 (100%)	365,40±65,60 360,00(267-495)	0,31*	2,11#
RND	9 (45%)	11 (55%)	20 (100%)	407,55±77,27 421,50(270-540)	0,58*	

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Uji Shapiro Wilk
#*Uji Independent Sample tets*

Data from table 2 shows that in the Prenatal Yoga group, the duration of labor in the active phase of the first stage, which was less than 360 minutes, was 12 (57%) and more than 360 minutes was 9 (33%). In the RND group, labor duration of less than 360 minutes was 9 (45%) and more than 360 minutes was 11 (55%). The average length of labor in the Prenatal Yoga group was 365.40 (SD = 65.60) minutes shorter than the RND group, 407.55 (SD = 77.27) minutes. The results of the Independent Sample Test were ρ=2.11, so it was concluded that there was a significant difference in the length of labor in the first stage of active phase in primigravida between Prenatal Yoga and RND. Prenatal yoga more effetive than RND.

Discussion

The age of the research subjects ranged from 18-30 years, where the average age of the Prenatal Yoga group was slightly older than the RND group, but this difference was not significant (ρ=0.37). This shows that the majority of research subjects are in the reproductive age group who are physiologically still strong enough to withstand labor pain and menstruation. Mothers of productive age (20-35 years) have energy when menstruating. A mother's age at birth can have important implications for her pregnancy and birth experience. Although the majority of mothers have normal pregnancies and healthy babies regardless of age, younger mothers (under 20 years of age) and older mothers over 40 years of age have an increased risk of complications and adverse pregnancy outcomes. (Cunningham et al. , 2014) Although teenage mothers are 1.1 times more likely to experience spontaneous labor (without intervention) 63% compared to 59% of mothers aged 20–24 years, young pregnant women are at risk of experiencing premature birth 1.2 times greater than that of mothers aged 20–24 years, namely those born at or before 36 weeks of gestation (11.0% versus 8.9%). (Australian Institute of Health and Welfare, 2018) In mothers aged over 40 year, there is a 1.36 risk of premature birth, a 2.36 risk of hypertensive disorders of pregnancy, a 1.71 risk of gestational diabetes mellitus, a 1.99 risk of delivery by Caesarean section, and a 1.29 risk of pregnancy with abnormal fetal presentation. (Londero et al., 2019)

The duration of labor in the first stage of active phase in primigravidas generally lasts 9 hours, from 4 cm dilation to 10 cm dilation, with an average speed of 1 cm per hour. (National Network for Clinical Training-Reproductive Health, 2017), (WHO, 2020) Prenatal Yoga and Prostaglandin treatment stimulates the posterior pituitary to produce the hormone oxytocin. The increase in the hormone oxytocin makes uterine contractions stronger, this is proven by 57% of mothers experiencing a shorter labor duration (<360 minutes). Contractions that become progressively stronger cause the cervix to stretch so that the baby is pushed into the birth canal. This creates positive feedback where the stretching of the cervix due to the pushing of the baby stimulates the uterus to contract more strongly in the next cycle. As contractions increase, the cervix continues to stretch causing the baby to be expelled. The frequency of contractions increases as labor progresses, accompanied by an increase in intensity and can cause uterine spasm if not balanced with rhythmic relaxation. Uterine spasm will result in cessation of blood flow through the placenta, which can cause fetal death. (Cunningham et al., 2014) In this study the average length of labor in the first stage of the active phase in the Prenatal Yoga group was 365.40 ± 65.60, meaning that no

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research subjects experienced parturition. precipitatus due to Prenatal Yoga treatment. So Prenatal Yoga can be used as a non-pharmacological alternative to overcome the problem of length of labor in the first stage.

Conclusion

The effect of prenatal yoga on the length of labor during the first active phase has a significant value that can influence the length of labor.

Ethics approval and consent to participate

This research has passed the Ethical Clearance test, Faculty of Science and Health, PGRI Adi Buana University, Surabaya with number: 108-KEPK dated June 5 2023.

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