



Exercise During Pregnancy Reduce Labor Anxiety

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ABSTRACT

Background: Pregnancy and childbirth are meaningful experiences for a woman and therefore need to be prepared both physically and psychologically. Physical exercise is one of the methods used to psychologically and physically prepare pregnant women for a pleasant, healthy pregnancy and birth for both mother and child.

Purpose: The study aimed to find out the differences in the anxiety of pregnant women facing labor before and after doing exercise.

Methods: The research was conducted in Bandung City and Regency. The research design employed a quasi-experimental pre-posttest. Samples were taken by consecutive sampling. The sample was pregnant women who meet the inclusion criteria for gestational age > 34 weeks, have no pregnancy complications and exercise (walking, yoga, jogging) twice per week for 30-60 minutes. The number of respondents was 60 people. The data obtained is primary data from the results of a questionnaire assessment about the anxiety of mothers facing childbirth as measured by the Hamilton Anxiety Rating Scale (HARS). The data analysis used is the normality test with Kolmogorov Smirnov and then it is continued with Wilcoxon to analyze the differences in anxiety facing labor before and after exercise.

Results: The results showed that there were differences in anxiety facing labor in pregnant women before and after exercising. The anxiety score before exercise is 55,5 and after exercise is 46,5. There were decrease anxiety score of 9 and p value <0,005 meaning that there were significant differences before and after exercise.

Conclusion: Exercise during pregnancy can provides a relaxing effect and inhibit sympathetic nerve activity thereby reducing the level of anxiety in pregnant women in facing labor. It is recommended for pregnant women to do exercise regularly during pregnancy.

Keywords: *anxiety, exercise in pregnancy*

BACKGROUND

The pregnancy process is something that every woman goes through. During pregnancy, there are changes both physically and psychologically as the body adapts to pregnancy, prepares for childbirth, and prepares for becoming parents. Pregnancy discomfort and anxiety about childbirth are often experienced by pregnant women. Anxiety is a mental disorder that is characterized by two things, namely the condition of anxiety, which is directly related to the psychological and physiological reactions that are experienced in relation to specific unwanted situations; and the nature of anxiety, namely the characteristics expressed by individuals when experiencing anxiety. Anxiety can be determined by one of two things, because the higher the level of anxiety, the higher the level of anxiety (Sánchez-Polán et al., 2020).

Anxiety that is not managed properly can result in depression during pregnancy and have an impact on fetal development and birth outcomes. Pregnancy is a vulnerable period for women, especially regarding mental problems, which are more likely to manifest during pregnancy than at any other period in a woman's life. It is known that pregnancy risks (such as excessive maternal weight gain) are directly related to increased levels of anxiety during pregnancy. Prenatal anxiety does not only affect psychological parameters but can also increase the incidence of other pathologies such as cancer, heart disease, stroke, arthritis, high blood pressure, and gestational diabetes. The impact of mental disorders even goes beyond the mother's health. Mothers who experienced poor mental health during pregnancy are more likely to give birth to babies with low birth weight, and newborns whose mothers experienced mental disorders during pregnancy are more likely to have worse APGAR scores in the first 1 to 5 minutes than those who were not mentally disturbed during pregnancy (Sánchez-Polán et al., 2020).

Antidepressant and anxiolytic medications are the most commonly used method of anxiety management. However, most pregnant women do not drink it because of the risk that will affect the health of the fetus (Sánchez-Polán et al., 2020). Therefore, it is the role of health workers to provide assistance, education related to this matter. Physical exercise during pregnancy is one method of reducing discomfort and anxiety in pregnant women.

Based on research results, exercise has a positive effect on reducing anxiety in the general population and other mental disorders in the pregnant population, so it is reasonable to say that exercise can also be beneficial in reducing anxiety during pregnancy. It has been shown that a program of physical exercise undertaken during pregnancy reduces the severity of depressive symptoms and the likelihood of prenatal depression. Recent research publications report the effectiveness of exercise in reducing or preventing depression in pregnant women: if the woman is active during pregnancy, she is 16% less likely to suffer from prenatal depression (Sánchez-Polán et al., 2020).

Physical activity is the movement of the skeletal muscles of the body that results in energy expenditure. Physical activity is believed to be one of the important ingredients for a healthy pregnancy. Historically, sedentary Hebrew slaves gave birth more easily than sedentary Egyptian women. In addition, physical activity during pregnancy is also believed to be able to control weight gain during pregnancy, reduce the risk of mental disorders after giving birth, and increase body image satisfaction. Physical activity in pregnancy is very important to facilitate positive outcomes for babies who are born (Cilar et al., 2022).

Pregnant women who exercise regularly during pregnancy, on the other hand, are still in short supply. The reasons for the lack of knowledge of the mothers about physical

activity are race, socio-economic and cultural factors, and mother's education. Only a few pregnant women receive education about exercise during pregnancy. In addition, previous studies identified important barriers to increasing pregnant women's knowledge about physical activity in the absence of domains related to physical activity in the development of the professional competence of health workers in professional health services. Due to a lack of guidelines, expectant mothers access information about healthy lifestyles during pregnancy via the internet with questionable credibility (Evenson et al., 2019).

According to Burden et al., physical activity in pregnancy mostly focuses on health outcomes for pregnant women and babies. However, the analysis revealed heterogeneity of findings on exercise modality, duration, and intensity. It is important to standardize measurable and comparative characteristics of physical activity in pregnancy (Cilar et al., 2022). Physical fitness is defined as a condition characterized by the ability to carry out daily activities with enthusiasm; demonstration of traits and capacities associated with a low risk of premature development from physical activity (Lewis et al., 2015; Tani & Castagna, 2017). In a broader sense, a person's physical fitness represents their ability to perform various exercise modalities and daily tasks. Physical fitness is required to improve this ability along with managing fatigue, stress or changes in health conditions which are common conditions that are especially relevant for pregnant women. In addition, it is necessary to develop efficient physical activity interventions for pregnant women (Campbell & Nolan, 2019; Vakilian et al., 2018).

The results of other studies and meta-analyses show a relationship between physical activity during pregnancy and maternal and child health outcomes. Observational studies show a positive association between physical activity and mother-child health, while most randomized controlled trials (RCTs) report no association. However, a recent meta-analysis that included only RCTs indicated that an exercise program during pregnancy prevented excessive weight gain, gestational diabetes, and large-term newborns. Based on the observed results, there was no effect of exercise during pregnancy on pre-eclampsia, preterm birth, or birth weight (Cilar et al., 2022).

OBJECTIVE

The purpose of this study was to analyze the differences in the anxiety of third trimester pregnant women facing labor before and after doing exercise.

METHODS

The research design was quasy experimental research. The research sample consisted of 60 pregnant women in one group. Sampling technique with consecutive sampling. The research sample met the inclusion criteria including pregnancy planned and/or expected, gestational age > 34 weeks and willing to be research subjects, while the exclusion criteria were pregnant women who had complications during pregnancy. Exercise in this study included yoga, walking or jogging which carried out by pregnant women twice a week for 30-60 minutes. Exercise is done independently and for yoga practice is guided by the YouTube channel. Researchers remind and monitor the exercise of the women by the WhatsApp group and the women should fill out the exercise checklist. Anxiety scores were evaluated by questionnaire before doing exercise and one month later or and at least

8 times of exercise as a posttest. The questionnaire assessment about the anxiety of mothers facing childbirth as measured by the Hamilton Anxiety Rating Scale (HARS). The respondent characteristic data was not normally distributed with Kolmogorov Smirnov so data analysis used non-parametric analysis with Wilcoxon to analyze the differences in the anxiety of third trimester pregnant women facing labor before and after doing exercise. The research has received ethical clearance from the Health Research Ethics Committee of the Health Polytechnic of the Bandung Ministry of Health, with the number "ethical approval" No.01/KEPK/EC.

RESULTS

This research on the relationship of physical exercise during pregnancy to anxiety in facing childbirth was carried out from July to November 2022 at the Independent Midwife Practices and Community Health Centers in the City and Regency of Bandung. The study participants were 60 people who met the inclusion criteria, which were gestational age 34 weeks, did regular exercise during pregnancy at least twice per week for 30 to 60 minutes, and had no pregnancy complications.

The results obtained in this study were in the form of respondent characteristic data, which was categorized into some parts, for instance: age, parity, and occupation. Meanwhile, anxiety data took the form of number. The results of the normality test with the Kolmogorov Smirnov test revealed that the data had an abnormal distribution ($p < 0.005$). The data analysis used to test the difference in anxiety before and after exercise during pregnancy is a non-parametric statistical test with Wilcoxon. The following are the results of research data:

1. Characteristics of Respondents

Table 1 Frequency distribution of the characteristics of the respondents

Variable	n	%	p value
Parity			0,001*
Primigravida	33	55	
Multigravida	27	45	
Age			0,001*
<20 years	2	3,4	
20-35 years	53	88,3	
>35 years	5	8,3	
Working			0,001*

Yes	14	23,3
No	46	76,7
Total	60	100

Test: Kolmogorov-Smirnov

The results showed that there were significant differences in the characteristics of parity, age and occupation, meaning that the study group was not homogeneous. The majority of respondents in this study (55%) were primigravida, with some (45%) being multigravidas. Most of the respondents were in the age range of 20-35 years (88.3%). Most of the respondents' jobs were not working (76.7%).

2. Differences in Anxiety of Pregnant Women Facing Labor before and after Exercise during Pregnancy

The following table shows the differences in the anxiety of pregnant women facing labor before and after exercise during pregnancy:

Table 2
Differences in anxiety in pregnant women facing labor before and after doing exercise during pregnancy

Exercise	n	Median Anxiety (Minimum-maximum)	p value
Before	60	55,5 (27-75)	0,001*
After	60	46,5 (28-75)	

*Test: *Wilcoxon*

The results of the study showed that there was a significant difference in anxiety facing childbirth in pregnant women before exercising compared to after exercising. The results of the anxiety score before doing routine exercise have a median of 55.5 and after doing exercise it has decreased to 46.5 and statistically this decrease has a significant difference and p value < 0,005.

DISCUSSION

In this study, the age of the respondents was mostly 20-35 years (88.3%). This is the adult age group and the healthy reproductive period. The more mature, of course, there are physical and psychological changes as well as increased lessons, life experiences. This will affect the maturity of thinking, toughness in dealing with problems and skills in managing emotions including dealing with worries (Meiranny & Alfiah Rahmawati, 2022). Anxiety is an emotional response, confusion, worry about something that will happen with no clear cause. The anxiety response that arises can be in the form of nightmares, physical complaints and difficulty concentrating (Tekoa, 2019a). Common causes of anxiety in pregnancy and childbirth include young mother's age, education or

low socioeconomic level, psychological problems before pregnancy, sexual harassment/sexual problems, low self-esteem, fear of illness in general, psychological problems during this pregnancy, lack of social support, poor previous history of pregnancy and childbirth, lack of knowledge, and lack of preparation for childbirth (Devi et al., 2018; Glazier, 2014; Tekoa, 2019b).

One effort to reduce anxiety during pregnancy is by exercising (Rahayu et al., 2020). In this study, there was a decrease in anxiety facing childbirth in mothers who exercised during pregnancy. Walking and yoga twice a week for 30 to 60 minutes have been recommended for 34 weeks of pregnancy. Pregnant women were given a pretest questionnaire to see their anxiety score at 34 weeks of age, then they did regular exercise and were asked to fill out the posttest questionnaire again after got eight exercises (Peters et al., 2015; Shirvani et al., 2017; Stuge, 2012).

Physical activity is movement of the skeletal muscles of the body that results in energy expenditure. Physical activity is believed to be one of the important elements for a healthy pregnancy, physical activity during pregnancy is also believed to be able to control weight gain during pregnancy, reduce the risk of mental disorders after giving birth and increase body image satisfaction, Physical activity in pregnancy is very important to facilitate positive outcomes for babies who are born (Cilar et al., 2022). Similar to other studies showing that exercise during pregnancy can reduce the risk of depression during pregnancy (McInnes et al., 2018). Exercise can improve physical fitness. Research shows that pregnant women do moderate exercise consisting of warming up; aerobic exercise, strengthening, and stretching with relaxation to have an effect on the body and optimize well-being, mood and sleep patterns (de Araújo et al., 2017). Physical exercise affects the basal ganglia as a bridge between the hypothalamus and pituitary as the body's balance center. This will stimulate the pituitary to release the hormones dopamine, serotonin and endorphins as hormones of calm and happiness (Evenson et al., 2019; K Curtis, A Weinrib, 2012; Rodríguez- & Blanque, 2020). The benefits of exercising improve metabolic health, mental health, muscle strength, and prevent heart disease. Exercise increases insulin sensitivity because of IL-10 which is produced during muscle contraction. Exercise is closely related to mental health because it increases happiness hormones such as endorphins, serotonin and dopamine. These hormones are produced by the central nervous system and the pituitary gland (Heijnen et al., 2016). Muscular activity requires the uptake of amino acids and these compete with tryptophan, the precursor of serotonin, for transport across the blood-brain barrier. By reducing the amount of competitive amino acids through muscle uptake, aerobic exercise increases tryptophan's chances of crossing the blood-brain barrier, thereby potentially increasing serotonin in the brain. Serotonin is an important neurotransmitter for emotional processing and it serves memory functions in the hippocampus (Hall & Hall, 2021; Heijnen et al., 2016; Patrick & Ames, 2015).

Changes in brain serotonin metabolism are time dependent and differ between brain regions. The striatum, hippocampus, and midbrain of rats showed increased of serotonin and serotonin turnover after acute exercise. Additionally, frequent exercise (swimming 30 minutes daily, 4 weeks) increased serotonin synthesis and metabolism in the cerebral cortex and brainstem but decreased serotonin levels in the hippocampus directly. Post-exercise cortical changes persist for at least a week after stopping exercise, whereas serotonin activity in the brainstem decreases during this time. The hypothalamus exhibits a decrease in serotonin metabolism one day after exercise, increasing again after a week's

rest as serotonin induces the release of corticotropin-releasing hormone. This decrease serves to reduce the stress response during prolonged exercise. Thus, exercise with duration of 20-30 minutes provides an anti-anxiety effect that can improve mental health (Hall & Hall, 2021; Heijnen et al., 2016; Hjelm et al., 2018; Kahyaoglu Sut & Kucukkaya, 2020).

The limitation in this study is the are varies exercise type and no control group so that this factor will affect the anxiety level of the respondents. In the next study should standardize the type of exercise for pregnant women.

CONCLUSION

In conclusion, exercise during pregnancy reduces anxiety in dealing with labor. It is suggested that pregnant women need to exercise regularly during pregnancy at least twice in a week with a duration of 30-60 minutes. In addition, guidelines are needed for health workers to develop standardized and measurable types of exercise to promote the health of pregnant women through exercise during pregnancy in order to achieve optimal physical and psychological health and quality pregnancy outcomes.

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