Original Research

Pregnancy Exercise Shorten the Duration of the Second Stage of Labor

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Abstract

Background: Labor is a natural process, but it may be interrupted by complicating factors resulting from the power, passage, or passenger's insult**.** Aerobic exercise during pregnancy is unarguably beneficial for mental and physical health, but training-induced improvement in the duration of stage two labor in primigravida has yet to be elucidated.

Aim: This study investigated the impact of pregnancy exercise on the duration of the second stage of labor in primigravida.

Material and Methods: This was an analytic observational study using a cross-sectional design conducted in Al-Irsyad Hospital in Surabaya. The total sample was 48 women who met the inclusion criteria and signed up for the pregnancy exercise program. They were then divided into two groups: compliance (exercise group) and non-compliance (non-exercise group). Data was collected from medical records, and Mann-Whitney U was used to analyse the data.

Results: The mean duration of the second stage of labor in the exercise group was 25.88±13.21 minutes and 11.46±4.77 minutes in the non-exercise group. The Mann-Whitney test analysis showed a significant difference between pregnancy exercise and the second stage of labour (p=0.000).

Conclusion: Performing exercise training regularly during pregnancy shortens the duration of the second stage of labor in primigravida.

Keywords: *Duration of Labor, Second Stage of Labor, Pregnancy Exercise*

INTRODUCTION

Labor is the process that leads to childbirth.[1] Labor process can be divided into four phases, starting from phase I (cervical dilatation), phase II (fetal expulsion), phase III (placental expulsion), and phase IV (puerperium). Duration of phase 1 and phase II in primigravid can reach more than 12 hours.

There are several factors that contribute to the duration of labor, which are power, passage, and passenger. Power consists of uterine contraction, abdominal wall muscles, and pelvic floor muscles.[2] Pregnancy exercise is one of many interventions that can be done in favor of increasing power during labor. Pregnancy exercise is considered to be safe for the mother and their fetuses if it is undertaken under professional supervision.[3] It provides beneficial effects to the mother that include: 1) reducing pain perception during labor, 2) strengthening muscles that help during labor, 3) reducing medical complaint during pregnancy, 4) increasing muscles elasticity, 5) providing relaxation feeling, and 6) increasing sleep duration of the pregnant women.[4,5,6,7,8,9]

This study was intended to investigate the impact of pregnancy exercise using on the duration of the second stage of labor.

MATERIAL AND METHODS

This was an analytic observational study using a cross-sectional design. It was conducted in Al-Irsyad Hospital Surabaya. The population of the study was all mothers who delivered their babies in Al-Irsyad Hospital Surabaya. Inclusion criteria include primigravid, 18-35 years, having no history of smoking, gestational hypertension, or diabetes mellitus. The exclusion criteria in this study were absolute contraindication for pregnancy exercise and BMI <17 or >35. Data were collected from medical records and the attendance list from the exercise program undertaken in the hospital.

Following exclusion criteria screening, forty-eight primigravids who

signed up for a pregnancy exercise program were divided into exercise (compliance to the program, n = 24) and non-exercise (not compliance to the program, n = 24).

All data were presented as means and standard deviations. Statistical analysis was performed using Mann-Whitney U to calculate the difference between group.

RESULT

The second stage of labour duration in the non-exercise group was 25.88 ± 14.21 minutes compared to 11.46 ± 4.77 minutes for the exercise training group.

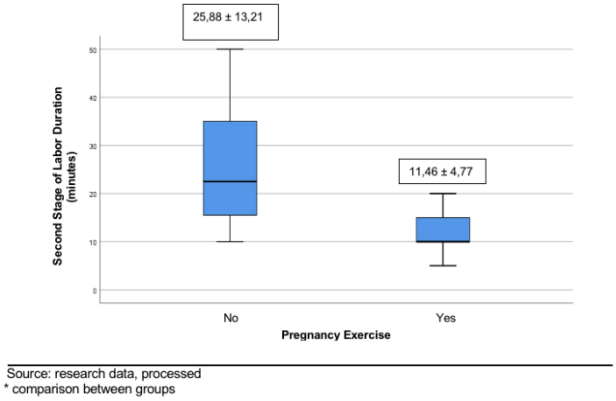

Figure 1. Second stage of labor duration

The results of comparative test of second stage of labor duration in pregnancy exercise and non-pregnancy exercise produced p-value of 0.000. Thus, it was concluded that second stage of labor duration in pregnancy exercise and non-pregnancy exercise were significantly difference.

Table 1. Results of the comparative test of second stage of labor duration

	Second Stage of Labor Duration (minutes)	**p value Mann-Whitney**
Pregnancy Exercise	11.46±4.77	
Non-Pregnancy Exercise	25.88±13.21	.000

Source: Research Data, Processed

* comparison between groups

Discussion

Several studies that explain the impact of pregnancy exercise and second stage of labor are: 1) The study of Barus (2013), which explains that pregnancy exercise reduced second stage of labor duration. 2) The study by Yuksel (2017), explains that pregnancy exercise could reduce pain perception through an increase in serotonin and dopamine following exercise in pregnancy, thus affecting the second stage of labour to become shorter. 3) The study by

Larasati and Wibowo (2015), explains that pregnancy exercise could reduce pregnant women's anxiety during labour. 4) Furthermore, Anggraeni (2010) reveals that pregnancy exercise also gives pregnant women a feeling of relaxation during labour by practising breathing techniques. 5) The study by Clapp (2003), which explains that pregnancy exercise shortened second stage of labor duration by increasing the muscles elasticity and strength that helped during labor. 6) The study by Stoppard (2008), which explains that pregnancy exercise could reduce muscles tense and helped in directing the fetus into better position during labor. 7) The Study of Bø (2014), which explains that women who followed pregnancy exercise had a wider levator hiatus area than women who did not follow pregnancy exercise.

Several theories explaining the impact of pregnancy exercise on the second stage of labor duration are an increase in dopamine and serotonin, which leads to reduced pain perception,[5] an increase in the perineum, vaginal, and abdominal muscles elasticity and strength,[6] widened levator hiatus area that could reduce the probability of pregnant women to become exhausted during labor[11].

Conclusion

Performing exercise training regularly during pregnancy significantly shortens the duration of the second stage of labor in primigravida

Limitations

This study was undertaken to accomplish the thesis for the bachelor's program in medical school. Due to time constraints and ethics, this study involved a small number of participants (n = 48), and all data were taken from the medical record (secondary data). Furthermore, we had a wide bracket of the exercise duration, making the training spread from 8 weeks to 40 weeks, and we did not implement and supervise the exercise training accordingly. Hence, we could not identify and control the exercise intensity.

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