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PREFACE

On behalf of the Institute for Population and Social Research as the host, please allow me to extend our warm welcome to all the participants of the International Conference on Applied Science and Health (ICASH) to Mahidol University Salaya, the Wisdom of the Land. Our institute has been established for almost 45 years, since we were known as the Center of Population and Social Research under the Faculty of Public Health, Mahidol University, Phayatai Campus and changed to be “**Institute for Population and Social Research**” in 14 November 1971.

To date, we have been adhering to our aim to lead Institute with Quality and Morality, we remain the ambitious of our goal to foster our Institute to be a prominent and renowned research Institute. The achievement of the outstanding of research qualities, teaching, training and the expertise of our staff in the fields of Population and Social Sciences have been recognized at National and International levels, this allowing us to become one of the leading research Institutes in Asia. Our work is adherent to the common interest of the people as a whole and continuingly fond engaging with IPSR symbolic beloved cultures.

We are honor to host the International Conference on Applied Science and Health (ICASH) as a joint conference between the Institute for Population and Social Research Mahidol University Thailand and Doctoral Program in Public Health Science, Diponegoro University Indonesia and Universitas ‘Aisyiyah Yogyakarta, Indonesia. The conference aims to exchange the knowledge and experiences among experts, practitioners, professionals and students from three parties, and also to extend the networks between two countries. It is expected, the output of the conference will enrich the body of knowledge in applied science and health-related field, and also to provide evidence-based studies to direct the government and policy makers in designing strategic planning for the future growth and development of the regions.

We would like to extend our appreciation to Indonesian Scholar’s Alliance as the organizing committee of the conference, who have been working with our Institute’s staff to make today’s event possible. More importantly, to all speakers and participants who willing to share their knowledge and expertise for our better society.

Lastly, I wish you a joyful conference, and have a pleasant stay in Thailand!

Associate Prof. Rossarin Gray, PhD

Conference Chair and Director of the Institute for Population and Social Research
Mahidol University Thailand

ICASH-A20

PREGNANT EXERCISE INFLUENCE ON THE BABY'S BIRTH WEIGHT AND POSTPARTUM HEMORRHAGE

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ABSTRACT

Background: The benefits of exercise during pregnancy have been reported to be higher than its negative side effects. A reduction in low birth weight, a decrease in heart rate abnormalities of the baby and a decrease in excessive bleeding after 24 hours of labor are among those positive outcomes of the exercise during pregnancy.

Aims: This study was meant to determine the effects of exercise during pregnancy

Methods: This research was an explanatory research using cross sectional design. The research respondents were 42 mothers who were admitted to give birth in Hermina Hospital. Twenty-one mothers who practiced twice a week of a combined yoga, pilates, hypnotherapy, and tai chi were recruited as a case group in this study. Meanwhile, 21 mothers who did not practice exercise during pregnancy were requested to participate in the control group of this study. The infants' birth weight was weighed immediately after birth with the baby scales, and the mothers' post-partum hemorrhage (PPH) were measured by the need bandages and blood ejected through similar toilet ≥ 500 ml. A statistical test used is the T-Test Independent and Mann-Whitney.

Results: The results showed that the postpartum hemorrhage occurrence was less among respondents who practiced a regular exercise during pregnancy than who did not. However, there was no evidence of statistically difference between the two groups. The average of birth weight babies born to mothers who practiced a regular exercise during pregnancy was $3,418 \pm 215$ grams or greater as compared (2643 ± 180 grams). It showed a significant difference in birth weight between mothers who did exercise during pregnancy than mothers from other group ($p = 0.001$).

Conclusion: In conclusion, the exercise during pregnancy has a positive impact on the birth weight of the babies. Thus, the authors suggest to all maternal and child health service providers to plan a pregnancy exercise program.

Keywords: Pregnant exercise, Postpartum hemorrhage, Birth Weight, Hermina Hospital, Semarang

INTRODUCTION

The success of a pregnancy can be measured if the birth weight > 2500 g and the mothers do not experience hemorrhage the child birth. The expected impact of the baby and his mother are spared from death, because of maternal and perinatal mortality is an indicator of the success of health care.

The success of the pregnancy can be realized with a normal birth weight and no postpartum hemorrhage. Fetal growth is influenced by the amount and quality of food also the mother who is routinely doing the pregnancy exercise [1].

Pregnancy exercise can increase the amount of oxygen in the mother's blood circulation, causing the supply of sufficient oxygen through the placenta, so that optimal fetal growth. Pregnancy exercise can improve maternal glucose tolerance, thus becomes optimal fetal growth.. Birth weight

are critical to the morbidity and mortality of infant, and child development in the next life cycle [2,3]. Movement exercises during pregnant may increase fetal brain development so that the baby has a score of languages and intelligence skill at the age of five [2].

Pregnant exercise is a exercise movement specially designed by medical and fitness experts to strengthen the uterine and the pelvic floor muscles, in order to facilitate the delivery process and reduce the risk of hemorrhage postpartum. Combined yoga, Pilates, hypnotherapy, and tai chi called Yophyta Maternal [1].

Pregnancy exercise has been reported to decrease the incidence of low birth weight, heart rate normal heart rate, and also reducing hemorrhage after childbirth [1,3]. Exercise during pregnancy can increase the norepinephrine, which serves to improve the frequency and strength of uterine muscle contraction, so that postpartum hemorrhage can be reduced [4].

Pregnancy exercise can increase the concentration of estrogen and miometrium perfusion, that can improve the receptors oxytocin and prostaglandin, so it has an adequate quality of uterine contractions, as a result of postpartum hemorrhage can be minimized [2]. Cc

Postpartum hemorrhage is loss of blood through the vagina more than 500 ml after give birth. If the blood loss occurred in the first 24 hours after give birth called primary postpartum hemorrhage. Secondary postpartum hemorrhage refers to excessive vaginal bleeding between 24 hours - 6 minggu postpartum [5-7]. Hermina Hospital Pandanaran is a hospital in Semarang that provide health services to the community, especially for maternal and child health issues. Hermina hospital held a pregnancy exercise program twice a week, led by a certified instructor under the supervision of a specialist in obstetrics and gynecology [8].

METHODS

This research was an explanatory research using cross sectional design. The study population is mothers who was give birth at Hermina Hospital in 2009. Inclusion criteria include: primiparas, aged 20-35 years, practiced twice a week. Exclusion criteria included: Gemelli, history pre eclampsia, injuries to the birth canal. The study and control groups distinguished by routine exercise during pregnancy. The number of samples in each group is 47 mothers give birth, according to the criteria by taking purposive sampling. Infant birth weight were measured immediately after birth up to 24 hours with the baby scale, whereas postpartum hemorrhage is measured based the sanitary pads that are used in a day and blood ejected through the toilet wich equivalent to > 500 ml for 3 days postnatal care in hospital [9-11].

This analysis is used to provide an overview of research data in the form of a frequency distribution. Analysis was conducted to PPH difference test using Independent T Test, being the difference birth weight use Mann Whitney.

RESULT

Characteristic of the sample

Table 1. Characteristic of the samples

Variable	f	%
Education		
Junior high school	17	36,2
Senior high school	1	2,1
Undergraduate	27	57,4
Graduate	2	4,3
children Job		
Housewife	11	23,4
Employee	15	31,9
Private employees	21	44,7
Ante Natal Care		
≥ 4 times	29	61,7
< 4 times	18	38,3

Table 1 showed that most of the samples is education undergraduate, worked as a private employees, and perform antenatal care ≥ 4 times. all samples are classified as middle socio-economic.

Effect of Pregnancy Against exercise ostpartum Hemorrhage

The average PPH group which doing the exercise routinely during pregnancy (194 ± 16 ml), and those who do not exercise during pregnancy ($214 \text{ ml} \pm 20$ ml). Mann-Whitney test showed no significant difference between maternal postpartum hemorrhage who do exerciseduring pregnant and not doing exercise ($p = 0.691$). although not statistically proven no correlation exercise during pregnancy with postpartum hemorrhage, but showed a tendency that if during pregnancy do gymnastics regularly at least 2 times / week, then the PPH can be minimized.

Effect of Pregnancy Gymnastics Against Birthweight Infants

The average birth weight of babies born by those who routinely perform pregnancy exercise routine (3418 ± 200 grams) is greater than the group that did not do exercise pregnant (2643 ± 126 grams). Results of cross-tabulation show the incidence of LBW (Low Birth Weight) that is < 2500 grams not found in women who do exercise during pregnancy.

Table 2. birth Weight Infants

Variable	Birth Weight Infants			
	≥ 2500 g		< 2500 g	
	frequency	%	frequency	%
Pregnant Exercise	47	100,0	0	0,0
Not Pregnant Exercise	33	70,2	14	29,8

Table 2 showed that the incidence of low birth weight is common in women who did exercise during pregnancy, whereas in women who regularly exercise during pregnancy at least 2 times / week was no baby is born with a birth weight < 2500 g. Independent T Test showed the difference in birth weight between mothers who do exercise during pregnant than who do not exercise ($p=0,001$)

DISCUSSIONS

The impact of exercise during pregnancy with postpartum hemorrhagic

Pregnant women who didn't exercise regularly usually have (214 ml \pm 20 ml) and (194 \pm 16 ml) to those who did it on regular basis. Although not proven the existence of statistically significant difference. Only 10 ml bleeding difference between mothers who regularly exercise during pregnancy or not. This is because the measurement of bleeding is based on the number of pads used per day, as well as bleeding issued through the toilet.

Pregnancy exercise can improve the quality of the uterine muscle contraction (amplitude, frequency, duration) in the delivery process. Pregnancy exercise can increase the concentration of estrogen and perfusion myometrium (uterine muscle). It increases oxytocin and prostaglandin receptors and ultimately the quality of adequate uterine contractions, so that PPH can be reduced / prevented. Exercise is known to increase circulating levels of norepinephrine and epinephrine. Norepinephrine has been shown to increase both the strength and the frequency of uterine contractions. In contrast, epinephrine has an inhibiting effect on uterine activity.

The lower of hemoglobin levels, injuries to the birth canal and the placenta remaining in the uterus can also affect postpartum hemorrhage [2,6,7].

Effect of Pregnant Exercise on Birth Weight Infants

The results showed on the mother who did a routine exercise while pregnant will not be found low birth weight. t test showed significant differences in birth weight among mothers who do exercise routine for pregnant and do not do exercise. Some studies suggest a physical and physiological benefits for the baby, if the mother doing exercise during pregnancy.

Pregnant exercise will increase the amount of oxygen in the blood throughout the body of the mother, and therefore the flow of oxygen to the baby through the placenta will also be smooth, so that the growth of fetus during pregnancy run optimally [2]. When the pregnant woman doing exercise, then the blood circulation becomes smooth, so that the supply of oxygen to the baby through the placenta more leverage, the impact is the growth of the fetus will be maximal, and reduce the incidence of low birth weight.

Regular exercise during pregnancy can be affect glucose tolerance, so that the growth fetus become better. According to a Canadian study, pregnant women who exercise regularly better glucose tolerance, so that the risk of giving birth to babies weighing > 4000 grams or low birth weight lower than pregnant women who do not do exercise [11]. Another study showed that pregnant women do exercise routine has an average birth weight of more than 5 ounces of pregnant women who do not do exercise. these results do not correspond with Haakstad research that states that exercise during pregnancy has nothing to do with birth weight infants [3,4,12,13,14,15,16].

Research in Norway has found that mothers who do exercise regularly have a lower risk of having a baby with birth weight > 400 grams (Macrosemia). Movement during pregnancy exercise affect the fat removal on the baby's body, thus preventing the occurrence macrosemia. [17].

CONCLUSIONS

In conclusion, the exercise during pregnancy has a positive impact on the birth weight of the babies. so the authors suggest to all layananan maternal and child health, can plan a pregnancy exercise program. This study is only based on the number of sanitary pads used per day and the bleeding had been spent on toilet. Next work should include the medical records part of the delivery room, postpartum hemorrhage, especially measuring devices untested validity, because it.

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