



The Effect of Exercise on Physical and Psychological Adaptation During Antenatal Period: Systematic Review

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Abstract. During pregnancy physical and psychological changes occur that will cause discomfort during the stages of pregnancy. Pregnancy exercise is one of the activities in prenatal care that will provide a better pregnancy product or delivery outcome, compared to pregnant women who do not do pregnancy exercises. The purpose of this study was to determine the effectiveness of pregnancy exercises in improving physical and psychological adaptation during pregnancy. This study is a literature study with article search using Google scholar, search engine PubMed, science direct, and the Garuda portal to find articles according to the inclusion and exclusion criteria and then review the articles. From the screening there are 16 articles that matched the criteria. Based on the literature study in 16 articles, it found fourteen articles says there is an influence between pregnancy exercise and the intensity of low back pain and to help reduce anxiety in pregnant women and two article says there is no effect between pregnancy exercise and the intensity of low back pain and anxiety in pregnant women. Pregnancy exercise have proved to be effective in increasing physical and psychological adaptation during pregnancy.

Keywords: pregnancy exercise · physical · psychological · pregnancy

1 Introduction

During pregnancy there are physical and psychological changes which are useful for the growth and development needs of the fetus [1]. The changes that occur will cause a feeling of discomfort that lasts during the pregnancy stage. This change is an attempt to adjust for excessive body load due to an increase in the height of the uterine fundus and accompanied by an enlargement of the abdomen which makes the body load forward so that the spine pushes towards the back causing a feeling of soreness, varicose veins and cramps in the legs [2].

The physiological changes that occur in each of the body's systems during pregnancy can interfere with the physiological responses needed to fight acute illness [3]. Acute critical illness in pregnancy can cause various conditions that can endanger the health of the mother and baby, which in turn can lead to death. In the UK, 261 women died as a direct or indirect result of pregnancy. Pre-eclampsia and thromboembolic disorders

are the leading causes of maternal mortality in the UK. The World Health Organization (WHO) noted that around 830 women worldwide die every day due to complications related to pregnancy and childbirth and as many as 99% of them are in developing countries. In developing countries, the Maternal Mortality Rate reaches 239 per 100,000 live births.

Apart from physical changes, pregnant women also experience psychological changes during pregnancy [4]. In the first trimester, the psychological changes that occur are that the mother shows feelings of anxiety mixed with happiness, an ambivalent attitude, the mother is more focused on herself, and there are emotional changes and sexual changes that occur due to decreased libido [5]. Libido in general is greatly influenced by fatigue, nausea, depression, enlarged breasts, pain, anxiety, worry and other problems which are normal in the first trimester. Furthermore, in the second and third trimesters, the psychological conditions often experienced by pregnant women are anxiety and fear in dealing with physical changes and preparation for birth [6]. This is called the fear-tension-pain concept. Where fear creates tension or panic which causes the muscles to stiffen and ultimately causes pain. Excessive anxiety increases the risk of preterm birth, miscarriage, and causes the release of the stress hormone Adreno Corticotropin Hormone, cortisol and catecholamines which result in impaired blood flow in the uterus which results in postpartum parenting stress [7]. So that if left untreated, the mortality and morbidity rates for pregnant women will increase.

Pregnancy exercise is an important method to maintain physical balance of pregnant women and is an exercise therapy given to pregnant women with the aim of achieving a fast, easy and safe delivery [8]. Pregnancy exercise plays a role in strengthening contractions and maintaining flexibility of the abdominal wall muscles, ligaments, pelvic floor muscles and others that hold the added pressure and are associated with childbirth [9]. Pregnancy exercise is also useful for reducing anxiety levels in dealing with childbirth. Through exercise, the mother's stress during pregnancy and childbirth will be reduced, because pregnancy exercise results in an increase in norepinephrine levels in the brain, thereby increasing work power and reducing tension. The relaxing effect is useful for stabilizing anxiety and reducing fear by means of physical and mental relaxation, as well as obtaining information for preparations to be experienced during labor and birth [5, 6].

Breathing exercises, strengthening and stretching exercises, and relaxation exercises are the core components of pregnancy exercise. When pregnant women do deep breathing exercises, they feel that their breathing becomes more regular, light, less rushed and long. In addition, strengthening exercises and stretching muscles also reduce the stress of pregnant women. At the end of the pregnancy exercise program, there are relaxation exercises that combine muscle relaxation and breathing relaxation. A healthy reproductive age is 20–35 years, multiparous women require less uterine work than primiparous but this can be overcome by doing pregnancy exercises. This occurs due to an increase in the level of endorphins in the body during exercise, which naturally functions as a pain barrier.

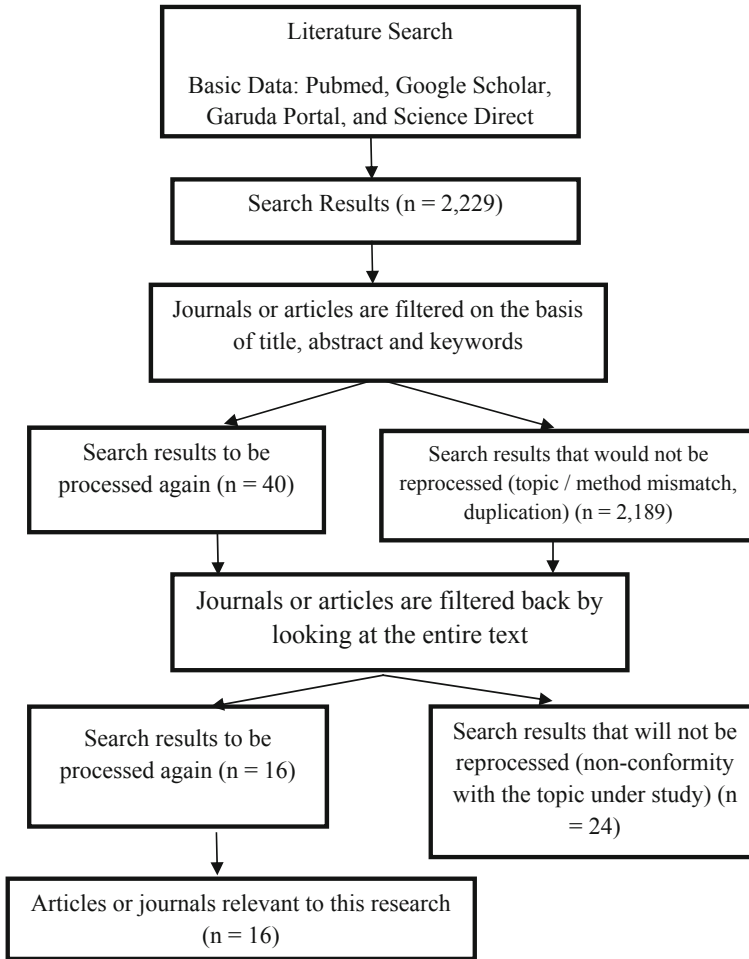
The purpose of this study was to analyze the description of maternal characteristics during pregnancy and the effectiveness of pregnancy exercise in improving physical and psychological adaptation during pregnancy.

2 Research Methodology

The research method used is literature study. The literature study method is a form of research that is carried out through searching by reading various sources, including books, journals and other publications related to the research topic, to answer existing issues or problems. Sources of literature search using electronic based Google Scholar, PUBMED, Science Direct, Garba Digital Reference using the keywords Pregnancy exercise and back pain, Pregnancy exercise and anxiety, Effect pregnancy Exercise and Low back pain, Effect pregnancy Exercise and Anxiety. The inclusion criteria in this study were articles used were full text, articles used Indonesian and English, original articles (not research reviews). The total number of journal search findings was 2229 journals. Then after going through the journal selection process according to the inclusion criteria, 16 journals were selected to be used in this study, namely through PUBMED, 2 journals were selected, ScienceDirect 2 journals, Poral Garuda 6 journals and Google Scholar 6 journals. The 16 selected journals include journal 1 Specific exercise to treat pregnancy-related low back pain in a south African population (Judith Kluge, David Hall, Quinette Louw, Gerhard Thern, Debbie Grove, 2011), journal 2 The effect of exercise training on disability due to low back pain in pregnant women referred to the health center of Karaj. Iran (Maryam Khalednezhad, Sedigheh Sadat Tavafian, Rahman Panahi, 2017),

Anxiety Levels of 2nd and 3rd Trimesters of Pregnant Women in Margaluyu Village, Kasemen Health Center Work Area (Nila Marwiyah, Pratiwi Anjar Sari, 2018).

Literature Study Stages



3 Result and Discussion

Results

See Table 1.

Discussion

1. Characteristics of Pregnant Women

a. Age

From the results of the review of the article, it was found that the average pregnant woman was in the age range of 20–35 years, which was classified as safe or not at risk for pregnancy. The risk of gestational age occurs at the age of > 35 years because of that

Table 1. Result

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
1.	<i>Specific exercise to treat pregnancy-related low back pain in a south african population</i>	Judith Kluge, David Hall, Quimette Louw, Gerhard Thern, Debbie Grove, 2011 Researchers from Stellenbosch University and Tygerberg Hospital, Cape Town, South Africa	This is to determine the effect of exercise on pain intensity and functional ability of pregnant women who experience back pain	<i>Exercise pregnancy and low back pain</i>	This study used a randomized controlled trial conducted at the Tygerberg and Paarl hospitals with a total sample of 50 respondents. The research instrument RCOG guidelines for Exercise During Pregnancy, pain intensity was measured using a numerical pain scale for functional ability measured using a Likert-Modified Roland-Morris Disability questionnaire.	a. The results showed that between the group that was given the intervention and the group that was not given the intervention with a significance value ($P < 0.01$) b. <i>Exercise</i> programs can reduce back pain and can improve the functional abilities of the mother during pregnancy
2.	<i>The effect of exercise training on disability due to low back pain in pregnant women referred to the health center of karaj. Iran</i>	Maryam Khalednezhad, Sedigheh Sadat Tavafian, Rahman Panahi, 2017 Researcher from the Faculty of Medical Sciences, Tarbiat Moderes University, Tehran, Iran.	This is to determine the effect of exercise on disabilities caused by back pain during pregnancy	<i>Exercise pregnancy and low back pain, Disability</i>	This study used two groups randomly assigned using a multi-stage random sampling technique with a sample size of 120 pregnant women The research instrument used a Quebec questionnaire with 25 questions	The results show that exercise during pregnancy can reduce back pain in pregnant women so that it can reduce the risk of disability caused by back pain. This is evidenced by the differences before and after the intervention. In the control group who did not receive educational materials and exercise exercises, the level of disability was worse. With a significance value in the intervention group ($P < 0.0001$).

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Table 1. (continued)

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
3.	<i>Effect of a regular exercise program on pelvic girdle and low back pain in previously inactive pregnant women</i>	Lene A. H. Haakstad, MSc, PhD and Kari Bo, PhD, 2015 Researcher from the Norwegian School of Sports Sciences, Oslo, Norway	To determine the effect of exercise on the severity of pain during pregnancy	<i>Exercise pregnancy, pelvic girdle and low back pain</i>	The study used a randomized controlled trial with a sample size of 105 pregnant women The instrument used is the America College of Obstetricians And Gynecologist Guidelines	The results showed no significant difference between the intervention group and the control group.
4.	<i>Effect of therapeutic exercise on pregnancy related low back pain and pelvic girdle pain</i>	Iva Sklenpe Kokic, PhD, Marina Ivanisevic, Md, PhD, Melita Uremovic, Md, PhD, Tomislav Kokic, MD, Rado Pisot, PhD and Bostjan Simunic, PhD, 2017 Department Of Health Studies, Collage Of Applied Sciences "Lavoslav Ruzicki" In Vulkovar, Croatia	To determine the effect of exercise on the severity of lumbopelvic pain	<i>Exercise pregnancy, low back pain and pelvic girdle pain</i>	This study used a randomized controlled trial with a total sample of 45 pregnant women The instruments used are numeric rating scale, rolland-morris disability questionnaire (RMDO), Pelvic girdle Questionnaire (PGQ).	The results showed that there was a significant difference between the group that was given the intervention and the group that was not given the intervention so that the exercise program could be used to reduce the severity of low back and low back pain during pregnancy. With a significance value ($P = 0.017$).

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Table 1. (continued)

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
5.	The Influence of Pregnant Exercise on Decreasing Back Pain in Third Trimester Pregnant Women	Rini Anggeriani Cendekia Medika (vol.3 no 1, April 2018) Researcher from Abdurrahman Midwifery Academy Palembang	to determine the effect of pregnancy exercise on reducing back pain in trimester III pregnant women	Pregnancy exercise and back pain	Survey analytic with cross sectional approach with total sampling technique with a total sample of 30 respondents statistical test using Chi-Square	The results show that pregnancy exercise has an effect on reducing back pain: a. The results of measurements before the intervention showed that 1 person experienced mild pain, 22 moderate pain and 7 severe pain. b. After participating in pregnancy exercise, it was found that 22 respondents experienced mild pain and 3 respondents experienced moderate pain. Meanwhile, 5 respondents who did not participate in pregnancy exercise experienced moderate pain.
6.	The Effect of Pregnancy Exercise on Lower Back Pain in Third Trimester Pregnant Women in Bangkalan Community Health Center	Merlyna Suryaningsih, Alvin Abdillah, Sufiyani, 2017	to determine the effect of pregnancy exercise on reducing back pain in third trimester pregnant women	Pregnancy exercise and back pain	This type of research is a quasi experiment with a pretest posttest approach with control group with a simple random sampling technique with a sample size of 18 respondents. The research instrument used SOP and research questionnaires. Data analysis used Shapiro will statistic and paired t-test.	Based on the results of the study, it was found that there were differences in the back pain scale between the pre-post pregnancy exercises.

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No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
7.	Development of Pregnant Exercise and Its Effect on the Reduction of Complaints of Low Back Pain in Trimester III Pregnant Women	Neny Yuli Susanti, Nurul Khalifah Putri. Oxytocin, Obstetrics, Vol. VI, No. 1, February 2019: 45-49. Researcher from the health faculty, Ibrahimy university	The purpose of this study was to determine the effect of developing pregnancy exercise combined with antenatal yoga to reduce lower back pain in pregnant women.	Pregnancy exercise and back pain	This study used a pre-experimental design method. Meanwhile, the design in this study used the One Group Pretest Posttest Design. The sample used purposive sampling technique with a sample size of 14 respondents. The instruments used were the observation sheet and pregnancy exercise SOP. Data were analyzed using the Wilcoxon Signed Rank Test statistics	The results showed the effect of back pain Pre and post pregnancy exercise. The mean ranks with the Wilcoxon test results of statistical tests with the p value of 0,000 (<0,05), so there is a significant difference in low back pain complaints between area not pain before and after pregnancy exercise and antenatal yoga.

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No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
8.	The Effect of Pregnancy Exercise on Lower Back Pain Intensity Decrease in Trimester II and III Pregnant Women at Bps Diah Clotina, Mororejo Village, Kaliwungu District, Regency Kendal	Menik Kusriyani, Priharyanti Wulandari, Klara Mita Apriliyani. 2017 Researcher from STIKES Widya Husada Semarang	a. Knowing the effect of pregnancy exercise on reducing the intensity of low back pain in pregnant women in the second and third trimesters b. Describe the intensity of pain before and after pregnancy exercise.	Pregnancy exercise and back pain	This research is a quasi-experimental research method with one group pre-test post-test without control design. The sampling technique used was total sampling with a sample size of 30 pregnant women. The instrument used the NRS observation sheet and data analysis used the Wilcoxon signed test statistic.	a. The results showed that there was an effect of pregnancy exercise on decreasing the intensity of low back pain in pregnant women in the second and third trimesters b. The level of pain before and after doing pregnancy exercise shows that there is a decrease in the level of pain, as evidenced by the lower median (median) from the previous 6,00 to 4,00, the value on the standard deviation from previously 1.215 to 1.203, the lowest value (min) from 4 to 2 previously, and the highest value (max) from the previous 8 to 6.
9	Pregnant Gymnastics with lower back pain in third trimester pregnant women at Independent Practice Midwives	Sylvia Meristika Rachman, Maesaroh, Nur salamah Al hady, 2019 Researcher from Bhakti Health Polytechnic	This is to determine the relationship between pregnancy exercise and lower back pain in third trimester pregnant women	Pregnancy exercise and lower back pain	This research is an analytic survey using a cross sectional approach. Sampling using total sampling technique with a sample of 46 people.	The results of this study indicate that there is a relationship between the implementation of pregnancy exercise with low back pain in third trimester pregnant women with a p value of 0,000 or p value < 0,005.

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No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
11	<i>The effect of exercise and childbirth classes on fear of childbirth and locus of labor pain control</i>	Momika Guskowska, 2015 Researcher from the department of Socio-Cultural Foundations of Tourism, Faculty of Tourism and Recreation, Jo zef Pilsudski University of Physical Education in Warsaw, Poland	Identifies effects of two types activities to prepare for childbirth, namely traditional and physical labor classes exercise class, on the intensity of the fear of childbirth	<i>Exercise and childbirth classes, fear, locus of labor pain control</i>	This study is a longitudinal / non-experimental research sample of 109 respondents. The instrument uses the <i>Fear of Childbirth Scale</i> and the <i>Control of Birth Pain Scale</i> , three standardized psychological inventories for the big five personality traits (NEO Five Factors Inventory), trait anxiety (State/Trait Anxiety Inventory) and dispositional optimism (Life Oriented Test Revised) and a questionnaire concerning socioeconomic status, health status, activities during pregnancy, relations with partners and expectations about childbirth.	trait anxiety (State/Trait Anxiety Inventory) and dispositional optimism (Life Oriented Test Revised) and a questionnaire concerning socioeconomic status, health status, activities during pregnancy, relations with partners and expectations about childbirth.

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Table 1. (continued)

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
12	Effect of Combination of Prenatal Yoga and Pregnancy Exercise on Levels Anxiety and the duration of the first stage of labor in the third trimester of pregnancy	Puji Iestari1, Risma Aliviani Putri, Moneca Diah Listiyanningsih. 2019 Researcher from Ngudi Waluyo University	Knowing the effects of pregnancy exercise on anxiety levels and the duration of labor 1	Pregnancy exercise, anxiety and labor duration 1	This study used a quasi-experimental research (Quasi Experimental) with a Non Equivalent Control Group Design. In this design it is divided into 2 groups, namely 15 respondents the treatment group and 15 control group respondents who have the same characteristics.	a. Based on the results of this study using the T-Test Independent, the p value was 0,005 smaller than 0,05. This means that there is an effect of a combination of prenatal yoga and pregnancy exercise on anxiety in Trimester pregnant women who are facing labor. b. Based on the results of the study, it shows that there is an effect of a combination of prenatal yoga and pregnancy exercise on the duration of the first stage of labor with a p value of 0,000 smaller than 0,05.

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Table 1. (continued)

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
13	Pregnancy Exercise Affects Anxiety Levels in Primigravida Trimester III at RSIA Sakina Idaman Sleman, In Yogyakarta	Farida Aryanil, Akbar Raden, Ismarwati. 2016 Researchers from 'Aisiyah Yogyakarta University and Alma Ata University Yogyakarta	Knowing the effect of pregnancy exercise in reducing the level of anxiety in the third trimester primigravida at RSIA Sakina Idaman Sleman, DIY	Pregnancy Exercise and anxiety levels	Research design used was a quasi experiment with a pretest – post test non equivalent control group design. Primigravida research sample amounted to 56 people with accidental sampling technique. The research instrument used a questionnaire that had been tested for validity and Reliability at Rs. Queen Latifa Univariate analysis describe each variable. Bivariate analysis using t-test and linear regression for analysis multivariate.	The results showed that the average level of anxiety in the group given pregnancy exercise was more low- 4.3 ± 3.8 compared to the control group 0.8 ± 1.2 . The result of the t-test p-value $0.00001 < 0.05$.

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Table 1. (continued)

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
14	Effects of Pregnant Exercise on Anxiety Levels in Pregnant Women	Widya Kusuma Wati, Yunda dwi jayanti, 2020 Researcher from Akbid Dharma Husada Kediri	Knowing the effect of pregnancy exercise on levels anxiety in pregnancy.	Pregnancy Exercise and Anxiety Levels	This research is a researcher Comparison with cross sectional approach. The research was conducted at the Tiron Health Center. The research sample was 30 gymnastic group respondents and 30 respondents the control group using the technique purposive sampling. Research instruments using questionnaire (Zung Self-Rating Anxiety Scale Data analysis used the Wilcoxon Man test Whitney U Test with a significance level of $\alpha = 0.05$.	The results showed that of the 30 group respondents no one experienced anxiety, while in the group control (without exercise) there was 1 respondent (3,33%) experiencing anxiety weight. The analysis results obtained p value = 0.154 which means there is no significant effect pregnancy exercise significantly affects the level of anxiety in pregnancy.

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Table 1. (continued)

No.	Article Title	the researcher and the year and origin of the researcher	Research purposes	Variable	Research methods	Research result
15	Participation Relationship Exercise with Pregnant Deep Primigravidian Anxiety Coping with Labor	Diana Hartaty A. 2016 Researchers from the Jakarta Health Polytechnic	know the participation in pregnancy exercise reduce primigravida anxiety in dealing with childbirth	Pregnancy exercise and anxiety	This research is quasi experimental non equivalent control group. The population in this study were all third trimester Primigravida pregnant women Checking their pregnancy at the West District Puskesmas with a sample of 30 respondents consisting of from the group control and treatment groups. The data analysis technique used the T test to see the difference between pregnant exercise participation in the control group and the treatment group.	Independent T statistical test results The test shows that the value of $p = 0.00$ with $\alpha = 0.05$ stated that pregnancy exercise is effective in reducing anxiety of primigravida pregnant women in dealing with childbirth.
16	The Effectiveness of Pregnancy Exercise Trimester Anxiety Levels of Pregnant Women 2 and 3 in the Margaluyu village working area Kasemen Health Center	Nila Marwiyah, Pratiwi Anjar Sari, 2018 Researcher from the Science Study Program Nursing, STIKes Paletelan	Knowing the effectiveness of pregnancy exercise on the level of anxiety of pregnant women in the 2nd and 3rd trimesters Margaluyu Village Working Area of Kasemen Health Center.	Pregnancy exercise and anxiety levels	This research uses design <i>quasi experiment pre post without control</i> . The sample used by 14 pregnant women was taken using total sampling. The instrument used <i>Perinatal Anxiety Screening Scale</i> (PASS).	Based on the results of the study, it shows that the average value of anxiety levels for pregnant women in the 2nd and 3rd trimesters before and after being given pregnancy exercises in Margaluyu Village, the working area of Kasemen Health Center is 7.429. The results of the Paired Sample T-test in the group given the pregnancy exercise intervention obtained a P-value = 0.000, it can be concluded that H_0 is rejected and H_a is accepted. This means that there is an effect of pregnancy exercise on the anxiety level of pregnant women in the 2nd and 3rd trimesters in Margaluyu Village, the Kasemen Health Center Work Area.

age the reproductive organs will experience aging and the possibility of stiffness in the birth canal so that the risk of pregnant women getting a child with defects, obstructed labor and bleeding may occur.

b. Gestational age

Gestational age is a factor that can adapt both physically and psychologically during pregnancy. Based on the results of the study of the article on the gestational age of mothers who enter the second and third trimester stages, they often experience back pain due to the growing uterus, changes in body posture, and weight gain which results in increased body workload. In addition, in the third trimester of pregnancy, the mother often experiences anxiety due to worries about the approaching labor. This indicates that gestational age affects physical and psychological adaptations during pregnancy.

c. Profession

Based on the study of work articles, it can affect the implementation of pregnancy exercise. In the eighth and tenth articles, it is said that work affects the participation of mothers in doing pregnancy exercise. Pregnant women who do not work have more time than pregnant women who work. Furthermore, based on the results of the study, work articles also affect physical and psychological adaptations during pregnancy. Mother's work is related to the activities that pregnant women do. Strenuous activity puts a higher risk of miscarriage and preterm birth due to insufficient oxygen intake to the placenta and possible premature contractions.

d. Parity Status

Based on the article parity status can affect physical and psychological adaptation during pregnancy. Multigravida mothers often experience back pain due to muscle stretching that occurs in the first pregnancy. So that the more pregnant women experience and give birth, the risk of back pain is greater than that of primigravida women who have good abdominal muscles because these muscles have not been stretched. In addition, the level of anxiety also increases in primigravida mothers, the assumption of researchers based on the literature review is that this occurs due to fear of unprecedented experiences and maternal anxiety in facing the approaching time of labor.

In the eighth article, it says that parity status can also affect the implementation of pregnancy exercise, because usually multigravida mothers will understand and make it possible to feel the benefits of pregnancy exercise based on previous pregnancies. So that mothers with multigravidas do more frequent pregnancy exercises.

e. Education

Education is a person's effort to increase knowledge through the learning process. One of the factors that can influence the implementation of pregnancy exercise is education. A highly educated person will be broader in their views and more receptive to new ideas and ways of life. In general, the higher a woman's education level, the more likely she is to do pregnancy exercises. Based on the results of the study, it was found that the average mother who participated in pregnancy exercise was a mother with high

education, namely high school and university. However, there are inconsistent results in the ninth article because in this study mothers with primary education (SD-SMP) participated in more pregnancy exercise.

2. The Effectiveness of Pregnancy Exercise on Physical and Psychological Adaptations during pregnancy

During pregnancy, the mother experiences physical and psychological changes that occur due to hormonal changes that the fetus needs for growth and development. The physical changes that occur during pregnancy cause the mother's discomfort during pregnancy. Based on 16 review articles that have been carried out by literature studies, pregnancy exercise has been shown to be effective in improving physical and psychological adaptation during pregnancy. Pregnancy exercise is an important method to maintain and improve the physical balance of pregnant women. The effects of the hormones estrogen, progesterone, and elastin will affect the muscles of the body parts, including the spine, abdominal muscles, and pelvic floor muscles. Pregnancy exercise is also useful for shaping and adjusting body posture, improving circulation and respiration, adjusts for weight gain and forms good breathing habits. In addition, during pregnancy exercise, the body will produce more endorphin. Endorphin is known as a substance that has a working principle like morphine which functions to provide calm, overcome stress during pregnancy and is able to reduce pain such as pain in the back area. In pregnancy exercise, there is also a relaxing effect that can stabilize the emotions of pregnant women. Relaxation is very useful for reducing stress during pregnancy. Pregnancy exercise should be done at 22 weeks of gestation to avoid the risk of abortion. This is because before the pregnancy is three months, the attachment of the fetus in the uterus is not too strong. Pregnancy exercise is done at least 2–3 times a week with a duration of 30 min.

The assumption of this pregnant exercise intervention researcher has a great opportunity to be practiced at the health center or at home with expert supervision. Researchers suggest that educational material is expected before doing pregnancy exercise in order to increase the mother's knowledge of changes that occur during pregnancy. There are still few articles on pregnancy exercise for the search for articles on an international scale (in English), the majority of the published years are above 10 years ago so that further research is needed with a larger number of samples and a combination of new discovery interventions so that this pregnancy exercise can be further developed.

4 Conclusion

Based on 16 article studies, it was found that the characteristics of pregnant women were the most respondents aged 30–35 years, gestational age was in the second and third trimesters, the occupation of the most respondents was housewives, the most parity status of mothers was multiparous mothers and the most respondents' education was senior secondary education (SMA / SMK).

The results of a literature study conducted on 16 articles, it can be concluded that pregnancy exercise is effective in improving physical and psychological adaptation during pregnancy.

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