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The Effect of Pregnancy Massage on Pregnant Mother's Anxiety Before Labor

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***Abstract*---**Non-pharmacological treatment that can be given to overcome antenatal anxiety is Pregnancy massage. Pregnancy massage is a modification of technique and body position for pregnant women given since pregnancy. The purpose of this study was to determine the effectiveness of Pregnancy massage on the anxiety of pregnant women. This study is a quantitative study with a Quasy Experiment research design with Pre-Posttest Design with Nonequivalent Control Groups. The sampling technique used was purposive sampling. Measurement of anxiety in pregnant women using the Pregnancy-Related Anxiety Questionnaire (PRAQ). The difference test was carried out before and after treatment using a nonparametric test. Pregnancy massage had a significant effect on anxiety in both groups. The results showed that pregnancy massage

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was effective in reducing anxiety in third-trimester pregnant women. Pregnancy massage is most effective interventions to reduce anxiety during pregnancy period. Non pharmacological interventions may be applied by applied by nurses and midwives to reduce anxiety during pregnancy.

Keywords---anxiety, labor, massage, non-pharmacological, pregnancy.

Introduction

Currently, the maternal mortality rate (MMR) is a key indicator of public health status. AKI shows the number of women who die per 100,000 live births, where the cause of death is related to pregnancy disorders or treatment during pregnancy, childbirth, and postnatal bleeding (42 days after delivery), excluding the length of the gestation period. MMR in Indonesia has reached 228 cases per 100,000 live births. The current global challenge is to achieve the 2015 MDGs. The MMR target is 102 per 100,000 live births. Currently, Indonesia has only reached 305 per 100,000 births. MMR in Bali province reached 68.6 per 100,000 live births (Kementrian Kesehatan RI, 2019). In 2017, nationally the cause of maternal death was dominated by bleeding as much as 23.91%, this is still a problem, including in Bali. The infant mortality rate in 2017 was 4.8 per 1,000 live births, already lower than the Prov. Bali 10 per 1,000 live births and the MDGs target of 5.7 per 1,000 live births, while maternal mortality in Badung Regency, Bali was 5 cases in 2017. Therefore, the government needs to improve the quality and ability of health workers or midwives to reduce the number of high Maternal Mortality (MMR) (Dinkes Bali, n.d.).

Anxiety is a feeling of fear and discomfort under certain conditions. This condition often appears in pregnant women due to hormonal changes with rates from 4.1% to 20%. Anxiety during pregnancy increases with increasing gestational age. This is caused by the fear of childbirth and the lack of effectiveness of coping strategies. Antenatal anxiety in pregnant women will harm the quality of life of pregnant women. Antenatal anxiety is one of the triggers for postpartum depression when it is not handled properly. The situation will get worse to cause morbidity in the mother and fetus. Although it harms the mother and fetus, the psychological health of pregnant women still receives less attention compared to the physical condition of pregnant women. Anxiety that is not addressed immediately can result in abnormal delivery and even death for the mother and fetus (Silva et al., 2017).

Non-pharmacological therapies that are commonly recommended for pregnant women are pregnancy massage (61%), acupuncture (45%), relaxation techniques (43%), and yoga (41%) (Field, 2010). Pregnancy massage is a modification of the technique and body position for pregnant women that is given since the gestational age of more than 16 weeks and at the end of pregnancy. At the end of pregnancy, the anxiety of pregnant women will increase, and through giving pregnancy massage pregnant women become more relaxed and reduce the hormones cortisol and norepinephrine which cause stress (Diego, 2004). Massage

therapy increases blood flow in several parts of the brain that are directly involved in depression and stress regulation, including the amygdala and hypothalamus, suggesting that massage therapy involves hypothalamic regulation of autonomic nervous system activity, cortisol secretion, and limbic activity associated with emotion regulation (Ouchi et al., 2006). This is reinforced by a study conducted by Field et al. (2010), which stated that pregnancy anxiety and depression were reduced by giving pregnancy massage. Pregnancy massage is a massage performed on pregnant women to increase blood circulation, reduce discomfort during pregnancy and reduce the stress hormone cortisol and reduce the risk of premature birth (Field et al., 2010). Pregnancy massage is given to pregnant women from 20 weeks of gestation until the last trimester of pregnancy. Pregnant women are positioned in a position to lie down as comfortably as possible and the back is supported by a pillow so that the mother feels comfortable. Pregnancy massage starts from the head, neck, back, arms, hands, and feet. A pregnancy massage is given for 10-20 minutes 2 times a week. Pregnancy massage techniques can reduce anxiety during pregnancy, depression and optimize the condition of babies born to pregnant women who are depressed (Field et al., 2009).

This study develops research that has been carried out, namely research on pregnant women diagnosed with severe depression. The results showed that pregnant women in the treatment group experienced a decrease in depression and higher cortisol levels compared to pregnant women in the control group and provided a smaller risk of preterm labor and low birth weight (Field, 2009). Pregnancy massage has never been done to pregnant women in Abiansemal Village, Badung Regency. In addition, several studies state that pregnancy massage is mostly given to third-trimester pregnant women who experience antenatal depression, while research on pregnancy massage to third-trimester pregnant women who experience anxiety is still very limited. This study aims to determine the effect of pregnancy massage on the anxiety of pregnant women in the third trimester.

Materials and Method

Quantitative research with Quasy Experiment research design with Pre-Posttest Design with Nonequivalent Control Groups which aims to determine the effect of Pregnancy massage on anxiety before delivery in third-trimester pregnant women. The objectives of this study are 1) to determine the characteristics of the research subjects 2) to compare the anxiety scores between those given pregnancy massage and those given antenatal care by existing procedures, 3) to compare each item of anxiety scores between those given pregnancy massage given antenatal care following existing procedures. This study used a randomized controlled trial (RCT) with a single-blind design to evaluate the effect of pregnancy massage on anxiety before delivery in pregnant women at the end of the third trimester. Each respondent was randomly assigned to be given a Pregnancy massage as an intervention or a full service.

The research subjects were third-trimester pregnant women in Abiansemal Village, Badung Regency. For safety reasons, there are inclusion criteria in this study: 1) pregnant women who agreed to be respondents in this study, 2)

pregnant women with gestational age > 28 weeks, 3) desired pregnancy, 4) no history of complications of pregnancy, and childbirth in past and checked with a midwife, 6) had no history of allergies to the oil to be used for massage, 7) had an anxiety score >20 which indicates that the mother was anxious during her pregnancy. The exclusion criteria in this study were 1) pregnant women with a history of depression and mental disorders, 2) mothers with multiple pregnancies. Drop out was carried out on pregnant women who had signed the consent form but withdrew in the middle of the study.The sample measurement uses the sample formula to test the mean difference between two groups at random. In Widastini's previous study, the anxiety score in the intervention group was 16.00±7 and the control group was 21.40±4. The researchers used an alpha of 0.05 and an 80% chance. Calculation of the sample using the formula of two independent groups. Based on the sample calculation, the size of each sample in the treatment group and the control group was 89 people. This number is added by 10% to anticipate the dropout rate so that the minimum sample size for each group is 98 people or a total sample of at least 196 people.

The sampling technique used in this study is random. A random process was used to minimize selective bias in this study. For pregnant women who are willing to participate in this study, the names of pregnant women are included in the list. The randomized process used simple random randomization with a ratio of 1: 1. The investigators did not know which subjects received the intervention or controls. This process is assisted by enumerators and therapists who have a certificate of Pregnancy massage training. Placement is done using a closed envelope containing sequential numbers (in two separate sets) which will later be grouped by a computerized generated random sequence. Placement is done by using a sealed envelope containing sequential numbers (in four separate sets) which will later be grouped by a computerized generated random sequence. The officer conducting the study gave each subject a sealed envelope for the selection of massage therapists and enumerators. The sample was divided into two research groups, namely the control group and the treatment group. The treatment group was given a pregnancy massage by researchers and enumerators. The control group was given antenatal care according to existing procedures.

This study began with the collection of data on pregnant women in Abiansemal Village, Badung Regency. The control group and the treatment group were formed from subjects who satisfied the inclusion criteria but did not meet the exclusion criteria. In the control group, prenatal care was provided according to standard procedures. Treatment was administered to the subjects in the treatment group. For the next four weeks, have a 20-minute pregnancy massage every two weeks. Pregnancy massage is safe to offer to third-trimester pregnant ladies. According to RCT research, the advantages of pregnant massage exceed the risks. Pregnancy massage was most likely unrelated to any obstetric or postnatal complications that occurred. Pregnancy massage has a favorable effect on pregnant women who are healthy and have no difficulties (Hall et al., 2020).

Each session began with the mother lying on her side with cushions behind her back and between her legs for support.The massage is performed in the following order and then repeated with the mother lying on her other side for a total of 20

minutes: (1) Massage the scalp, making little circles from the hairline to the temples, and kneading the neck from the base up; (2) Back: inching up the back, using fingertips placed on the sides of the spine, starting from the hipbone to the neck and then reversing; pressing fingertips along both sides of the spine from the neck to the backbone and then stroking upward from the hips to the neck; stroking the shoulder muscles (trapezius); stroking the shoulder muscles (trapezius); stroking the shoulder muscles (trapezius); stroking the shoulder muscles (trapezius); massaging the lower back from the backbone across the waistline with the heels of the hands in broad circles; stroking the shoulder muscles lengthy gliding strokes up and over the shoulders; (3) Arms: stroking from the wrist to the elbow; kneading the muscles from above the elbow to the shoulder; stroking from the wrist to the elbow; kneading the muscles between the wrist and the elbow; (4) Hands: using thumbs to make little circles on the palm; stroking between the spaces of the bones on the back of the hand; sliding down each finger; (5) Legs: sweeping strokes from the knee to the thigh, up and over the hip; kneading the muscles between the knee and the thigh; sweeping strokes from the ankle up towards the knee; kneading the muscles between the ankle and knee; sliding the hand from the Achilles tendon up towards the upper calf and sliding down to the heel with less pressure several times; (6) Feet: massaging the soles with fingers and thumbs from the toes to the heel, then returning to the toes; sliding down each toe and rotating the toes three times; stroking the top of the foot towards the leg. Both groups were given the Pregnancy-Related Anxiety Questionnaire-Revised 2 (PRAQ-r2) questionnaire to determine the amount of anxiety before delivery after four weeks.

Measurement of anxiety in pregnant women using the Pregnancy-Related Anxiety Questionnaire (PRAQ) which consists of 10 questions. This measuring tool is used to find out what makes pregnant women anxious during their pregnancy (Alderdice et al., 2013). PRAQ identifies anxiety through the results of a score of 37 = severe, 23 score < 37 = moderate and score < 23 = mild. PRAQ consists of 10 statement items which are grouped into 3 categories, namely; 1) fear of childbirth in items no 1, 2, and 5, (2) concern for fetal defects in items no 4, 8, 9, and 10, (3) concern for physical changes in items no 3, 6 and 7 (Mudra et al., 2019). Anxiety measurements were carried out after the intervention was given to the control group and the treatment group. Implementation of the intervention in the form of Pregnancy massage was carried out using a checklist.

Data analysis using SPSS version 21.0 with a significance level of 5%. The difference test was carried out before and after treatment using a nonparametric test because the scale was not normally distributed. This research has received ethical approval (Ethical Approval) from the Health Research Ethics Commission of STIKES Bina Usada Bali based on No.330/EA/KEPK-BUB-2019. Research subjects have first explained the objectives, procedures, benefits, risks and inconveniences, data confidentiality, and volunteerism. After getting an explanation, the research subjects were asked to fill out a written consent form.

Result and Discussion

Characteristics of research subjects

Table 1
Characteristics of research subjects

Characteristics	Group		Value ρ
	Treatment (n=98)	Control (n=98)	
Age (years old)			
Average (SD)	29,07(3,56)	27,48(3,80)	0,004*
Median (IQR)	28,0	27,0	
Rentang	21-35	21-34	
Gravida			
Primigravida	58(60,2)	49 (50,0)	0,196**
Multigravida	39 (39,8)	49 (50,0)	
Education level			
Elementary School	0	0	0,083**
Middle School	0	0	
High School	50(51,0)	62 (63,3)	
University	48 (49,0)	36 (36,7)	
Occupation			
Does not work	36(36,7)	46 (46,9)	0,193**
Work	62(63,3)	52 (53,1)	

Test Description : *)Mann Whitney **)chi square

In table 1, it is informed that the two groups have the same characteristics in gravida, education, and occupation (ρ> 0.05), while in the age characteristics in the treatment group and the control group there are significant differences (ρ <0.05). Based on the sociodemographic characteristics of third-trimester pregnant women in Abiansemal village, Badung district, it is known that the majority of respondents in the treatment group and control group are aged 27-28 years who fall into the category of healthy reproductive age. This study is in line with Hanifah's research (2019) which states that the characteristics of third-trimester pregnant women who experience anxiety in terms of age are included in the non-risk age category (20-35 years). The age of the pregnant woman determines the physiological and psychological status of the mother during pregnancy until delivery. Anxiety in pregnant women occurs due to individual maladaptive responses in the form of low coping abilities so that they are destructive and this coping mechanism is not always related to a person's age.

There is even younger age, better coping mechanisms in dealing with existing stressors (Hidayat, 2013). The gravida characteristics in the treatment group were more primigravida and in the control group, the number of primigravidas and multigravida mothers was comparable. According to Yanuarini (2013), previous childbirth experiences contributed to influencing a mother's level of anxiety in dealing with the labor process. Educational status in the treatment group and control group were more than those who had graduated from high school. In terms of educational characteristics, the results of this study are in line with

research by Hanifah (2019), which states that more third-trimester pregnant women have graduated from high school. Education is a factor that affects anxiety in pregnant women because education is an important role in the process of growth and development of all human abilities and behavior. Through education, humans are considered to gain knowledge. A pregnant woman with higher education will be able to control her emotions and suppress feelings of anxiety when facing the changes that occur in pregnancy and childbirth (Wulandari et al., 2019).

On the characteristics of occupation, in the two groups, both the treatment group and the control group, more respondents worked. For pregnant women who work, the responsibilities and workloads are often a burden which in turn affects the psychological condition of the mother and makes the mother stressed. But some state that mothers who do not work will increase the risk of pregnancy anxiety. This is following Ningsih (2018), which states that there is a significant relationship between work variables and the level of anxiety of third-trimester pregnant women in facing childbirth.

Anxiety analysis in both groups after intervention

Table 2
Comparison of anxiety of pregnant women in the treatment group and the control group after the study

Information	Group		value
	Treatment (n=98)	Control (n=98)	
Post-test scores			
Anxiety			
x (SD)	20.37(1.96)	30.08(4.10)	<0.001
median	20.0	30.0	
Range	17-28	20-40	

Test description: *) Mann Whitney

Table 2 it is informed that the average anxiety in the treatment group is 20.37 (1.96) lower than the control group, which is 30.08 (4.10). The results of the analysis in both groups after the study obtained p <0.001. This shows that pregnancy massage has a significant effect on anxiety in both groups. In table 2, the results of the analysis in both groups after the study obtained p < 0.001. This shows that pregnancy massage has a significant effect on anxiety in both groups. Respondents in the treatment group after being given a pregnancy massage for 4 weeks said that the body was more relaxed, slept more comfortably, and had no worries about pregnancy. This is following the theory that pregnancy massage can increase blood flow, and stimulate the release of endorphins so that it can reduce anxiety in pregnant women (Eman, 2016).

Physiologically the relaxing effect of pregnancy massage involves the parasympathetic nerves in the central nervous system which functions to reduce the production of the hormone adrenaline or epinephrine (stress hormone) and increase the secretion of the hormone noradrenaline or norepinephrine (relaxing

hormone), resulting in a decrease in anxiety and tension in pregnant women resulting in the mother pregnant become more relaxed and calm. Further research confirms that pregnancy massage is known to reduce levels of the hormones cortisol and noradrenaline and increase the concentration of dopamine and serotonin in pregnant women who experience pregnancy depression (Diego, 2004; Field et al., 2008). This is following research conducted by Field (2009), which states that giving pregnancy massage to pregnant women for 20 minutes every 2 times a week for 5 weeks can reduce anxiety and the incidence of premature birth (Field, 2009). An RCT study found the effect of massage on pregnant women who experience clinical depression. Pregnant women who received massage reported lower rates of depression and less leg and back pain than pregnant women who did not receive massage (Field et al., 2012; Manber et al., 2004; Manber et al., 2010).

Analysis of Anxiety by item questions

Table 3
Comparison of anxiety of pregnant women in the treatment group and the control group by item question PRAQ

No	Question Items	Group		ρ value*
		Treatment Mean(SD)	Control Mean(SD)	
1	I'm worried about childbirth	2,07(0,77)	1,87(0,57)	0,065
2	I'm worried about the pain of contractions and pain during labor	2,18(0,79)	1,84(0,76)	0,002
3	I'm worried about the fact that I can't get back into shape after giving birth	2,23(0,79)	1,85(0,77)	0,001
4	I sometimes think that our child will be in poor health or prone to illness	2,01(0,73)	1,97(0,73)	0,677
5	I'm worried that I won't be able to control myself during labor and I'm afraid that I will scream	2,41(0,89)	2,31(0,93)	0,439
6	I'm worried about my unattractive appearance	2,37(0,99)	2,32(1,01)	0,691
7	I'm worried about my excessive weight gain	2,31(0,92)	2,27(0,92)	0,723
8	I'm afraid the baby will be mentally disabled or suffer brain damage	2,31(0,70)	2,29 (0,70)	0,753
9	I am afraid that our baby will die at birth or will die during and	2,44(0,51)	2,43(0,51)	0,888

	some time after delivery			
10	I am afraid that our baby will suffer from a physical disorder or worry that something will happen to the baby's physical form	2,49(0,81)	2,49(0,81)	1,000

Test description: *) Mann Whitney

Based on table 3, in question items number two and three there is a significant difference in the average answers in the two groups ($p < 0.05$), while in the other question items there is no significant difference ($p > 0.05$). Antenatal anxiety measured in this study consisted of 10 question items. Based on table 3, in question items number two and number three regarding concerns about pain in the labor process and concerns about physical changes, there were significant differences in the two groups ($p < 0.05$). Research respondents expressed anxiety and fear of pain caused during the delivery process. Anxiety in antenatal care is often associated with fear leading up to the delivery process. The results showed that anxiety can increase the prevalence of fear in childbirth (Rouhe et al., 2009). Anxiety is one of the factors that contribute to the progress of labor. Anxiety can increase plasma catecholamine concentrations. High concentrations of catecholamines can weaken uterine contractions, which can lead to a prolonged second stage. Excessive anxiety can also increase labor pain through the mechanism of increasing catecholamine secretion which can increase nociceptive stimulation in the pelvis and increase the perception of these stimuli (Carla, 2011; Kuti, 2006).

In several studies, recent research states that pain impulses can be regulated or inhibited by central nervous system mechanisms. Pain impulses are delivered when the nervous system is opened and impulses can also be inhibited by closing the defenses of the central nervous system, so from this theoretical analysis emerge various efforts to reduce labor pain through relaxation techniques through massage, aromatherapy, and acupressure (Baker, 2001; Caton, 2002; Raj, 2007). Massage therapy is one of the effective interventions to reduce the anxiety of pregnant women. Research results Field et al. (2009), respondents were 26 pregnant women who were given massage therapy or relaxation therapy group for 16 weeks. Respondents were divided into groups who were given massage therapy by professional massage therapists and relaxation therapy groups in the form of progressive muscle relaxation exercises. The massage therapy group resulted in reduced anxiety during pregnancy, improved mood, better sleep, and reduced back pain on the last day of the study. Norepinephrine hormone levels decreased for the massage therapy group. Pregnant women in the massage group had fewer complications during labor, anxiety during labor about perceived contractions and the outcome of the baby being delivered had fewer postnatal complications, and lower rates of prematurity than the relaxation therapy group at 0% versus 17% (Field et al., 2009). Massage therapy has a positive effect on women experiencing prenatal anxiety by reducing stress hormones during labor (Field, 1996; Field, 1997).

In question item number three regarding concerns about physical changes, there was a significant difference ($p<0.05$) in the two groups. Pregnancy is associated with changes in the shape and size of a woman's body. For many women, this forms a negative perception of body image (Rallis et al., 2007). Worried about not being able to return to shape after giving birth is one part of body image perception (BIP). BIP can vary due to the rapid physical changes that occur in a woman's body. Assessment of body image is part of psychological well-being during pregnancy. The issue of body image during pregnancy is often circulated among women because it is associated with negative feelings during pregnancy, eating disorders, and depression (Skouteris, 2005; Wingood, 2002). In line with Inanir et al. (2015), stated that women who are pregnant have a decreased perception of changes in body image. The body image of pregnant women has an impact on eating habits, anxiety during pregnancy, sexual behavior, emotional state, and social relations. Pregnant women have a negative body image and lack self-confidence. The determinants of body image dissatisfaction during pregnancy are changes in shape and weight.

A woman's pregnancy phase will be more prone to experiencing dissatisfaction with her body compared to other phases of her life when her body shape is relatively stable (Inanir et al., 2015). In a prospective study, it was stated that the average postpartum mother was 4.88 kg heavier than before pregnancy. This causes dissatisfaction in the mother and gives a negative image of her body shape and size. Another longitudinal study found that women experienced greater levels of body dissatisfaction during the postpartum period than during the antenatal period (Rallis et al., 2007). This is how the research respondents felt when filling out the antenatal anxiety question item on the third point. Anxiety and physical discomfort are stressors that can stimulate the sympathetic nervous system and the adrenal gland modulus so that it can increase tension in pregnant women which causes pregnant women to become more restless, unable to concentrate, and feel anxious so that one of the efforts that can be done is pregnancy massage (Inanir et al., 2015). The results showed that pregnancy massage was effective in reducing anxiety in third-trimester pregnant women. It is recommended in future research to use a better research design with a larger sample and measurement of anxiety before and after the intervention so that the results are more accurate. Pregnancy massage is one of the complementary medicine in the world of midwifery so that in the future training and practice is needed in health care facilities for pregnant women.

Conclusion

There is evidence that non-pharmacological interventions to reduce anxiety in the childbirth particularly during pregnancy period. Based on the results of the study, it is recommended to give nurses and midwives trainning pregnancy massage because they are health professionals who serve as points of access to this type of non pharmacological treatment to reduce anxiety in the pregnant women.

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