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Effect of Special Massage on Hamilton Anxiety Rating Scale (HARS) Scores among Primigravida Pregnant Women in the Third Trimester in Coping with Childbirth During the Covid-19 Pandemic

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A B S T R A C T

The spread of coronavirus during the Covid-19 pandemic has resulted in an increased level of anxiety among pregnant women. Decrease in the level of anxiety in pregnant women can be achieved through non-pharmacological therapy, one of which is special massage. This study aims to analyze the difference in the effect of special massage on the anxiety level between primigravida pregnant women in the third-trimester and pregnant women without special massage in coping with childbirth during the Covid-19 pandemic. This was a quasi-experimental study with a Non-equivalent Control Group Design approach. The samples in this study were 80 pregnant women in the third-trimester. The sample size was determined using the formula for unpaired categorical analytical study to test the hypothesis between the two proportions. The test results showed a comparison of anxiety scores (pre and post) in the two study groups, with a decrease in the HARS score in the special massage group by 43.7%. Meanwhile, the decrease in the HARS score in the group without special massage was -9.1%. The statistical test results with the Mann-Whitney test obtained a p-value ≤ 0.001 (p <0.05) which indicated a significant difference. It can be concluded that special massage had a significant effect on a decrease in the HARS Score of primigravida pregnant women in the third-trimester pregnant women in coping with childbirth during the Covid-19 pandemic.

Penyebaran virus corona di masa pandemi Covid-19 mengakibatkan meningkatnya tingkat kecemasan pada ibu hamil. Kecemasan pada ibu hamil tidak bwasa begitu saja dibiarkan, Sebab, jika penanganannya kurang tepat, akan menimbulkan risiko bagi ibu hamil, diantaranya resiko terjadinya prematuritas dan resiko hipertensi pada kehamilan. Penurunan kecemasan dapat dilakukan dengan terapi non-farmakology, salah satunya adalah dengan melakukan pijat khusus. Tujuan penelitian ini adalah untuk menganalisa perbedaan pengaruh pijat khusus terhadap tingkat kecemasan ibu hamil primigravidan trimester III dibandingkan ibu hamil tanpa diberikan pijat khusus dalam menghadapi persalinan pada masa pandemi Covid-19. Metode yang digunakan dalam penelitian ini adalah eksperimental semu dengan pendekatan Non-equivalent Control Group Design. Sampel dalam penelitian ini sebanyak 80 ibu hamil trimester III. Perhitungan sampel menggunakan rumus penentuan besar sampel untuk penelitian analitik kategorik tidak berpasangan, digunakan rumus besar sampel untuk uji hipotesis antara dua proporsi, Hasil pengujian menunjukan perbandingan skor kecemasan (pre dan post) pada kedua kelompok penelitian, penurunan Skor HARS pada kelompok pijat khusus sebesar 43,7%. Sedangkan penurunan Skor HARS pada kelompok tanpa pijat khusus sebesar -9,1%. Hasil uji statistic dengan Uji Mann-Whitney diperoleh nilai p ≤ 0,001 (p<0,05) yang berarti bermakna. Kesimpulan dari penelitian ini menunjukan bahwa pijat khusus memiliki pengaruh yang signifikan terhadap penurunan Skor HARS Ibu Hamil Primigravida Trimester III dalam menghadapi persalinan pada masa pandemi Covid-19.

Introduction

Pregnancy is the most special and always-awaited period in a woman's life. According to WHO (2018), pregnancy is a physiological process. The process of pregnancy begins with conception until the fetus is born, calculated from the first day of the last menstruation, which is 280 days or 40 weeks or 9 months 7 days (ACOG, 2016). Pregnant women will experience many physiological and psychological changes during pregnancy.

Psychological changes can be influenced by external factors, such as the Covid-19 pandemic. This is in line with a study conducted by (Nurliana et al., 2021) which revealed that the widespread of COVID-19 in society also influenced pregnant women, resulted in psychological problems such as depression, anxiety, and stress. Up to April 2020-2021, there were 536 cases of pregnant women confirmed with COVID-19, of which 16 people died or it was estimated that 32 of every 1000 pregnant women died. Meanwhile, if there was no pandemic under normal conditions, the mean maternal mortality rate was 3 of every 1,000 pregnant women. In fact, the number of deaths of pregnant women during the COVID-19 period increased by up to 10 times (POGI, 2021).

There were 11,607 cases of COVID-19 in Tasikmalaya City, and 368 deaths as of 29 November 2021. Tasikmalaya City was one of the largest contributors to COVID-19 in West Java (Pikobar, 2021). On December 2, 2021, researchers conducted a preliminary study at the Urug Community Health Center which consisted of 4 sub-districts including Urug sub-district, Leuwiliang sub-district, Tanjung sub-district, and Gunung Gede sub-district. It was recorded that 489 were confirmed positive for COVID-19 in the Urug Health Center area from March 15 2021 to November 15 2021, where 480 people recorded, and 28 people died, 2 of whom were pregnant women in the third-trimester. In March 2022 there was an additional 226 cases of COVID-19. Thus, the total number of confirmed cases of Covid-19 at the Urug CHC in Tasikmalaya City was 706 people.

Pregnant women are vulnerable to physiological changes during pregnancy, the immune system decreases and it affects pregnant women (Liang, H., & Acharya, 2020). When compared to pregnant women who do not have comorbidities, pregnant women with comorbidities face a higher risk of serious illness, morbidity, and mortality. (POGI, 2021). Other coronavirus infections, such as Severe Acute Respiratory Syndrome (SARS), are also more likely to cause problems and severe illness in pregnant women (Di Mascio D, Khalil A, Saccone G,dkk, 2020).

Psychological changes in pregnant women and the amount of information regarding Covid-19 causes several pregnant women to experience anxiety (Niken Sukesi, 2020; Devid Saputra. Mau'idhoh Hasanah, 2020) not only worrying about the state of the fetus in the womb but also about whether the mother and the fetus will be healthy and free from COVID-19 infections, and whether it was safe or not to perform Antenatal care visit during the Pandemic.

Pregnancy was a very vulnerable time and the environment affects it psychologically which will have an impact on pregnant women and the fetus. Based on a study conducted by Cathrine (2020), there was a significant relationship between the Covid-19 incidence and depression and anxiety in pregnancy (Bagshawea, Catherine Lebela Anna MacKinnonb Mercedes Lianne Tomfohr-Madsenb Giesbrecht,

2020). Depression during pregnancy has been associated with various complications, such as premature birth low birth weight, decreased length of birth, fetal growth retardation and post-natal complications (Alder J Fink N Bitzer J et al, 2007; Broekman et al, 2014; Grigoriadwas et al, 2013; Ciesielski, 2015; Becker et al, 2016).

There are many ways to get over anxiety, including medication and non-pharmacological treatment (Hastuti, 2015). Psychopharmacology can only be done by psychiatrists with strict limits and high caution, while non-pharmacological therapy can be done through relaxation, massage, warm compress, music, and aroma therapy (Suyatmo, Yeyi, SP, Carla, 2009). According to previous study, massage therapy can function as an effective intervention for women with pregnancy depression. Furthermore, according to The Australian Association of Massage Therapists (AAMT) there are several methods of massage (Koren, 2017)

There are several types of massage for pregnant women, including prenatal massage, effleurage massage, and endorphin massage. Endorphin Massage is a touch therapy or light massage that was given to pregnant women before giving birth. It is very helpful because such massage can release endorphins which are pain relievers so as to provide a sense of comfort (Kuswandi, 2014). Based on a study conducted by Hidayati and Wisnu (2014) entitled Effect of Endorphin Massage on β-endorphin Levels and Edinburgh Postnatal Depression Scale (EPDS) Score among Women with Postpartum Blues, it was revealed that endorphin massage was a good alternative treatment to increase β-endorphin levels (ng/l) from 1241.47 ± 1701.91 to 1929.96 ± 2617.93 (Hidayati et al., 2014) Several ways can be performed to increase the level of β-endorphin levels in the body, including: exercise, food, sexual activity, and massage (Njwas, Kosek, 2012; Loh et al, 1996; Hawkes CH, 1992; Géher, 2007).

Endorphin massage affects the surface of the skin, soft tissue, muscles, tendons, ligaments and fascia which can cause a feeling of calm in pregnant women (Candimulyo et al., 2017). This study aims to know the description of HARS score among Primigravida pregnant women in the third trimester in coping with childbirth before and after being given a special massage during the COVID-19 pandemic. Further study objective is to analyzing the effect of special massage on HARS score of Primigravida pregnant women in the third trimester compared to pregnant women without special massage in coping with Childbirth during the COVID-19 Pandemic.

Methods

This was a quantitative and quasi-experimental study with a Non-equivalent Control Group Design approach using Treatment and Control groups. The sample size in this study applied calculation for the hypothesis test for two populations. Thus, a sample size of 80 pregnant women was obtained, who were selected using purposive sampling based on inclusion criteria, namely Primigravida pregnant women, aged 15-40 years, in the third trimester of pregnancy, lived at home with their husbands or family, were willing to be a respondent, had mild, moderate and severe anxiety. On the other hand, the exclusion criteria were pregnant women who had a serious illness, were taking anxiety medication, husband or family who did not want to perform special massage (endorphin massage). Data were

collected using the Indonesian version of the Hamilton Anxiety Rating Scale (HARS) anxiety score questionnaire (HARS vol.1).

The statistical analysis technique applied here was the Mann-Whitney test which is a comparison test with two samples to determine the relationship between variables under study. The free sample was used to compare the two independent samples come from different populations. Such test was applied as alternative when the t test in parametric statistics could not be applied since it did not meet the assumptions required in the t test.

Special massage, namely endorphin massage was performed on the back of pregnant women to form the letter V. Such massage was performed by the husband at home for 3 consecutive days for 15 minutes assisted by the researchers. The current study has obtained an ethical certificate related to The Effect of Special Massage on Hamilton Anxiety Rating Scale (HARS) Score among Primigravida Pregnant Women in the Third Trimester issued by Research Ethics Committee of Padjadjaran University, Bandung number 438/UN6.KEP/EC/2022.

Results

Table 1. Characteristics of the Study Subjects

Characteristic	Group		P value
	Treatment	Control	
Age			0.104
<20	9	11	
20-24	20	22	
25-29	10	6	
>30	1	1	
Education			0.808
Elementary	8	8	
Junior High School	9	8	
Senior High School	14	14	
Academy	9	10	
Occupation			0.882
Housewife	27	29	
Self-employed	5	6	
Civil servant	4	2	
Private	4	3	
Gestational Age			0913
7	12	10	
8	14	15	
9	14	15	

Description: *) Chi-square test

Based on the table of respondents' characteristics above, it was revealed that there was no significant difference in age, education, family income, occupation, and gestational age in the two study groups (p >0.05). Thus, it can be said that the study subjects were relatively homogeneous and could be compared. The further table shows Pre and Post anxiety scores in the treatment group by the subjects' characteristics.

Table 2. Changes in Pre and Post-Anxiety Scores in The Treatment Group by The Subjects' Characteristics

Characteristic	Pre-Anxiety Score		Post Anxiety Score	
	Median	P value	Median	P value
Age				
<20	25 (21 – 31)	0.758	15 (10 – 20)	0.159
20-24	25 (15 – 33)		14 (8 – 24)	

Characteristic	Pre-Anxiety Score		Post Anxiety Score	
	Median	P value	Median	P value
25-29	23 (16 – 27)		10.5 (9 – 18)	
>30	23 (23 – 23)		13 (13-13)	
Education				
Elementary School	25.5 (21 – 31)	0.312	14.5 (9 – 20)	0.958
Junior High School	21 (15 – 28)		12 (11 – 19)	
Senior High School	25 (16 – 33)		13.5 (8 – 24)	
Academy	25 (17 – 39)		13 (9 – 21)	
Occupation				
Housewife	23 (15 – 31)	0.751	13 (8 – 21)	0.698
Self-employed	22 (16 – 33)		15 (10 – 24)	
Civil servant	22 (17 – 27)		13.5 (9 – 18)	
Private	25 (23 – 29)		14 (13 – 21)	
Income				
<1.5 million	25 (15 – 31)	0.694	14 (9 – 21)	0.256
1.5- 3 million	22.5 (17 – 33)		11 (8 – 24)	
>3 million	25 (16 – 29)		15 (10 – 21)	

Description: *) *Kruskal-Wallis test.*

Referring to table 2 above, there were no significant relationship between changes in the anxiety scores and characteristics of age, education, family income, and occupation in the treatment group (special massage) ($p>0.05$). Furthermore, the anxiety score was mostly decreased based on age characteristic, where the anxiety scores before treatment was 0.758 while after the special massage treatment, it changed to 0.159. On the other hand, in the control group (without special massage), there was a significant relationship between changes in the anxiety scores and characteristics of the level of education and occupation ($p<0.05$). Thus, based on the HARS score on the first day, it can be said that the higher the education level and the better the occupation, the lower the anxiety score.

Table 3. Changes in Pre and Post-Anxiety Scores in Groups Control Based on Characteristics

Characteristics	Pre-Anxiety Score		Post Anxiety Score	
	Median	P value	Median	P value
Age				
<20	23 (21 – 28)	0.129	25 (20 – 30)	0.303
20-24	22 (17 – 28)		23.5 (14 – 30)	
25-29	19.5 (14 – 24)		20.5 (17 – 28)	
>30	25 (25 – 25)		29 (29 – 29)	
Education				
Elementary School	24 (21 – 28)	0.001	24.5 (20 – 28)	0.095
Junior High School	23 (21 – 28)		24.5 (20 – 30)	
Senior High School	22.5 (18 – 26)		24.5 (20 – 29)	
Academy	19.5 (14 – 22)		20.5 (14 – 30)	
Occupation				
Housewife	23 (18 – 28)	0.005	24 (17 – 30)	0.016
Self-employed	22 (20 – 24)		23 (22 – 28)	
Civil servant	17 (14 – 20)		16.5 (14 – 19)	
Private	17 (16 – 18)		19 (15 – 22)	
Income				
<1.5 million	23 (18 – 26)	0.535	14 (9 – 21)	0.882
1.5- 3 million	22 (16 – 28)		11 (8 – 24)	
>3 million	21 (14 – 26)		15 (10 – 21)	

Description: *) Kruskal-Wallis test.

Table 3 revealed that the highest decrease in anxiety scores based on level of education with a p-value of 0.001 in the first day and a p-value of 0.095 on the second day; followed by a decrease in anxiety scores based on occupation, with a p-value of 0.005 on the first day and a p-value of 0.016 on

the second day. The data illustrated that the subject's level of education and occupation could influence changes in anxiety.

The following table displays the changes in the level of anxiety of the treatment group and the control group, both for Pre-Treatment and Post Treatment.

Table 4. Changes in Anxiety Levels in the Treatment and Control Groups between Pre and Post Intervention

Characteristic	Group				P value
	Treatment		Control		
	N	%	N	%	
Pre-Treatment	0	0	1	2,5	0.913
No anxiety	7	17.5	10	25	
Mild Anxiety	26	65	27	67.5	
Moderate Anxiety	7	17.5	2	5	
Severe Anxiety	0	0%	1	2.5	
Post Treatment					<0.001
No Anxiety	20	50	0	0	
Mild Anxiety	17	42.5	8	20	
Moderate Anxiety	3	7.5	24	60	
Severe Anxiety	0	0	8	20	

Based on table 4 above, shows that the pre-treatment anxiety scores in the two groups did not have a statistically significant difference, because the p-value was greater than 0.05 (p> 0.05). Meanwhile, the anxiety scores in the post-treatment group showed a significant difference, because the p-value was less than 0.05 (p<0.05).

Table 5. Comparison of Anxiety Scores (Pre and Post) in Both Study Groups

Anxiety Score (HARS)	**Group**		
	Treatment	**Control**	**P value**
Pre-treatment			0.056
Median	24	22	
range	15-33	14-28	
Post-treatment			<0.001
Median	13.5	24	
range	8 – 24	14-30	
Decreased Anxiety Score	43.7%	-9.1%	<0.001

Information: *) Mann-Whitney test; **) Wilcoxon test.

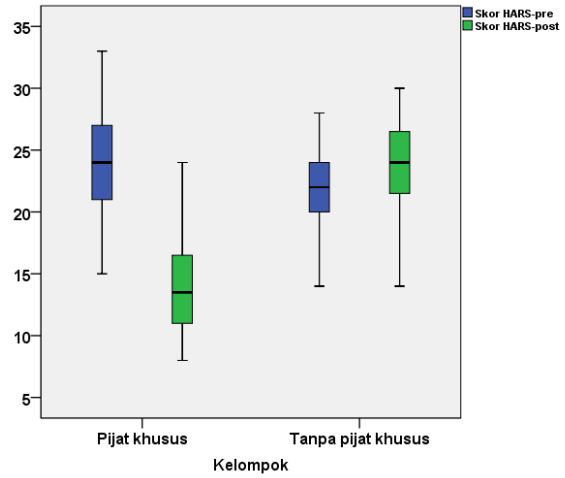

Figure 1. Comparison of Anxiety Scores (Pre and Post) in Both Study Groups

Referring to Table 5 above, it was shown that there was no difference in the anxiety scores before treatment between the treatment group and the control group (p> 0.05). However, after treatment, there was a significant difference in the anxiety scores between the two groups, as indicated by a p value of less than 0.05 (p<0.05). The HARS score after the intervention/treatment in the treatment group

decreased by 43.7%. Meanwhile, in the control group, the HARS score decreased by -9.1%. Thus, the decrease in the anxiety level in the treatment group was very significant compared to the control group ($p<0.05$).

Discussion

Based on a comparison of the HARS scores in the two groups, the HARS score range for pregnant women before the special massage treatment was 15 - 33 with a median of 24. On the other hand, the group without special massage treatment had a HARS score range of 14 - 28 with a median of 22. Information regarding the HARS score showed that pregnant women experienced moderate anxiety. Meanwhile, pregnant women with moderate anxiety showed symptoms of focusing on important things and setting aside others, experienced selective attention but could do more things if given directions. Behaviors that can be seen when experiencing moderate anxiety included nervousness or agitation, bad perception, decrease in hearing, and touching sensitivities. Previous study revealed that anxiety disorders generally occurred among women of childbearing age (Handayani R, 2015). Anxiety is a disruption in emotional state along with worry and depressive feeling in the face of difficulties (Supri Yanti, 2013).

Anxiety often occurs in pregnant women (Kessler R Keller M and Wittchen, 2001). In the third trimester, the mother's psychological changes appear to be more complex compared to the psychological state in the previous trimester, namely in the first and second trimesters (Chui Yi Chan et al., 2013). This was because a woman was increasingly aware of the presence of a fetus in her womb which was getting bigger and bigger. In addition, several fears start to increase, and the woman feels increasingly anxious about the baby's life and condition as well as her condition (Janiwarty, 2013). According to Kaplan and Sadock, anxiety in pregnant women can be due to background of pregnancy, unexpected pregnancy, thinking about bad things about the baby in the womb, life events that are not positive, negative thinking, suffering from physical illness, and fear (Sadock et al., 2015). Fear among pregnant women can be caused by fear of the delivery process. According to Handayani (2015), the delivery process often affects the psychological aspects of pregnant women in the third-trimester which can cause various psychological problems, one of which is anxiety. Anxiety and depression during pregnancy symptoms affect 10 to 25% of pregnant women, and if not handled properly, such symptoms can be associated with an increased risk of premature birth (Bagshawea, Catherine Lebela Anna MacKinnonb Mercedes Lianne Tomfohr-Madsenb Giesbrecht, 2020).

Based on the results of this study, after special massage in the treatment group, the HARS score range was 8-24 with a median of 13.5, while the control group's HARS score range was 14-30 with a median of 24. The HARS score was 13.5 indicating that the treatment group did not experience anxiety, while the HARS score HARS 24 shows that the control group experienced moderate anxiety. The decline was caused by the absence of support or touch by the husband or family and the absence of physical activity such as special massage or pregnancy exercise.

The decrease in anxiety level was due to the provision of special massage or endorphin massage wherein pregnant women obtained for 3 consecutive days. The less they obtained endorphin massage, the less it could decrease the anxiety they experience. Such finding is in line with a study conducted by Durankus (2020) which states that it is important for husbands or families to provide psychosocial support to pregnant women during a pandemic, otherwise, it will have an impact on pregnancy thereby affecting the mother and fetus.

Anxiety during pregnancy had been associated with various complications, such as premature birth, low birth weight, decreased birth length, fetal growth restriction, and post-natal complications (Alder et al, 2007; Grigoriadwas· et al., 2013; Broekman, B., et al., 2014; Ciesielski, 2015; Becker et al., 2016). It was also associated with preeclampsia and gestational diabetes, also has a negative impact on the relationship between mother and baby (Mauri M Borri C Cargioli C et al, 2016; Lefkovics, E., Baji, I., Rigó, J., 2014). In addition, anxiety during pregnancy was a predictor of postnatal anxiety and depression (Biaggi, A., Conroy, S., Pawlby, S., Pariante, C., 2015). Although pharmacological therapy is frequently used to treat mental health issues in the general population, there was insufficient evidence regarding the safety of some of these medications during pregnancy (Ravesteyn, Leontien M. van Berg, Mijke P. Lambregtse - van den Hoogendijk, 2017). Anxiety and stress during pregnancy are serious public health problems that must be addressed as soon as possible despite the constraints of the Covid-19 pandemic.

The study finding is in line with a study conducted by Hargi (2013), that husband's support in coping with childbirth was very meaningful, where the husband could grow a wife's self-confidence so that she was mentally strong enough to face the childbirth process. Husband should assist the wife in preparing all the baby's needs, pay close attention to the wife's needs, and foster self-confidence and a sense of security so that the woman may not feel anxious.

The results showed an decrease in the HARS score of primigravida pregnant women after a special massage treatment, indicating a significant difference ($p<0.05$). In the special massage group, the median post-anxiety score was lower when compared to the group without a special massage (13.5 vs 24). When compared to the pre-and post-intervention anxiety scores in the two treatment groups, there was a significant decrease in scores ($p <0.05$), with a decrease in the HARS score in the special massage group by 43.7%. Meanwhile, the decrease in the HARS score in the group without special massage was -9.1%.

The decrease in anxiety level was due to the provision of special massage or endorphin massage wherein pregnant women obtained for 3 consecutive days. The less they obtained endorphin massage, the less it could decrease the anxiety they experience. Such finding is in line with a study conducted by Durankus (2020) which states that it is important for husbands or families to provide psychosocial support to pregnant women during a pandemic, otherwise, it will have an impact on pregnancy thereby affecting the mother and fetus.

Endorphin massage was very important for pregnant women. According to (Jimenez, 2006), there are several benefits, including helping in relaxation and reducing awareness of pain by increasing blood

flow to the painful area, stimulating sensory receptors in the skin and brain underneath, changing the skin, providing a general sense of well-being associated with human closeness, increasing local circulation, stimulation of the release of endorphins, decreased stimulation of endogenous catecholamines to efferent fibers resulting in a block of pain stimuli. Endorphin massage can reduce anxiety levels. The study finding is in line with a study conducted by (Wilis Sukmaningtyas Prahesti Anita Windiart, 2016) that giving endorphins massage had an effect on reducing anxiety levels among women during the latent phase of the first stage of labor. Touch makes women to feel comfortable and can decrease the anxiety level of the women in labor. The study finding is also in line with a study conducted by (Diana Arianti & Restipa, 2019) that there was an effect of endorphin massage on a decrease in the level of anxiety in the experimental group before and after intervention. Based on the t-test that was carried out, it was obtained a significant p-value of 0.041.

Based on a study conducted by Maesaroh; Eva & Hardono (2019) that most of multiparous women in labor before being given the endorphin massage treatment experienced mild anxiety. After endorphin massage, most of them did not experience anxiety. There was an effect of endorphin massage on the anxiety among women in the active phase of the first of labor, with a p-value of 0.000. Endorphin massage was associated with the anxiety of pregnant women in the third trimester as evidenced in a study conducted by Widiastini (2018) which obtained a p-value <0.05. Thus, it can be interpreted that giving endorphins massage decreased the level of anxiety in the treatment group compared to the control group.

Special massage can be applied in midwifery practice to decrease the level of anxiety among pregnant women in the third trimester in coping with childbirth. The results of this study can be a basic knowledge for managing pregnant women who are anxious through special massage. And even though the pandemic period is over, pregnant women can adapt to the environment regarding the way of managing anxiety in the future.

There are certain limitations in this study including did not examine the β endorphin levels among pregnant women in the third trimester, and did not follow-up pregnant women who experienced severe anxiety. Researchers only provided education related to ways to manage anxiety and report the number of severe anxiety to the head of the Urug CHC

Conclusions

Based on the results of the analysis and discussion, a general conclusion can be made. Before being given special massage, 65% of primigravida pregnant women in the third trimester in the treatment group experienced moderate anxiety and 67.5% in the control group experienced moderate anxiety. After being given special massage, 42.5 % of respondents in the treatment group still experienced mild anxiety, but there was an improvement, wherein 50% of respondents had no anxiety. Meanwhile, in the control group, there was no improvement in anxiety level, wherein 60% of pregnant women experienced moderate anxiety. Thus, there was an effect of special massage on the HARS score among Primigravida Pregnant Women in the Third Trimester in coping with childbirth during the COVID-19 pandemic.

Recommendation

Future healthcare providers should consider the effect of other variables such as the level of social status, economic status and environmental conditions on the level of anxiety among pregnant women in the third trimester pregnant women, both primigravida and multigravida, involve a larger size of samples, and apply mixed method research method.

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