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THE EFFECT OF DIAPHRAGMATIC BREATHING TECHNIQUE ON THE LEVEL OF ANXIETY IN THE THIRD TRIMESTER PREGNANT WOMEN

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Anxiety commonly occurs among pregnant women, especially those who are at the third trimester. The waiting period until the delivery and birth may increase the anxiety level, thus an intervention is needed to overcome the problem. This study aims to determine the effect of diaphragmatic breathing techniques on the level of anxiety in the third trimester pregnant women.

This was a quasi-experimental study with pre-test and post-test control group design. Eighteen pregnant women who visited the local government clinic in Palangkaraya after the 28th until the 37th week of pregnancy were consecutively selected as sample and assigned as control and the intervention group. The intervention group was given diaphragmatic breathing technique to be inhaled through nose in every four enumeration, holding up and exhale breathing in every six enumeration for 30 minutes per day during seven days. The control group received only routine prenatal care. The research instruments of anxiety measurement were using a modified Hamilton Anxiety Rating Scale (HARS) instrument. The data was analyzed with t-test by using SPSS software. The results of t-test analysis showed that the intervention group had the p-value of 0.005 ($p < 0.05$), and the control group had the p-value of 0,168 ($p > 0.05$). The sum of two t-test analysis had the p value of 0.002 ($p < 0.05$).

The diaphragmatic breathing technique performed in the prenatal care for women in the third trimester could lower the anxiety level.

Keywords: Third Trimester Pregnant Women, Anxiety, Diaphragmatic Breathing Techniques.

1. INTRODUCTION

Many efforts have been conducted to decrease maternal and child mortality rates, including through improving antenatal service (ANC). Standard antenatal service is supposed to monitor woman's pregnancy since the beginning of pregnancy until the birth and detects the risk factors that might appear in pregnancy, birth and postpartum period. It aims to determine anticipation steps that are needed according to maternal condition (Purwaningsih et al, 2010).

Pregnancy is natural and physiological process that is experienced by a woman which is preceded by fertilization process. There are physiological and psychological changes in pregnancy period that can create anxiety especially in trimester III. Factors that increase mother's anxiety are education, income, social support, and violence during pregnancy period (Ali NS et al, 2012). Anxiety relates to the health of embryo, afraid of having abnormal baby, first pregnancy, unplanned

pregnancy and previous premature delivery. Studies found, anxiety prevalence among women was reported between 18-70%. Anxiety among pregnant women needs to be overcome because it may cause disadvantages for the mother and baby. For instance, the increase of Low Birth Weight, postpartum depression, nutritional problems in neonates and under-five children and the increase of saliva cortisol in neonates period (Aprilia Y, 2010).

From a Randomized Controlled Trial conducted among Hospitalized patients, anxiety level could be decreased by using diaphragmatic breathing technique (Valenza MC et al, 2014). Diaphragmatic breathing reduces sympathetic arousal and promotes an anabolic state, which encourages regeneration. This regeneration through breathing has been demonstrated in the treatment of a variety of disorders such as asthma, coronary heart disease, hypertension, epilepsy, pain, hot flashes during menopause, hyperventilation syndrome and panic attacks. This anabolic state mobilizes health and may improve performances in activities. Effortless diaphragmatic breathing consists of a slower respiration rate (<8) with large tidal volume (>2000ml), and smooth flow rates, predominant abdominal expansion during the inhalation and abdominal contraction during exhalation. The exhalation time which includes an exhalation pause is significantly longer than the inhalation time and the end-tidal CO₂ is 5%. In addition, respiratory sinus arrhythmia is increased and in phase with the breathing pattern. In practicing effortless diaphragmatic breathing, passive attention is encouraged, allowing the breath to move in and out without effort or striving. This approach evokes internal quieting (mindfulness), relaxation, and peripheral warming (Iskandar M, 2010). Clients report that diaphragmatic breathing is one of the most useful stress reduction techniques (Chang SB, 2009). Therefore, based on explanation above, diaphragmatic breathing technique is quite suitable on anxiety management for pregnant women. This study aims to determine the effect of diaphragmatic breathing techniques on the level of anxiety in the third trimester pregnant women.

2. METHODS

This was a quasi-experimental study with pre-test and post-test design on experimental and control groups. This method was used to assess or measure the influence of diaphragmatic breathing technique on anxiety level of pregnant women in trimester III. The treatment given to research subjects in the intervention group was diaphragmatic breathing technique for pregnant women who were anxious in trimester III. The effect of diaphragmatic breathing technique could be seen from the level of anxiety of pregnant women after and before the treatment. This study was conducted in the Health Centers in Palangkaraya District Health Office since September 2013 until February 2014. The samples of this study were pregnant women who visited health centers during December 2013 until January 2014 and experienced anxiety. The samples taken had fulfilled the inclusion criteria aged between 20-30 years old, first pregnancy, single pregnancy, low risk pregnancy and lived in Palangkaraya. Those who had their pregnancy over 37 weeks were excluded from the study.

The sample selection process was performed by using consecutive sampling technique with a total number of 18 pregnant women in each group. The instrument used in this study was Hamilton Anxiety Rating Scale (HARS) questionnaires that had been modified for Indonesian women. The researchers used 42 questions adopted from the HARS questionnaires and provide 4 possible answers those were: Never (N), Rarely (R), Usually (U), and Always (A). N answer was given score of 1, R answer was given score of 2, U answer was given score of 3 and A answer was given score of 4. All answers were then being summarized to gain the total score of anxiety level. A cut-

off point of 80 for HARS is suggested for the identification of anxiety in this study. Data were analyzed and interpreted with paired t-test by using SPSS for windows release 11.0.

3. RESULTS AND DISCUSSION

Anxiety is a respond of a person toward uncomfortable condition and may be experienced by everyone in their daily life. Anxiety is subjective experience by a person that cannot be observed directly (Zope SA, Zope RA, 2013). It also belongs to emotional condition without any specific objects. Anxiety can be overcome by giving non-pharmacology therapy such as relaxation technique with diaphragmatic breathing technique (Yu WJ, Song JE, 2010).

This study used diaphragmatic breathing as relaxation technique since other techniques such as progressive muscle relaxation can trigger contraction on smooth muscle. Furthermore, massage and yoga cannot be applied to several points of the body since it can trigger contraction and not all movement in yoga can be performed by pregnant women. Requirement for meditation technique is that a person has to put up with sit position for a long time, unfortunately is not recommended for pregnant women. Music and visualization therapy need exercise and certain tools so that the researcher chose diaphragm breathing technique as a suitable choice for pregnant women since it is easy to do everywhere at their convenience.

Table 1: Distribution of Pregnant Women Characteristics

Variabel	Control		Intervention	
Age				
Mean±SD	24±3.614		20-33	
Min-Max	23±3.135		20-30	
	N (n=18)	%	N (n=18)	%
Education level				
Elementary school	6	33.33	5	27.78
Senior high school	7	38.89	8	44.44
Higher education	5	27.78	5	27.78
Occupation				
Housewife	13	72.22	14	77.78
Private employee	2	11.11	2	11.11
Civil servant	2	11.11	1	5.56
Honorary employee	1	5.56	1	5.56

Participants in the intervention group were slightly younger than their control counterparts. Educational attainment of both groups showed relatively similar picture, where about 27% of pregnant women were completed higher education. Women in the intervention group who completed senior high school was slightly higher (44%) compared to women in control group (38%). In terms of occupation, most of women in control and intervention group were housewives (72% and 77% respectively).

Table 2: Anxiety Level Before and After the Given of Diaphragmatic Breathing Technique in Experimental Group

Group	n	Mean	±SD	Min-Maks	Δ	P
Before	18	81.72	±13.949	57-107	5.33	0.005
After	18	76.39	±14.967	51-107		

The study result revealed that diaphragmatic breathing technique for seven days could decrease anxiety level of pregnant women in the third trimester. The data indicated that the mean level of anxiety level before the treatment was 82.72 and decreased to 76.39 after the treatment. The

paired t-test result with the significant level of 0.05 showed the p-value= 0.005, which means there was a significant difference of stress level on pregnant women before and after the treatment. This study showed the same result with the previous study which stated that diaphragmatic breathing technique could significantly decrease anxiety level of pregnant women (Figueiredo B, Conde A., 2011).

Theoretically, diaphragmatic breathing technique can help in carrying oxide nitrate, helping the lungs in increasing surfeited of oxygen up to 100 % from 98% and escaping the tense by raising lymph system channelization which removes the toxin from the body so that the body can be relaxed. By performing diaphragmatic breathing technique, stomach cavity becomes bigger and pushes the diaphragm to be larger to create bigger space to save the air. It is similar with inhaling and exhaling the air slowly and deeply so that we can inhale more oxygen and exhale more carbon dioxide (Iskandar M, 2010).

In the control group, paired t-test showed that there was no difference between pre-test and post-test, shown by the *p value* of 0.168, $\alpha=0.05$. However, there was a decreased in the mean level of anxiety in the pretest and the post test for about 1.78 points.

Table 3: Anxiety Level Before and After Routine ANC in the Control Group

Group	n	Mean	±SD	Min-Max	Δ	p
Before	18	77,94	±19,022	50-107	-1.78	0,168
After	18	79,72	±18,961	43-112		

Anxiety is usually related to women' readiness toward the pregnancy. Self-adjustment in facing the pregnancy will be easier if women are ready to face the psychological and physical changes in pregnancy process which will decrease the level of anxiety (Bobak L, 2004). This statement is not completely true for the present study. Normally, pregnant women who had no experience with the previous pregnancy and birth will be more likely to experience anxiety because they imagine the changes of their physics and psychological condition that will be faced including the process of birth.

The age of pregnancy of the samples was the third trimester or near the delivery. This condition could influence the mean of anxiety level on pregnant women. According to Varney, third trimester period is a waiting period. In this time, pregnant women tend to feel afraid and anxious on the life of their babies and themselves. On the paired t-test between two groups, it was found the p value=0.002. It means there was significant difference on level of anxiety mean between intervention group and control group in alpha 5%, with the difference level on anxiety in intervention group was 5.33 and control group was -1.78.

From the result, it is found that diaphragmatic breathing technique had significant influence to minimize anxiety level of the pregnant women in the third trimester compared to regular ANC. It can be understood because diaphragmatic breathing is a slow, conscious, and deep breathing technique as indicated by deep inhalation process (Chang SB et al, 2009). There are three steps in this technique; positioning the body in a comfortable position (sit down or lie down on the left side by closing the eyes), concentration step and visualization step.

Diaphragmatic breathing technique is done by inhaling the air into the lungs through nose canal (or mouth), performed in four counting times (four seconds), give a little pause before exhaling the air from the lungs through the admittance canal (performed after the fifth count until the tenth count), give a little pause after exhaling the air before starting the next inhaling process. This technique is done repetitively in 15 minutes. This technique is done twice a day for seven days. The best position is sitting / lying on the left side with closed eyes and by doing visualization to

imagine somewhere comfortable/beautiful such as in the mountains, on the edge of a river/beach, or in large plantations. For control group, the treatment was only by giving regular ANC.

Tabel 4: Anxiety level on control and experimental groups after treatment or intervention

Group	N	Mean \pm SD Before	Mean \pm SD After	Δ	P
Control	18	77,94 \pm 19,022	79,72 \pm 18,961	-1,78	0,002
Experimental	18	81,72 \pm 13,949	76,39 \pm 14,967	5,33	

From the table above, it can be concluded that the Mean of the anxiety level before and after intervention was decreased in the experimental group. On the other side, the Mean of the anxiety level before and after intervention was increased in the control group.

Diaphragmatic breathing technique in this study is suitable with the statement which stated that breathing with organized rhythm will calm down the brain wave and relax the whole muscles and tissues of the body. Brain wave in relax condition will reduce hold out from beta to alpha (Aprilia Y, 2010). Breathing technique in lie down position and closed eyes is able to relax the body without making a person sleep because he or she concentrates on breathing. This is also supported by the opinion of the respondents who have tried to do this technique. The respondents stated that they were more relaxed and feel better. The study result is in line with previous study which found that this technique could minimize the anxiety level of pregnant women when giving birth. This this technique had a significant influence toward the decrease of anxiety level on pregnant women.

4. CONCLUSION AND RECOMMENDATION

The study showed that Diaphragmatic Breathing Technique was able to minimize level of anxiety of pregnant women in trimester III before and after treatment in the intervention group, whilst in the control group, there was no decreased of anxiety level before and after routine ANC. Statistics result also confirmed there was positive and significant influence on the decrease of anxiety level on intervention group than control group. Based on the study results, this technique can be used by the nurse as independent training to minimize the level of anxiety on pregnant women in the third trimester. Moreover, it can also be used as input, evaluation and consideration for the nurse or stake holders in arranging or developing new policy or program to develop the quality of antenatal service.

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