The Effect of Progressive Muscle Relaxation Therapy on Anxiety of Patients with Chemotherapy Measures at Dadi Keluarga Hospital Banyumas

1st Danang Tri Yudono
Lecturer of Undergraduate Nursing Program
Harapan Bangsa University
Purwokerto, Indonesia
danangtriyudono@uhb.ac.id

Breast cancer patients who undergo chemotherapy often experience psycholytic disorder in the form of anxiety. One of the efforts of medical treatment for cancer treatment is chemotherapy. Chemotherapy action resulted in physical and psychological side effects, one of the psychological effects that arises is anxiety. Management of anxiety in general can be pharmacological and non-pharmacological, one of the non-pharmacological managements is Progressive Muscle Relaxation therapy. The objective of this study was to analyze the effects of Progressive Muscle Relaxation therapy on the anxiety level of Breast cancer patients with chemotherapy. This research employed a Quasi-Experimental design with pretest and posttest with control design, with a sample total of 44 which was divided into control and intervention group, sampling technique used was purposive sampling according to inclusion and exclusion criteria. The research instruments employed were the Zung Self Anxiety Scale (ZSAS) and PMR questionnaire. In analyzing the research data, the researcher used paired t-test and independent t-test samples. The findings revealed that there was an effect of Progressive Muscle Relaxation on the anxiety level of Ca Mamae patients with chemotherapy with p-value was 0.007 < 0.05. The conclusion of this research was that there is an effect of progressive muscle relaxation therapy on the anxiety level of Ca mammary patients with chemotherapy at Dadi Keluarga Hospital Banyumas.

Keywords: Progressive Muscle Relaxation, anxiety, chemotherapy

I. INTRODUCTION

The American Cancer Society has calculated that in 2013, there were 64,640 cases of breast cancer. Approximately 39,620 women die of breast cancer each year (WHO, 2013). In Indonesia, breast cancer ranks second after cervical cancer. The incidence of breast cancer in Indonesia is 11% of all cancer occurrences. About 70 percent of breast cancer patients visiting the hospital are at an advanced stage [3].

Efforts of medical treatment on cancer treatment are surgery, radiotherapy, chemotherapy, and biotherapy. Chemotherapy is a systemic therapy, which means the drug spreads throughout the body and can reach cancer cells that have spread far or metastases elsewhere [1]. Side effects on clients with physical chemotherapy are nausea and vomiting, digestive disorders, diarrhea, skin damage, baldness, depression of the spinal cord which results in decreased production of red blood cells so that patients can experience anemia and decrease the immune system, whereas psychologically the client feels fear, anxiety to panic [5].

In patients who are undergoing chemotherapy for the first time, patients often overestimate the dangers and underestimate the abilities themselves. Patients will experience fear or anxiety about the actions and effects of these chemotherapy [4]. Handling anxiety in general can be done by pharmacological and non-pharmacological ways. Pharmacological management, namely by using anti-drugs, especially *benzodiazepines,* used for the short term, not used in the long run because these drugs are dependent. Non-pharmacological management includes relaxation training, psychotherapy, and psycho-religious [6]. Relaxation is used to calm the mind and release tension. One technique that can be used to reduce depression is by using progressive muscle relaxation technique or *Progressive Muscle Relaxation* (PMR) [7].

Progressive Muscle Relaxation (PMR) is a relaxation technique that is done by the patient to tense and relax the muscles in sequence and focus attention on the differences in feelings experienced between when the muscles are relaxed and when the muscles are tense. PMR is useful for increasing the production of melatonin and serotonin and decreasing the stress hormone cortisol. Melatonin can make the deep sleep that the body needs to produce natural healing in the form of Human Growth Hormone, while the influence of serotonin is related to mood, sexual desire, sleep, memory, temperature regulation and social traits [6].

Preliminary studies were carried out on July 4th, 2017 at Dadi Keluarga hospital Purwokerto. Data found in 2015 revealed that the number of the patients with Ca mammary was 3,455 patients, 87 patients and Cervical Ca Lung Ca 2 patients. The number of Ca Mamae patients increased in 2016 by 5,275 patients, cervical cancer was 94 patients, while Ca Lung was 9 patients. Data of patients undergoing chemotherapy at Dadi Kelurga Hospital Purwokerto in 2015 were 4,167 patients and in 2016 there were 3,355 patients. Data obtained through interviews with one of the Ca Mamae patients with chemotherapy stated that there was no treatment from nurses regarding anxiety disorder experienced by the patient. From the above data, the researchers are interested to take a research entitled 'the

effect of *Progressive Muscle Relaxation* to decrease anxiety in *Ca mammary* patients with chemotherapy at Dadi Keluarga Hospital Purwokerto.

II. METHOD

The type of this research was a Quasi-Experimental research with the approach of the pretest and posttest with control design, i.e. the approach taken 2 times before and after the experiment. The populations in this study were all 838 patients of *Ca Mammae* who were undergoing therapy at Dadi Keluarga Hospital Banyumas, 42 was taken as samples respondents who were divided into 2 groups; control and intervention. The sampling technique used was purposive sampling. By using the inclusion criteria, Ca mamae patients with chemotherapy actions who experienced anxiety, could read and write, exclusion criteria, patients with severe anxiety disorders that had been determined by researchers.

The process of collecting the research data was at the beginning of the research, the respondents were measured their anxiety levels using the *Zung Self Anxiety Scale questionnaire (ZSAS),* then respondents who were experiencing anxiety would be taught the *Progressive Muscle Relaxation (PMR)* technique accompanied by the family carried out 2 times a day for 2 weeks, which later would be observed by the researcher 3 times a week, in the last week the researcher would measure again the level of the respondents' anxiety.

The data were analyzed using univariate and bivariate analysis; univariate analysis was used to find out the characteristics of respondents based on age, education, occupation, stage, and frequency of chemotherapy. Bivariate analyses used were *t-paired t-test* and *independent t-test*, where *t-paired t-test* used significance level 0.05. This test was used to find out differences in the mean values of two independent sample groups with the help of the SPSS program.

III. RESULTS AND DISCUSSION

The findings in this study revealed the characteristics of respondents, the level of anxiety, the effect of *progressive muscle relaxation* exercise on the changes in the level of anxiety on *Ca mamae* patients with chemotherapy before and after the intervention and control groups and the difference of the effects of exercise *progressive muscle relaxation* with caring approach on anxiety levels in *Ca mammary* patients with chemotherapy intervention and control groups.

1. Characteristics of Respondents

Respondents' characteristics in this study include: age, education, occupation, stage of cancer, and frequency of chemotherapy. Respondent characteristics data are presented in the following Table 1:

Table 1. Characteristics of Respondents

Variable	group Intervensi (n=22) F %	group control (n = 22) R %
Age		
Mature adult	3 13.6	5 22.7
Elderly	19 86.4	17 77.3
Total	22 100	22 100
Education		
Elementary School	6 27.3	7 31.8
Middle School	8 36.4	11 50.0
High School	6 27.3	4 18.2
University	2 9.1	0 0
Total	22 100	22 100
Work		
Housewives	12 54.3	10 45.5
Farmers	5 22.7	7 31.8
Civil Servants	2 9.1	0 0
Private	3 13.6	5 22.7
Total	22 100	22 100
Stage Cancer		
Stadium 2	9 40.9	10 45.5
Stadium 3	11 50.0	10 45.5
Stadium 4	2 9.1	2 9.1
Total	22 100	2 100
Frequency of Chemotherapy		
Chemo 1	2 9.1	1 4.5
Chemo 2	2 9.1	2 9.1
Chemo 3	2 9.1	3 13.6
Chemo 4	5 22.7	7 31.8
Chemo 5	8 36.4	5 22.7
Kemo 6	3 13.6	4 18.3
Total	22 100	22 100

Based on the table 1, it shows that the characteristics of respondents who suffered from *Ca mammary* based on the life of the greatest number with the category of the elderly accounted for 36 persons (81.8%), based on education 19 people (43.3%) on average respondents junior high school education, based on the work there are 22 people (50%) most of the respondents work as housewives, based on the stage of cancer there are 21 people (47.7%) almost most of the respondents have stage 3 cancer, based on the frequency of chemotherapy as many as 13 people (29.5%) with a history of chemotherapy to 5

Respondents in the intervention group were mostly 19 people (86.4%) in the elderly category and 3 people (13.5%) in the late adult category, with an average educational history of 8 people (36.4%) having a junior high school education, based on the work of more than half of the total respondents 12 people (54.3%) work as housewives,

cancer stage half of the patients 11 people (50%) suffer from stage 3, the frequency of chemotherapy 8 people (36.4%) with a history of chemotherapy to 5.

Respondents in the control group were mostly 17 people (77.3%) with the elderly category and 5 people (22.7%) with the final adult category, education history was half of the respondents i.e. 11 people (50%) had a junior high school education, work was almost part of the number of respondents ie 10 people (45.5%) as housewives, most cancer stages are 10 people (45%) with stages 3 and 2, the frequency of chemotherapy is mostly 7 people (31.8%) with a history of chemotherapy 4.

Characteristics of respondents for Ca mamae patients with chemotherapy. Based on the results of the study, it was found the age of breast cancer respondents in the intervention group and the control group were not too different, where the age of the respondents was in the age range 50-60 years 86.4% in the intervention group and 77.3% control group. This is consistent with data from WHO (*World Health Organization*) showing that 76% of the incidence of breast cancer in women over 50 years.

This is consistent with study that there is a tendency for breast cancer to increase with age. At the age of post menopause hormone progesterone cannot be produced in sufficient quantities, so the amount of the hormone estrogen cannot be controlled. This is very triggering the onset of breast cancer. According to research data at Dadi Keluarga Hospital Banyumas, the incidence of breast cancer is at most over 45 years due to hormonal factors [8].

Based on the results of the study, it is seen from the level of education of breast cancer patients undergoing chemotherapy programs at the Dadi Keluarga Hospital, most of them had junior high school education (36.4%) in the intervention group and (50%) in the control group. According to Notoatmodjo, the higher the level of education, the higher the level of one's knowledge. In the research results, the majority of respondents' education level is junior high school level, so the respondent's knowledge related to how to prevent breast cancer is still small [8].

The results of this study showed that the majority of respondents' jobs were housewives (54.3%) and farmers (22.7%) in the control group and (45.5%) and (31.8%). From these data, it can be associated with access to information and the level of awareness of respondents to obtain information sources related to breast cancer regarding prevention, lifestyle and the factors that cause breast cancer are very few, because they are busy with work such as farming and becoming a housewife to take care of chores at home.

Busyness in working as a housewife and farmer causes respondents not to pay attention related to the prevention of breast disease. Researchers assume that one of the triggers for breast cancer is due to the lack of information sources and lack of attention related to health for breast cancer. [9]

The frequency of chemotherapy in this study shows the data that the majority of respondents did the fifth chemotherapy that is 36.4% and in the intervention group. In the control group, most did chemotherapy to the fourth, 31, 8%. In the intervention group doing chemotherapy the first was 9.1% and in the control group was 4.1%. This is related to [12], which states that the experience of patients who are first undergoing treatment is a valuable experience for subsequent treatment. Chemotherapy treatment consisting of several cycles is a treatment in the long term, if in the first experience in undergoing chemotherapy treatment does not apply to the side effects of chemotherapy it will affect the level of anxiety in the next chemotherapy treatment.

The stage of breast cancer in this study shows that most of the respondents with stage three were 50% in the intervention group, whereas in the control group the majority were in stage two and three 45.5%. This is related to [11] which states that the stage of cancer is closely related to the effects of complications arising from the disease, the effects of complications of a disease will make patients feel complaints such as pain throughout the body and feel uncomfortable [13].

2. Anxiety level in all groups

Anxiety assessment is grouped into several levels, including: no anxiety, mild anxiety, moderate anxiety and severe anxiety. Anxiety data on respondents presented in the following Table 2:

Table 2. Levels of anxiety in all groups

Group	Anxiety Level Group							
	Not		Light		Medium		Heavy	
	F	%	F	%	F	%	F	%
Intervention								
Pre-test	0	0	8	36.4	12	54.5	2	9.1
Post-test	8	36.4	8	36.4	6	27.2	0	0
Control								
Pre-test	0	0	15	68,2	6	27,3	1	4,5
Post-test	0	0	12	54,5	10	45.5	0	0

Based on the table 2, it was shown that levels of anxiety in 44 respondents of *Ca mammary* patients with chemotherapy were divided into to a batch of intervention and control obtained the following data. Anxiety level in the intervention group before being given PMR, as many as 8 respondents or 36.4% in mild anxiety, in moderate anxiety as many as 12 respondents or 54.5%, in severe anxiety as much as 2 respondents or 9, 1%. After right action PMR therapy, a total of 8 respondents or 36.4% do not experience anxiety, the mild anxiety as much as 8 respondents or 36.4%, the anxiety was as much as 6 respondents or 27.2 %.

Anxiety level *pre-test t* patients *Ca mammary* In the group, 15 respondents or 68.2% experiencing mild anxiety, the anxiety was as much as 6 respondents, or 27.3%, on heavy anxiety as much as 1 respondents or 4.5%. Once done post-test for the group control obtained a total of 12 respondents, or 54.5% experiencing mild anxiety, the anxiety was as much as 10 respondents, or 45.5%.

3. Effect of *progressive muscle relaxation* exercise on changes in the level of anxiety on *Ca mammae* patients with action chemotherapy before and after the intervention and control groups.

Effect of *progressive muscle relaxation* exercise to changes in the level of anxiety on *Ca mamae* patients with chemotherapy action before and after the intervention and control groups is presented in Table 3 below:

Table 3. Effect of *Progressive Muscle Relaxation* on the Anxiety Level of Ca Mamaae Patients.

Group	Mean	Mean Change	SD	95% CI	p value
Intervention					
Pre-test	52.3	-9.9	3.73	37-73	0.00
Post-test		42.4		25-62	
Control					
Pre-test	48.0	2.2	5.4	36-68	0.73
Post-test	50.2			40-65	

Based on the table 3, it shows that the mean change in the level of anxiety before and after relaxation of PMR in the intervention group amounted to -9.9, which means a decline in the level of anxiety in the group of intervention after therapy PMR on the measurement of *post-test*. Based on statistical tests with *paired test samples* in the intervention group, it was found that the p value = 0.000 p-value <0.05, so it can be concluded that there is an effect of giving PMR relaxation to the anxiety level in the intervention group. The average change in anxiety levels before and after was 2.2, which means an increase in the control group after an anxiety assessment was carried out on the *post-test*. Statistical tests with *paired test samples* in the control group in result p = 0.730 p values> 0005 so that it can be concluded that there is no effect on the control group.

These results indicate that there are significant *progressive muscle relaxation* (PMR) to decrease anxiety in patients with breast cancer who are undergoing chemotherapy in the intervention group. This can be seen from the results of *statistical* tests using *paired t-tests* which show that there is a decrease in the level of anxiety in the intervention group with a p value = 0.000. p-value <0.05. From the statistical results, it can be seen that there is a decrease in anxiety with a mean value of -9.9 in the intervention group after PMR relaxation.

Based on the results of *statistical* tests in the control group obtained p value = 0.73 p-value> 0.005, so it can be concluded that there was no effect after the post-test measurements were carried out in the control group. From the statistical results obtained a mean value of 2.2 an increase in the mean value in the control group after the post test. In the control group the researchers only measured anxiety at the beginning and at the end without providing interventions related to anxiety reduction.

Progressive muscle relaxation (PMR) is a relaxation technique that is done by the patient tense and relax muscles

sequentially and focusing attention on the difference in the feelings experienced between the time the muscles relax and the muscles are tense [15]. PMR is useful for increasing the production of melatonin and serotonin and decreasing the stress hormone cortisol. Melatonin can make the deep sleep that the body needs to produce natural healing in the form of *Human Growth Hormone*, while the influence of serotonin is related to mood, sexual desire, sleep, memory, temperature regulation and social traits. Breathing deeply and slowly and tensing a few muscles for several minutes every day can reduce cortisol production by up to 50%. Cortisol (*cortisol*) is a stress hormone which if present in excessive amounts will disrupt the function of almost all cells in the body. [14]

4. Differences in effects of exercise *progress if muscle relaxation* terhadap anxiety levels in patient *Ca mammary* with chemotherapy intervention and control groups

Effect of exercise *progressive muscle relaxation* on anxiety levels in *Ca mammary* patients with chemotherapy intervention and control groups is presented in Table 4 below:

Table 4. The Difference of the Effects of *Progressive Muscle Relaxation* on Anxiety Levels in *Ca mammary* Patients

Group	n	Mean	SD	Mean Diference	95% CI	p value
Intv	22	-9.9	3.73		(-1.65)	
Pre-Post					(10.2)	**0.007**
Cont	22	2.2	5.4	11.0	(-13.3)	
Pre-Post					(-2.2)	

Based on the table 4, it is known that the difference in the average level of anxiety in patients of *Ca mammary* before and after doing therapy PMR in the intervention group and the control group amounted to -7.7 points. Differences change the level of anxiety in the intervention group and the control group in patients of *Ca mammary* with chemotherapy at Dadi Keluarga Hospital Banyumas after the test statistic by using *the Independent 's Ampel Tt est* obtained value of p = 0.007 <0.05, which means that there is a significant difference between the intervention and control groups after PMR therapy had been performed *on Ca Mamae patients* who were experiencing anxiety with chemotherapy.

This discussion covers the explanation and discussion related to the characteristics of respondents, the effect of *progressive muscle relaxation* (PMR) on changes in anxiety in patients of *Ca mammary* who are undergoing chemotherapy, and difference influence exercise *progressive muscle relaxation* (PMR) on anxiety in *Ca Mamae* patients who are undergoing chemotherapy.

These results indicate that there is a significant difference in anxiety levels between the intervention group with the control group after given *progressive muscle Relaxation* (PMR) exercises and therapy remembrance with

the approach of *caring* for patients with breast cancer who are undergoing chemotherapy. This can be seen from the results of the *independent statistical* test *sample t-test* which shows that the value of anxiety levels in the intervention group obtained p value = 0.007 p-value <0.05.

The results of this study support previous research by [16], which states that PMR is a component of complementary therapy that can reduce anxiety levels and provide feelings of calm, comfort and relaxation. The mechanism of PMR exercise itself in the process of reducing anxiety is basically stretching the muscle during contraction, then the strain is conveyed to the efferent nerve pathway. Relaxation is an extension of muscle fibers that function to eliminate the sensation of tension after releasing it will feel relaxed.

Based on research and theoretical research data, it revealed that exercise and therapy of PMR d remembrance will issue a positive energy and make the patient feel calm, resulting in decreased anxiety. PMR exercises and remembrance therapy can be used and are more effective in reducing anxiety than just providing education related to the management and effects of chemotherapy in breast cancer patients who are undergoing chemotherapy [15].

IV.   CONCLUSION

There is the effect of progressive muscle relaxation exercise to decrease anxiety in patients with breast cancer with chemotherapy at Dadi Keluarga Hospital in Banyumas

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