# ORIGINAL ARTICLE

# Effectiveness Of Progressive Muscle Relaxation Therapy on Anxiety by Using Model Approach Stress Adaptation and Interpersonal

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# ABSTRACT

**Introduction:** Patients with chronic diseases are characterized by experience of anxiety; therefore it is necessary to do progressive muscle relaxation therapy as one of the therapies used to treat anxiety. The aims of this study were to determine the effectiveness of progressive muscle relaxation therapy on anxiety patients with chronic diseases using model stress adaptation and interpersonal approach. **Methods:** This research used a quantitative study, quasi-experiment with pre-and posttest without control group, a total 16 participants were randomly selected and divided into intervention with the inclusion criteria of patients suffering from chronic diseases, adult populations, defined as any condition, including a stressor, giving permission to conduct the study and convenience in terms of distance. The evaluations included the pre- and posttest by using Hamilton rating scale anxiety and ability scale of exercise, progressive muscle therapy. **Results:** The study found that after progressive muscle therapy, response of anxiety reduces significantly at p-value 0.001 (p<0.05) and significant increase of ability of exercise progressive muscle therapy at p-value 0.001 (p<0.05). **Conclusion:** Progressive muscle relaxation therapy is effective in reduce the anxiety of patients with chronic diseases both in hospitals and community.

Keywords: Anxiety, Progressive muscle relaxation therapy, Model approach stress adaptation and interpersonal

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# INTRODUCTION

Anxiety is confusion or worry, helplessness and insecurity about something that is happening for no apparent reason and is associated with unpredictable feelings such as helplessness and uncertainty (1). Anxiety is an uneasy feeling of discomfort and comes from an autonomic response, the source of which is often nonspecific to the individual (2). Anxiety is also arises from a feeling of fear caused by anticipation of danger (3).

Anxiety affects more than 5 million people and panic disorder affects from 1.5% to 3% of the world's population (2). In Indonesia, the exact prevalence is not known, but it is estimated that it ranges from 9 to 12% of the general population (4). Data obtained from Basic Health Research in 2018 showed that the national prevalence rate for cases of severe mental disorders aged more than 15 years was 0.17%, mental emotional disorders aged more than 15 years was 6.0%, so that

if the percentage was calculated it would reach 340, 000 people with severe mental disorders and 12 million people with emotional mental disorders and the rest are people who are mentally healthy (5).

Based on the results of the World Health Organization -Psychiatric Prevalence in General Health study in 2018 it shows that anxiety disorders have the highest prevalence in physical disorders, namely 10.2% of other mental emotional problems. This means, of all who experienced physical complaints, it turned out that 10.2% experienced anxiety (2). Based on data from WHO in 2014, worldwide chronic diseases such as heart disease, stroke, cancer, chronic respiratory disease and diabetes are the main cause of about 60% of deaths worldwide and generally occur in lowincome and developing countries. In Indonesia, there are chronic diseases such as hypertension 25.8%, stroke 12.1%, diabetes mellitus 2.1%, and cancer 1.7% per mile (6). These data show that chronic disease ranks first in causing anxiety from mild to severe levels. Chronic diseases suffered by patients such as diabetes mellitus, hypertension, cancer, tuberculosis, heart and stroke, often result in the emergence of psychosocial problems, anxiety, body image disorders, low selfesteem disorders, helplessness and hopelessness (7). One therapy for anxiety has been shown to be effective based on previous research, namely progressive muscle relaxation therapy.

It is a systematic technique for achieving a state of relaxation developed by Edmund Jacobson. Progressive muscle relaxation therapy stimulates the release of endorphins and encephalon chemicals and stimulates brain signals that cause muscles to relax and increase blood flow to the brain (1). The effectiveness of progressive muscle relaxation therapy has been proven by many studies such as research which found a decrease in anxiety and depression as well as an increase in relaxation abilities and the ability to interpret the life of cancer patients who received progressive muscle relaxation therapy (8). Gitanjali et al. found that patients who performed progressive muscle relaxation continuously for three days could help them reduce anxiety and relax more. Based on the results of these studies, it can be concluded that progressive muscle relaxation therapy can be used as therapy in overcoming anxiety problem (9).

In the clinical practice of advanced mental nursing carried out in the work area of the Merdeka Health Central, Ciwaringin Village, especially in 5th region and 8th region, the population of region 5th was 316 people, with a diagnosis of one person, 97 people at risk, and healthy as many as 218 people. For 8th region it obtained a population of 308 people, with a diagnosis of one mental disorder, 87 people at risk, and 220 healthy people. The highest risk diagnosis is anxiety; 70% of patients who experience anxiety are accompanied by disease or physical disorders including hypertension, diabetes mellitus, gout, stroke, tuberculosis and gastritis (10). From these data, validated by the nursing assessment process, there were 27 patients who experienced anxiety out of the total risk managed during their practice in both areas. Based on the consideration of the patient characteristic criteria and the provision of therapy, the author reports 16 anxiety patients with chronic diseases.

Healthcare efforts provided for anxiety at the community stage, especially in the Merdeka Health Central area and treatment, are still limited to medical management efforts in the form of checking vital signs which are still focused on the condition of the patient's physical illness, while nursing actions are still limited. The generalist action is in the form of handling for mild anxiety with deep breathing, so that, in a general state, services for anxiety problems do not meet their expectations. Therefore, the authors seek to provide specialist action in the form of progressive muscle relaxation therapy. Based on this, the authors are interested in reporting the application of psychiatric nursing therapy to anxiety patients with chronic diseases.

### MATERIALS AND METHODS

#### Study Design

This study is quasi-experiment with pretest-posttest without a control group

#### Participant and setting

Participants in this study were 16 selected randomly with the inclusion criteria of patients suffering from chronic diseases, adult populations (20 years or older), defined as any condition (e.g. high blood pressure, anxiety) including a stressor, giving permission to conduct the study and convenience in terms of distance.

#### **Ethical considerations**

Permission to conduct the study was obtained from the Research Ethics Committee of University of Indonesia No. 84/UN34.04.4.1/KEP/EC/2015. Approval for data collection in region of Ciwaringin was permitted by the Government of Bogor District

#### Data collection

Pre-intervention: The purpose of the study was explained to participants and written consent was obtained. The two sets of questionnaires were given and answered by the participants: questionnaire on ability scale of progressive muscle relaxation and Hamilton anxiety rating scale questionnaire.

Intervention: All 16 participants or patients answered the Hamilton anxiety rating scale as pretest before having progressive muscle therapy, for 20-3- minutes for 7 days once a day. After therapy, the participants answered posttest with the same questionnaire as before therapy. The Indonesian validity and reliability study of the scale was conducted by Ramdan (12) and the results of the validity test based on the Pearson correlation ranged from 0.529 to 0.727, Cronbach's alpha reliability was obtained at 0.756

Post-Intervention: All the participants' answers were collected and measured by software analysis

# Data analysis

Statistical software SPSS version 15 was used to analyze all data in the present study. Non-parametric statistics were used when the data were not normally distributed; Wilcoxon test was used to measure signs and symptoms as well as ability before and after therapy.

# RESULTS

# Sign and Symptoms of Anxiety

A total of 16 participants showed difference in sign and symptoms of anxiety after and before of progressive muscle therapy. The Wilcoxon test results are p = 0.001. These results indicate the value of p<0.05, which means that there is significant difference. Progressive muscle relaxation can reduce sign and symptoms of anxiety.

Based on Table I, the responses to stressors identified in the case of patients with anxiety were classified into physiological, cognitive, affective, behavior and socio-cultural responses. The most dominant cognitive response identified from the participants was difficulty concentrating and focusing on oneself; all patients were treated and 16 people experienced this response. The cognitive responses found were both positive and negative. Positive responses result was from the patient's ability to tolerate stressors. Negative responses resulted from failure to perform a cognitive assessment of the stressor. After being given progressive muscle relaxation, all participants no longer showed this response.

The results of progressive muscle relaxation therapy

Table I: Effect of Progressive Muscle Relaxation Therapy on signs and symptoms of anxiety

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Increased respiratory rate 10 0 Improved reflexes 11 0 Dilated pupils 12 0 Body weak / tired/ 12 0 Increased blood pressure 9 1 Abdominal pain 9 1 Hard to sleep 16 0 <b>4. Behaviour Responses:</b> Decreased productivity 10 1 Performs uncoordinated movements 4 0 0,001 Nervous 16 0 Poor eye contact 12 0 Many / often observe the sick body part 16 0 Very alert 0 0 <b>5. Social Responses:</b> Really need other people 15 1 Lack of social interaction 14 0 0,001 Speak slowly 12 1	Pulse rate increases	15	1	
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Speak slowly 12 1	Lack of social interaction	14	0	0,001
	Speak slowly	12	1	

in anxiety patients identified a decrease in affective assessment, namely worry and nervousness. In stressor assessment, the main affective response is a non-specific reaction or, generally, an anxiety reaction, where this is expressed in the form of emotion. The affective response identified in this case is the feeling of anxiety experienced by all participants, and is in line with Stuart's opinion which states that the affective response includes sadness, fear, anger, acceptance, distrust, anticipation or surprise, confusion and worry. The equation that we can know from the results of applying therapy to cases and stress adaptation models is the negative emotional response due to the stressor experienced.

Physiological responses found in patients with anxiety are cold sweats, chest palpitations and difficulty sleeping. Physiological response was found in all patients, namely experiencing sleep disturbances. The physiological response to stress reflects the interaction of several neuroendocrine hormones, including prolactin, adrenocorticotropic hormone (ACTH), vasopressin, oxytocin, insulin, epinephrine, norepinephrine, and other neurotransmitters in the brain. The physiological fight-or-flight response stimulates the sympathetic division of the autonomic nervous system and increases adrenal gland activity. In addition, stress can affect the immune system and affect a person's ability to fight disease.

Social response is the result of cognitive, affective, physiological and behavior responses that are displayed in relation to other people. The results of the study showed that patients with anxiety identified social responses, namely most of the patients showed restless behavior and often presented sick body parts, as many as 16 people. The results of the study on patients with anxiety also identified the existence of social behavior that really needed other people, as many as 15 people. After being given progressive muscle relaxation therapy, all patients showed a loss of social response complaints. Patients who are in a state of anxiety generally need other people, one reason of which is for communication. Communication is usually done in the form of talking to several people. The conclusion is that the habit of open communication with others will be able to reduce the patient's level of anxiety. Patients can express the problems they are facing which will reduce the level of anxiety.

# Ability of progressive muscle relaxation exercise

Based on Table II, the Wilcoxon test result is p = 0.001. These results indicate where the p value <0.05, which means there is a significant difference. There was an increase in the participants' ability to perform progressive muscle relaxation. The ability of patients before and after therapy has increased. After being given therapy, patients with a diagnosis of anxiety have a special ability to overcome their anxiety problems. This shows that all patients are able to do therapy and use it to reduce

Abilities achieved	Pre	Post	Improvement (n)	<i>p</i> -Value
	n	n		
Identify body parts	0	16	16	
Able to perform relaxation technique exercises, including: forehead, eyes, jaw, mouth, back neck and front neck, each movement performed 2 times.	0	16	16	
Able to do relaxation technique exercises, including: hands, back of hands, arms and shoulders, each movement is done 2 times.	0	16	16	
Able to perform relaxation technique exercises, including: back, chest, stom- ach, legs and feet, each movement is performed 2 times.	0	16	16	0.001
Able to evaluate the ability of progressive relaxation exercises	0	16	16	
Mean		16	16	

Table II: Effect of Progressive Muscle Relaxation	Therapy on the ability of patients with anxiety
ruble in Enect of Frogressive Musele Relaxation	inclupy on the ability of patients with anxiety

their anxiety even though the decrease in signs and symptoms of anxiety is still not optimal, meaning that, apart from progressive muscle relaxation therapy, other specialist therapies still need to be added. Evaluation of the patient's ability is also seen by monitoring the patient's daily activities and the patient's progressive muscle relaxation therapy exercise schedule which is routinely carried out every day. From these results it is seen that the patient regularly exercises and shows increased ability and decreased signs and symptoms

# DISCUSSION

The findings of this study indicate the effectiveness of progressive muscle therapy in improving the patient's state of relaxation both psychologically and physiologically. This is seen with a significant decrease in the response that occurs, before being given progressive muscle therapy; physiological, cognitive, affective, behavior and social responses are seen in almost all patients but after being given therapy the response disappears.

This study seeks to use the stress adaptation approach from Stuart which states that, when a person experiences stress, several responses will appear, which can be in the form of local adaptation and general adaptation in the form of cognitive, affective, physiological, behavior and social reactions (1). Observations and analysis on cognitive responses after patients received progressive muscle relaxation therapy decreased or even disappeared; this could be due to the therapeutic effect that was able to help self-management in patients with anxiety problems. This is supported by Li et al. (13) who stated that muscle relaxation progressive helps self-management techniques based on the workings of the sympathetic and parasympathetic nervous systems. Muscle relaxation will inhibit the pathway that triggers anxiety by activating the parasympathetic nervous system and manipulation of the hypothalamus through concentration of thoughts or strengthening positive attitudes so that stimulation of stressors to the hypothalamus can be minimized. This condition means patients who initially show weak behavior and depend on others will feel more comfortable and more relaxed in doing things. Progressive muscle relaxation is part of

behavior therapy. This therapeutic technique is done to perform distraction in the hope of changing the patient's behavior from being maladaptive to adaptive in dealing with stressors (20). In addition to helping reduce physical and behavior symptoms, this therapy also affects the cognitive abilities of individuals who experience anxiety.

Patients who have been given progressive muscle relaxation can have a positive impact on the patient's cognitive and physiological responses to train the body to divert stimuli from within or from outside the individual. Progressive muscle relaxation blocks this pathway by activating the parasympathetic nervous system and manipulating the hypothalamus through concentration of thoughts or strengthening positive attitudes and helping patients change thought processes (14-17). The effectiveness of progressive muscle relaxation therapy has previously been studied by De Jean et al. (16) who found a decrease in anxiety and depression as well as an increase in relaxation ability and the ability to interpret the lives of cancer patients receiving muscle relaxation therapy. In line with this study, Gitanjali et al. proved that patients who performed progressive muscle relaxation continuously for three days could help them reduce anxiety and relax more (9). Several studies reported that, from 35 people with a diagnosis of anxiety who were treated and given progressive muscle relaxation therapy continuously for eight months, there was a decrease in the frequency of anxiety which previously reached 97% before being given therapy to 40% at the end of therapy (15,23). Based on some of the results of these studies, it can be concluded that progressive muscle relaxation therapy can be used in overcoming anxiety problems. Progressive muscle relaxation therapy also has a significant effect on physiological responses. The ability achieved by patients from the provision of progressive muscle relaxation therapy is that individuals control the physiological effects caused by anxiety, such as sleep patterns, eating patterns and vital signs (18-22). This is in line with the report of Kustanti (14) who performed progressive muscle relaxation therapy in 42 patients with chronic kidney disease who experienced sleep pattern disturbances, which ultimately decreased complaints of sleep pattern disorders after being given progressive muscle relaxation therapy on a regular basis. Several studies have reported that giving progressive muscle relaxation therapy helps lower blood pressure in the elderly who experience anxiety with hypertension; this supports the evidence that progressive muscle relaxation is very effective in reducing anxiety, especially by controlling the physiological effects caused by anxiety. This is in line with Tobing's opinion who stated that bustyrone and benzodiazepines inhibit the transmission of serotonin, which causes various symptoms of anxiety (9).

In the affective response there also appears to be a significant decrease; this can be caused by progressive muscle relaxation therapy which is able to reduce the secretion of the hormone cortisol; the role of this hormone can affect emotional stability and reduce stress. The benefits of this therapy in reducing the affective response to anxiety are supported by previous research which states that routinely giving progressive relaxation therapy can affect the daily release of the hormone cortisol (26).

On the other hand, negative social responses also decreased after being given progressive muscle relaxation, this could be due to the presence of social support when the patient did relaxation exercises, such as help from family members or close friends. This is supported by the findings of Birchwood et al. which state that social support in the form of sharing experiences can be done in groups; patients can have special groups and each member of this group can share experiences and tell their condition (3,25,28).

The approach using Peplau's interpersonal theory is used to see the patient's ability to perform progressive muscle relaxation exercises, as it is known that this theory explains the ability to understand themselves (nurses) and others (patients) in the sense that nurses need to understand their own behavior; this is then implemented in providing progressive muscle relaxation therapy to patients and the results of the analysis show that there is a significant difference in ability between before being given progressive muscle relaxation therapy with a p-value of 0.001. This means that the average ability of patients after being given progressive muscle therapy increases significantly, which indicates that all patients are able to do therapy to reduce their anxiety, even though the decrease in signs and symptoms of anxiety is still not optimal so that additional therapy is still needed.

# CONCLUSION

Progressive relaxation therapy has an effect on reducing signs and symptoms of anxiety and increasing the ability of anxiety patients who are treated. Progressive muscle relaxation is one of the specialist therapies that are highly recommended to reduce anxiety in patients with chronic diseases because this therapy has a great effect on reducing signs and symptoms in physiological aspects.

Suggestions to be conveyed include the need for further research on the application of therapy to nursing specialist cases with different diagnoses, the relationship of gender differences to increasing anxiety scales, research on the relationship between education and anxiety scales on the provision of progressive relaxation to patients who are hospitalized and community, as well as a combination of progressive muscle relaxation therapy with other therapies that can reduce anxiety.

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