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Progressive muscle relaxation therapy for elderly stress levels at the Muuliorejo public health center

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Abstract---Progressive muscle relaxation is a simple technique that tenses and relaxes the body's muscles. Stress is a psychological problem that is often faced by the elderly due to physical decline due to environmental conditions caused by uncontrolled pressure. Stress management with progressive muscle relaxation. Formulation of the problem of the high incidence of stress in the elderly at Muuliorejo public health center, formulation of the problem: whether advanced muscle relaxation therapy is effective against the stress level of the elderly? Type of pre-experimental research, design one group pre-post-test. The goal is to assess the effectiveness of progressive muscle relaxation therapy against stress levels. The population and samples are elderly at Muuliorejo public health center Sunggal District Deli Serdang Medan; the number of pieces, as many as 35 people determined by accidental sampling techniques, a statistical test with a one-sample t-test. The results of the study of the level of elderly stress before the intervention were the level of severe stress among as many as 20 people (57.1%), moderate stress level of 15 people (42.9%) after the intervention was a mild stress level of 33 people (94.3%), average stress level 2 people (5.7%). Test t-test value $p < 0.05$ ($p = 0.000$) means progressive muscle relaxation therapy to the stress level of the elderly at Muuliorejo public health center Sunggal District Deli Serdang Medan. It is expected that the elderly carry out advanced muscle relaxation therapy as a stress treatment.

Keywords---Effectiveness, Elderly, Medicine, Stress, Therapy.

Introduction

Progressive muscle relaxation is a simple relaxation method by relaxing and tensing the body's muscles (Richmond, 2013). A preliminary survey at the Muuliorejo Health Center, Sunggal District, Deli Serdang Medan Regency, found that when experiencing stress, the elderly often do activities such as gardening,

social interaction, watching television, increasing spiritual activities, doing hobbies such as singing, dancing, cooking, and some isolate themselves or stay in the room. Therefore, researchers need to research progressive relaxation therapy on the stress levels of the elderly at the Mulioorejo Health Center in 2020.

The impact of stress can be avoided by doing good stress management. Stress can be managed with pharmacological therapies, such as anti-anxiety (anxiolytic), anti-depressant (anti-depressant) drugs, or nonpharmacological medicines such as relaxation, behavioral approaches, and cognitive approaches (Hertanto, 2014).

Relaxation techniques that are often used are progressive muscular relaxation (PMR) techniques. This therapeutic technique is used to help relieve symptoms associated with stress, insomnia, and hypertension. This technique is superior because the stress response can ease muscle tension consciously (Fitrianti, S; Princess, 2018). The number of elderly in Indonesia is increasing. Therefore, the government pays attention to preventing stress. Referring to Law No. 36 of 2009, article 138 paragraph (1) that maintaining the lives of the elderly remains healthy by making health maintenance efforts to stay healthy and productive both socially and economically based on human dignity.

Psychological disorders that are often felt by the elderly are stress. If the elderly feel stressed continuously can cause negative impacts, starting mild, moderate, or severe this depends on the cause received. Based on basic health research reports (Riskesda, 2013). The prevalence of emotional disorders decreased from 11.6% (2007) to 6.0% (2013). According to the World Health Organization (WHO), this figure is the prevalence of elderly stress that varies between 10% and 20%, influenced by culture (Hertanto, 2014).

Based on Riskesdas data (2013), the prevalence of depressive disorders was 35% occurred in the male group, and 37% occurred in women. From this data, the number of older adults who experience significant deposits is 1-4%. Furthermore, minor depression is as much as 4-13%. The prevalence of depression in Indonesia is high. Older adults in service facilities experience depression by 5-17%, while those who get primary health services only 13.5% (P.H., L. Daulima; N.H.C; Mustikasari, 2018).

Stress mental health problems faced by the elderly are mild, moderate, and weight vary. The reaction to the changing environment that causes pressure and provides psychological symptoms is what has been understood by the Indonesian people to consider stress as a reaction of individuals who are not good at accepting this change, especially the elderly, to be a burden for this group to encourage families to bring the elderly to be treated in social care. One of these conditions causes stress in the elderly because it does not accept environmental changes.

Several studies have been carried out that are relevant to the research that the researcher is doing, namely "Muscle relaxation therapy for anxiety disorders: It works but how" by Ansgar Conrad (2007) who said that, review describes the most common M.R.T. techniques, summarizes recent evidence of their effectiveness in treating anxiety, and explains their rationale and physiological

basis. Although G.A.D. and P.D. patients may exhibit elevated muscle tension and abnormal autonomic and respiratory measures during laboratory baseline assessments, the available evidence does not conclude that physiological activation decreases throughout M.R.T. in G.A.D. and P.D. patients, even when patients report becoming less anxious. Better-designed studies will be required to identify the mechanisms and advance clinical practice.

In addition, the research entitled "Effect of Benson and progressive muscle relaxation techniques on sleep quality after coronary artery bypass graft: A randomized controlled trial" by Hossein Bagheri who is that Within-group comparison in the B.R. ($t = 3.51$, $p = 0.001$) and the PMR ($t = 4.58$, $p < 0.001$) group showed that the overall sleep quality showed a significant improvement after the intervention when compared to baseline. The between-group comparison showed that both the B.R. and PMR groups showed significant improvements in subjective sleep quality ($F = 3.75$, $p = 0.02$), habitual sleep efficiency ($F = 4.81$, $p = 0.01$), and overall sleep quality ($F = 5.53$, $p = 0.005$) when compared to the control group after the intervention. However, the three study groups identified no statistically significant differences regarding sleep latency, sleep duration, sleep disturbances, sleeping medication, and daytime dysfunction after the intervention ($p > 0.05$).

With the increase of the elderly, so many physical problems such as reduced hearing, vision, musculoskeletal system, endocrine system, respiratory system, and psychological issues such as stress, anxiety, and depression occur in the elderly. Therefore, the elderly need to adapt to their various topics for the self-defense mechanisms used before (Hertanto, 2014). Aging is a process that occurs in someone aged 60 years and over; the process is the final stage and phase of his life. Based on population data projected in 2017, about 23.66 million people are the elderly group (9.03%) (Ministry of Health, 2017).

The composition of the age-old population group (> 65 years old) is 4.28% (North Sumatra Provincial Health Office, 2017). Medan City Health Profile in 2014, the composition of the elderly population (> 65 years) was 3.6% (Suryani, 2016). Data from Muuliorejo public health center Pemprovsu 2018 elderly group there are 160 people, from this data category of suffering from gout 66 (31.2%), hypertension 55 souls (26.0%), cataracts 39 souls (18.4%), asthma ten souls (4.7%), dyspepsia ten people (4.7%), D.M. soul (3.7%), rheumatism eight souls (3.7%).

Research Novelty

Searches at the Mulioirejo Health Center tunggal district of Deli Serdang Regency have not been found therapy with muscle relaxation progressively effective against the level of elderly stress generally plays a role in nursing care.

Research Methods

Research Design

Type of pre-experimental research, research design one group pre-post-test design that is a group that is the same group given before and after treatment.

Place, Time of Research Implementation

Muulioorejo public health center is a research location in Sunggal District, Deli Serdang Regency. This study was conducted in April 2020.

Population and Sample

The population is the entire object of research or object studied. The research population is the elderly living in the Mulioorejo Health Center, which in the last two months amounted to 160 people.

Sample the part of the population to be studied or a portion of the number of characteristics that the population has. Samples were taken by accidental sampling techniques, with a sample count of 35 respondents based on inclusion criteria:

- a. Willing to be a respondent
- b. Old age ($50 \text{ years} \leq x \leq 70 \text{ years}$).
- c. Elderly who can mobilize independently

Data Type, How to Collect Data

The research data is primary data, the results of collecting questionnaires to 35 older adults.

Theoretical Concepts

The elderly are a group of 60 years and over (Hardywinoto; Setiabudi, 2005). Entering this period occurs the process of loss of the ability of tissues to regenerate, replace and maintain normal function. Then it is slowly unable to fight infection and repair the damage done (Constantinides, 1994). As a result, distortions occur and accumulate metabolically and structurally and result in degenerative diseases so that gradually the elderly end their lives in terminal episodes (Sunaryo, 2016).

Age Restrictions

The elderly are divided into four categories, namely (WHO, 2018):

- a. 45-49 years is called middle age (middle age).
- b. Age 60-74 years called (elderly).
- c. Age 75 - 90 years (old),
- d. Age over 90 years, very old (very old).

Stress

Definition of Stress

Stress is a condition caused by an individual's interaction with his environment, giving rise to the perception of demands derived from biological, psychological, and social situations (Manurung, 2016). Stress is also an adaptive response mediated due to individual differences and psychological processes that are a consequence of an external state, situation, or event that impacts a person's physical or mental state (Invancevich, 2001). Another opinion mentions that

stress is a natural reaction of the body because it defends itself from psychological pressure (Manurung, 2016).

Stress is also a term for behavioral science and natural sciences to indicate a physical, biological, and psychological situation or condition due to pressure on the organism so that it is above the threshold of its adaptive power (McGrath, Redford, Arend, et al., 1997 in Nixson, 2016). According to Lazarus and Folkman (1986), stress has three parts: stimulus, response, and process (Manurung, 2016).

Causes of stress or stressors

The physical and social conditions that cause stress are called stressors (Morgan, 1987). This stressor factor around human life can come from various sources such as physical, psychological, and social conditions that can also occur in work situations, at home, in social life, or other outside environments. Selye first introduced stressors. According to Lazarus and Folkman (1986), stressors can be social environments (such as social interaction). Individual thoughts and feelings themselves are considered a threat, both natural and imagination, that is also a stressor. It can also be physical (such as air pollution). According to Lazarus and Cohen (1977), giving tips on events that can cause stress is:

- a. Daily hassles such as small events repeatedly occurring every day; Work problems in the office or school.
- b. Personal stressors in the form of threats, more vital distractions due to loss of something on an individual missal level: loss of a loved one, work, fitness, and others.
- c. Freese Gibson (in Rachmaningrum, 1999) states that age is one of the factors that cause stress; the older a person, the easier it is to experience anxiety. It is associated with physiologists who experience deterioration of visual ability, thinking, remembering, and hearing. Work experience affects the onset of work stress, e.g., individuals who have more extended work experience tend to be prepared for job pressures compared to inexperienced individuals (Koch and Dipboye, in rachmaningrum, 1999).

Reactions to Stress

- a. Physiological Aspects of Walter Canon (in Sarafino, 2006) describe the body's reaction to a threatening event. The reaction was a fight-or-flight response. Physiological responses prepare individuals to face or avoid such dire situations. The fight-or-flight response causes individuals to respond quickly due to bad conditions. Selye (in Sarafino, 2008) observes the stressors that constantly appear. The term General Adaptation Syndrome (G.A.S.) is a series of physiological reactions to stressors, divided into 3 phases, namely:
 1. Surprising reaction (alarm reaction)
 2. Resistance reaction (Stage of Resistance)
 3. Stage of Exhaustion
- b. Psychological aspects of stressors include:
 1. Cognition and stress weaken memory and fitness in cognitive activity.

2. Emotional tends to individuals often use their emotional state to evaluate stress and emotional experiences (Uaslach. Schachterdan Singer, in Sarafino, 2006), fear, phobia, anxiety, depression, feelings of sadness, and anger.
3. Social behavior stress can change an individual's behavior towards others. Individuals can behave both positively and negatively (Sarafino, 2006). Anxiety followed by anger causes socially harmful behavior to increase to lead to aggressive behavior (Donnersstein and Wilson, in Sarafino, 2006).

Sources of Stress

Sources can change according to the infectious individual; stressful conditions can occur during life. According to Sarafino (2008), there is three head of stress.:

a. Individual self

It is related to Conflict. According to Miller in Sarafino (2008), Conflict produces two opposing tendencies of approach and avoidance. This tendency results in the primary type of Conflict (Sarafino, 2008) that is:

1. Approach-approach Conflict Have an interest in two opposing goals. For example, individuals make efforts to lose weight but Conflict when faced with delicious food.
2. *Avoidance-avoidance Conflict* Sarafino (2008) Review people avoid Conflict by trying to delay and prevent the decision. Avoidance-avoidance Conflict is complicated to resolve.
3. *Approach-avoidance Conflict*

b. Family

Sarafino (2008) explains that each family member's needs, behaviors, and personalities affect interactions with other family members, sometimes causing stress. Family factors that tend to allow the emergence of focus includes the emergence of new members, divorce, or if there are family members sick, disabled, or dead.

c. Communication and Society

Contact with people outside can be a source of stress—examples of children's experiences in school due to competition (Manurung, 2016).

Stress Stages

Stress in a person is often unaware of the initial symptoms because it arises slowly; pressure is felt if the stages of symptoms are advanced, disrupting the function of life and the environment at home, at work, or in the social environment. Dr. Robert J. Van Amberg (2001), in his research, mentioned the stages of stress consisting of:

- a. Stage I Stress
- b. Stage II Stress
- c. Stage III Stress
- d. Stage IV Stress
- e. Stage V Stress
- f. Stage VI Stress (Hawari, 2018).

Functional Consequences related to Elderly Cognitive Function and Psychological Function

Geriatrics and Psychogeriatrics are part of the mental health problems of the elderly. The science that studies aspects of the elderly, such as physiological, psychological, social, cultural, and economic, is included in the gerontology section (Padila, 2018).

Changes in Emotional Stability

The elderly face pressures and conflicts due to physical changes in the social and psychological changes. The harmony between the demands from within and the demands of the environment cannot be balanced to meet their needs which eventually causes new problems (Padila, 2018).

Progressive Muscle Relaxation Techniques

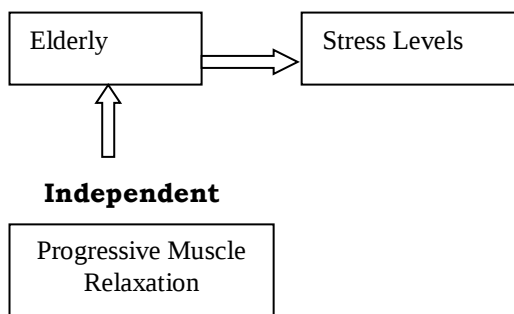
Kushariyadi (2011) explains how this technique is done, namely the method of deep muscle relaxation, using no suggestion or imagination or fear.

Goals of Progressive Muscle Relaxation Techniques

According to Herod (2010) in Setyoadi (Kushariyadi, 2011), the purpose of this method is:

- Decreased muscle tension
- Cardiac dysrhythmias and reduced oxygen demand
- Alpha brain waves increase when the client is aware of not focusing attention and relaxing.
- Feeling fit and concentration increased
- It has benefits on the ability to cope with stress.
- Insomnia, depression, overload, irritability, muscle spasms, mild phobias, and mild stuttering can be treated.
- Reducing negative emotions so that positive emotions are awakened.

Conceptual framework



Source: (Notoatmodjo, 2010)

Hypothesis

The hypothesis is a temporary answer to formulating a problem or research question. The established research hypothesis is the null hypothesis (Ho): there was no difference in the group's stress levels given relaxation therapy with the group not given relaxation therapy.

Results and Discussions

The results of the study on the effectiveness of progressive muscle relaxation therapy on elderly stress levels at the Muliorejo Health Center are presented below:

Univariate Analysis

Univariate analysis of the study was presented in a frequency distribution table based on characteristics such as age, gender, and stress levels before and after progressive muscle relaxation.

Table 1
Distribution of Frequency of Respondent Characteristics at Muuliorejo public health center Sunggal Subdistrict

No.	Characteristic	Frequency	Percent (%)
1	Age		
	50-60 years old	9	25,7
	61-70 years old	26	74,3
	Total	35	100
2	Gender		
	Man	15	42,9
	Woman	20	57.1
	Total	35	100

Based on table 1 above, it can be seen that the majority of respondents aged 61-70 years were 26 people (74.3%). Respondents are aged 50-60 years nine people (25.7%). Respondents were 20 women (57.1%), while male respondents were 15 people (42.9%).

Table 2
Distribution of Frequency of Respondents' Stress Levels before Progressive Muscle Relaxation at Muliorejo Health Center in 2020

No.	Stress Level	Day I		Day II		Day III		Day IV		Day V		Day VI	
		f	%	f	%	f	%	f	%	f	%	f	%
1	Light	0	0	0	0	0	0	1	2,9	15	42,9	31	88,6
2	Keep	15	42,9	15	42,9	15	42,9	16	45,7	17	48,6	4	11,4
3	Heavy	20	57,1	20	57,1	20	57,1	18	51,4	3	8,6	0	0
	Sum	35	100	35	100	35	100	35	100	35	100	35	100

Based on table 2, the respondents' stress levels before doing progressive muscle relaxation, the majority had a heavy stress level of 20 people (57.1%), respondents

had moderate stress levels of 15 people (42.9%), and the absence of respondents who had mild stress levels. There has been no change from the first day to the third day before the progressive muscle relaxation. There is a change in stress levels from the fourth to the sixth day.

Table 3
Distribution of Frequency of Respondents' Stress Levels after Progressive Muscle Relaxation at Mulioorejo Health Center in 2020

No.	Stress Level	Day I		Day II		Day III		Day IV		Day V		Day VI	
		f	%	f	%	f	%	f	%	f	%	f	%
1	Light	0	0	0	0	1	2,9	14	40,0	32	91,4	33	94,3
2	Keep	15	42,9	15	42,9	16	45,7	18	51,4	3	8,6	2	5,7
3	Heavy	20	57,1	20	57,1	18	51,4	3	8,6	0	0	0	0
	Sum	35	100	35	100	35	100	35	100	35	100	35	100

Based on Table 3, the respondents' stress levels after progressive muscle relaxation, the majority had mild stress levels 33 people (94.3%), respondents who had moderate stress levels two people (5.7%), and the absence of respondents who had severe stress levels. There has been no change from the first day to the second day after progressive muscle relaxation; from the third day to the sixth day, there is a change in stress levels.

Bivariate Analysis

After the data is grouped based on the category of each variable and has been obtained, the results of the frequency distribution are processed using univariate analysis; then, the data is analyzed bivariate, it is carried out to see the effectiveness of independent variables and dependent variables by using the dependent t-test.

Table 4
Difference in Stress Levels before and After Progressive Muscle Relaxation at Mulioorejo Health Center in 2020

Stress Levels	n	Mean	SD
Before	35	2,16	0,505
After	35	1,19	0,452

Based on table 4, the average stress level of respondents before the intervention on the first day to the sixth day was 2.16 with a standard deviation of 0.505; after the intervention, the average value of the stress level on the first day to the sixth day of 1.19 had a normal deviation value of 0.452.

Table 5
Effectiveness of Muscle Relaxation Therapy

Stress Level	Mean Difference	SD	Lower	Upper	P value
Before					
And After intervensi	1,007	0,236	0,93	1,09	0,000

Table 5 shows the difference in the average value before and after the intervention is 1.007, the standard deviation value is 0.236, the lower value is 0.93, and the upper value is 1.09. The T test statistic test results are $p = 0.000$ ($p < 0.05$). It is concluded that progressive muscle relaxation therapy is quite effective in stress levels.

Discussion

Stress Levels before Progressive Muscle Relaxation

Stated age as one of the critical factors causing stress due to the aging process; with the generation, a person becomes more easily stressed because of physiologically regress such as visual, thinking, remembering, and hearing (Hidayah, 2014).

The majority of female respondents, 20 people (57.1%), have a higher stress rate than the male sex. By Santoso's research (2008) examining the Influence of Yoga on stress on career women, the study's results explained that focus is more experienced by women than men; this is because women have a dual role in their lives.

Identifiable symptoms of stress: there are four outwardly concerned and inner. So it is very natural if stress symptoms are found in all aspects of the human self, namely physical, emotional, intellectual, and interpersonal (Hidayah, 2014).

Stress Levels after Progressive Muscle Relaxation

Elderly after doing relaxation therapy, there is a change in stress levels that decrease; this shows that interventions in the form of progressive relaxation therapy significantly benefit and meaningfully reduce the level of stress of the elderly. Hertanto Theory (2014) says there are good ways to avoid the effects of stress by managing stress well. Managing stress with cognitive, relaxation, and behavioral approaches is nonpharmacological therapy. At the same time, the use of drugs is pharmacological therapy.

Effectiveness of Giving Progressive Muscle Relaxation Therapy to Stress Levels

Based on table 5, the T-test results obtained a result of $p = 0.000$ ($p < \alpha = 0.05$) that the progressing muscle relaxation therapy effectively affects stress levels. The same study conducted by Hertanto & Suratini (2014) showed a decrease in stress levels in the elderly after a progressive relaxant therapy for six days in the elderly at PSTW Yogyakarta. The study results are by livana research, et al (2018). The results of this study mentioned a significant difference between the stress levels of the group that received treatment and the group that did not receive treatment. This theory of progressive muscle relaxation techniques is a therapy to help relieve symptoms of stress, insomnia, and hypertension. Even this technique is superior to other methods for stress response in relieving muscle tension consciously (Fitrianti & Putri, 2018).

Conclusion

1. The stress levels of respondents before the respondents took progressive muscle relaxation therapy on the first day to the third day obtained heavy stress levels of 20 people (57.1%), moderate stress levels of 15 people (42.9%), and no respondents at mild stress levels. The fourth to sixth day found changes, namely mild stress levels for as many as 31 people (88.6%), moderate stress levels for four people (11.4%), and the absence of respondents who had severe stress levels.
2. Classification of the stress levels of respondents after carrying out progressive muscle relaxation therapy in the elderly at the Muliorejo Health Center in 2020 on the first day to the second day was the heavy stress level of 20 people (57.1%), moderate stress levels of 15 people (42.9%) and the absence of respondents who had mild stress levels. While on the third to the sixth day, there were changes, namely the level of mild stress among as many as 33 people (94.3%), moderate stress levels among as many as two people (5.7%), and the absence of respondents who had severe stress levels.
3. Effective progressive muscle relaxation therapy against decreased stress levels in the elderly where the p-value < 0.05 (p = 0.000).

Suggestion

1. Muulioorejo public health center Health Institution to create and establish a policy of the elderly activity program on progressive muscle therapy as one way to overcome the problem of stress in the elderly.
2. The elderly to participate in applying and participating in progressive muscle therapy in daily activities if they are experiencing fatigue, anxiety, depression, or stress so that the elderly can increase their skills and knowledge in coping with stress.
3. Researchers to develop further research and increase the number of respondents by using a control group on the effectiveness of progressive muscle relaxation against reducing stress levels in the elderly. Researchers can also teach the elderly about good stress management.

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