

# Progressive Muscle Relaxation, Aromatherapy, and Combination of Aroma Therapy on Depression for Elderly People

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## ABSTRACT

**Background:** Depression is a common mental health problem that is most commonly found in the elderly. One approach that can be done in reducing the depression score of the elderly is through psychotherapy such as progressive muscle relaxation therapy, aromatherapy treatment, and a combination of progressive muscle relaxation therapy and aromatherapy.

**Purpose:** To determine the effect of Progressive muscle relaxation (PMR) therapy, aromatherapy therapy, and a combination of PMR therapy and aroma therapy on the level of depression in the elderly at the UPT social services for the elderly and children under five in the Gowaarea.

**Research Method:** This research is a quasi experiment with a pre-post test control-group design approach. This study consisted of 4 groups with a total sample of 18 elderly people in each group. The first group is the control group, the second group is the elderly with progressive relaxation therapy, the third group of elderly with aromatherapy therapy, the fourth group of elderly with progressive muscle relaxation-aromatherapy combination therapy. The instruments in this study were questionnaire sheets and observation sheets. Statistical tests using the Wilcoxon test to determine differences in pre and post treatment, and the Kruskal Wallis test to determine differences in the four groups, if there is a difference, it is continued with the Post Hoc test, namely the mann-whitney test to determine the group that has the most effect on reducing depression levels.

**Results:** There is a significant difference in depression levels before and after progressive muscle relaxation therapy ( $P < 0.05$ ). There is a significant difference in depression levels before and after the provision of aroma therapy ( $P < 0.05$ ). There is a significant difference in the level of depression before and after the combination of progressive muscle relaxation-aroma therapy ( $P < 0.05$ ). There is a difference in the level of depression in the four groups ( $P < 0.05$ ), Post-Hoc test obtained there is a difference in the level of depression in the progressive muscle relaxation therapy group and combined therapy of progressive muscle relaxation-aroma therapy compared to the control group.

**Conclusion:** Progressive muscle relaxation therapy and combination therapy of progressive muscle relaxation-aroma therapy have an effect on reducing depression levels in the elderly.

**Keywords:** Depression; Progressive muscle relaxation (PMR); Aromatherapy; Elderly

## Introduction

Depression is a common problem in the elderly. Depression is associated with poor outcomes with increased risk of disability, slow recovery from illness and death. Approximately 12%-20% of the elderly population has symptoms of depression. Depressed elderly have poorer health status, higher prevalence of disability, and more severe comorbidities and even increased mortality. [1] Depression in the elderly is a serious public health problem, resulting in impaired physical, mental, and social functioning that places a burden on families and communities. The National Institute of Mental Health Epidemiologic Catchment Area Study reported the prevalence of major depression in those aged 65 years or older to be around 1% (0.4% in men, 1.4% in women). Steffens and colleagues found a 15.8% prevalence of major depression in the elderly of all age groups in Cache County, Utah, higher than previously reported. [2] Wirasto et al (2007) stated that overall sociodemographic factors contributed to depression in the elderly by 19.2%. Sociodemographic factors associated with depression in the elderly who were respondents were not married, female and the number of dependent children. [3] The World Health Organization data shows that at the end of the 20th century, the increase in the world's population led to an increase in the number of senior citizens aged 65 years or older.

The number of elderly population in Indonesia in 2020 will be the 4th largest in the world after China, India, and the United States. [4] Nursing interventions that can be given to patients with depression are individual therapies such as cognitive therapy, behavioral therapy, thought stopping, Progressive Muscle Relaxation (PMR), and other relaxation methods such as lavender aroma therapy. [5] Progressive Muscle Relaxation is a form of muscle relaxation therapy through two steps, namely by applying tension to a muscle group and stopping the tension and then focusing on how the muscle relaxes, feels a relaxed sensation, and the tension disappears. Progressive Muscle Relaxation (PMR) can stimulate the release of endorphin and enkephalin chemicals that cause a sense of calm (relax), happiness (euphoria) and are able to stimulate brain signals that cause muscles to relax and increase blood flow to the brain. [6] According to Purwanto (2007), PMR can provide a smooth massage on various glands in the body, reduce the production of cortisol in the blood, restore the release of hormones in moderation so as to provide emotional balance and peace of mind. [7] Several studies reveal the benefits of PMR therapy, such as research conducted by Resti (2014) proving that it can reduce stress and stress symptoms in asthma sufferers. [8] Rahman [9] reported that PMR therapy has a significant effect on the quality of elderly sleep.

Furthermore, Supriati, et al. [9] proved that PMR therapy with a combination of thought stopping can reduce anxiety in clients with physical disorders compared to groups that are only given therapy alone. [10] Tobing (2012) reported that PMR therapy with a combination of logotherapy can reduce anxiety, depression and increase relaxation and the ability to make meaning of life compared to groups that are only given logotherapy therapy alone in cancer clients. [6] Lavender aromatherapy is a form of relaxation therapy. Lavender aroma therapy is an ancient healing process that uses pure lavender aroma therapy plant essence that aims to improve the health and well-being of the body, mind, and spirit. [11] Based on research, various aroma oils from flowers and woods have therapeutic and psychotherapeutic properties. [12] Lavender aroma therapy works by stimulating olfactory nerve cells and affecting the work of the limbic system by increasing positive and relaxed feelings. [13] Some of the essential oils that are commonly used in lavender aroma therapy because of their versatility are geranium, Eucalyptus (Eucalyptus), and Eucalyptus (Eucalyptus). Some essential oils that are commonly used in lavender aroma therapy because of their versatility are geranium, eucalyptus (eucalyptus oil), lavender, and rose essentials. [11] According to Merdikawati, et al. [12] Lavender aroma can increase the frequency of alpha waves in the back of the head, and this state is associated with relaxation. [12]

Laura, et al. [14] proved that lavender aroma therapy has a significant effect on sleep quality in post partum mothers. [14] Furthermore, Merdikawati, et al. [12] stated that lavender aroma therapy can reduce anxiety in adolescent girls who experience pre menstrual syndrome. [12] Arwana, et al. [15] confirmed that the administration of lavender aroma therapy can reduce the anxiety of patients before spinal anesthesia surgery. The results of a preliminary study conducted in December 2016 through interviews with 20 elderly people at the UPT Social Services for the Elderly and Toddler Children in Gowa and Bone, found that some elderly people complained of insomnia, despair, sadness, laziness, lack of appetite and lack of concentration. Based on this background, research related to PMR therapy, lavender aroma therapy and their combination on reducing depression in the elderly has never been carried out at UPT. Social services for the elderly and children under five in the Gowa and Bone regions. Therefore, researchers are interested in examining the effectiveness of PMR and lavender aroma therapy and the combination of both on reducing depression in the elderly at the UPT of Social Services for the Elderly and Toddler Children (Figure 1).

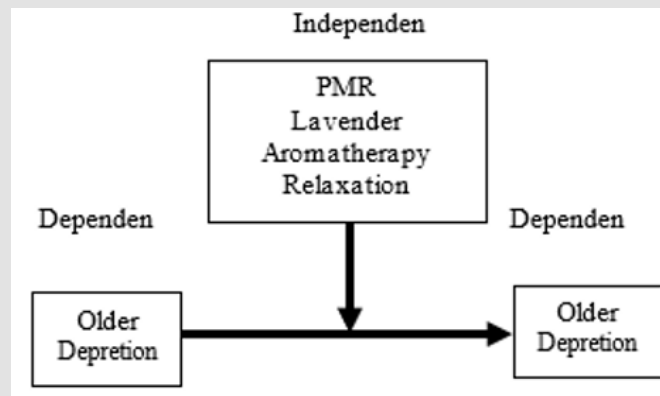


Figure 1: Conceptual framework research.

### Method of Research

This research type is a quasi experiment, with a pre-post-test control-group design, namely by comparing pretest and posttest values in the intervention group. In this study there were four groups, namely the first group, namely the control group (without treatment), the second group with PMR treatment, the third group with lavender aromatherapy treatment, and the fourth group with PMR-lavender aromatherapy combination treatment. This study aims to determine the effectiveness of Progressive Muscle Relaxation (PMR) therapy and aroma therapy on depression in the elderly at the UPT social services for the elderly and children under five. This research was conducted at the UPT Social Services for the Elderly and Toddler Children in the Gowa and Bone Regions. The research time started on August 18 to September 27, 2023. The population in this study were all elderly people at the UPT Social Services for the Elderly and Toddler Children in Gowa and Bone as many as 180 people. Research Sampling is using purposive sampling technique, a sample of 72 respondents was obtained, all of which were used as samples and divided into four groups, each group totaling 18 people. The first group is a control group, the second group of elderly people by getting Progressive Muscle Relaxation (PMR) therapy, the third group gets lavender.

Aromatherapy therapy, and the fourth group gets a combination therapy, namely Progressive Muscle Relaxation (PMR) exercise and lavender aromatherapy. The treatment was carried out for 6 consecutive days. At the beginning of the treatment, namely before the therapy, depression was measured and at the end of the treatment, namely after the therapy, depression was measured again. Analysis of data is using univariate and bivariate analysis. Univariate analysis is used to analyze the frequency distribution of the measurement results of a data by describing each data. In this study, the results of depression measurements are displayed in the form of a mean and then analyzed on the data display. While bivariate analysis aims to prove the truth of the hypothesis that has been formulated using the SPSS version 19

program. Wilcoxon test is used to determine the effect of treatment in one group with pre-test and post-test as well as comparing between groups, namely to determine the intervention that has the most effect on reducing depression with Kruskal Wallis analysis. If there is a difference, the Post-Hoc test is continued, namely the Mann Whitney test. The difference is declared significant if  $P < 0.05$ .

### Result Research

Based on the Table 1 above, it is known that the characteristics of respondents in this study are mostly female, Makassar ethnicity, Muslim religion, and age range 61-65. The table above shows that the level of depression at the end of the measurement compared to the beginning of the measurement obtained a P value of 0.317 ( $P > 0.05$ ). This indicates that there is no significant difference in the level of depression between the beginning of the measurement and the end of the measurement in the control group.

Table 1: Characteristics of Respondents at the UPT Social Services for the Elderly and Toddler Children in the Gowa Region.

No	Sex	Frekuensi	Persentase (%)
1	Sex		
	Female	39	54,17
	Male	33	45,83
	Total	72	100%
2	Ethnicity		
	Makassar	26	36,11
	Bugis	19	26,39
	Toraja	17	23,61
	Mandara	10	13,89
	Total	72	100%
3	Religion		
	Islam	53	73,61

	Christian	19	26,39
	Total	72	100%
<b>4</b>	<b>Age</b>		
	51-55	7	9,73
	56-60	14	19,44
	61-65	28	38,89
	>66	23	31,94
	Total	72	100%

**Progressive Muscle Relaxation (PMR) Therapy Group**

Based on the Table 2 above, after PMR therapy, a P value of 0.003 (P<0.05) was obtained, which means that there is a significant difference in the level of depression between before and after PMR therapy.

**Table 2:** Depression Level of the Control Group in the elderly at the UPT Social Services for the Elderly and Toddler Children GowaRegion.

Level Depression	Beginning of Measurement		End of Measurement		Value P
	F	%	F	%	
Not Depression	4	22,2	500%	27,8	0,317
Low Depression	14	77,8	13	72,7	
Total	18	100	18	100	

**Lavender Aroma Therapy Group**

Based on the Table 3 above, it shows that the level of depression after lavender aromatherapy therapy compared to before aromatherapy therapy obtained a P value of 0.003 (P <0.05), which means that there is a significant difference in depression levels between before and after lavender aromatherapy therapy.

**Table 3:** Effect of Progressive Muscle Relaxation (PMR) Therapy on Depression Levels in the elderly at the UPT Social Services for the Elderly and Toddler Children GowaRegion.

Level Depression	Beginning of Measurement		End of Measurement		Value P
	F	%	F	%	
Not Depression	3	16,7	1400%	77,8	0,002
Low Depression	15	83,3	4	22,2	
Total	18	100	18	100	

**Combination therapy group of Progressive Muscle Relaxation (PMR) and Lavender Aromatherapy**

The Table 4 above shows that the level of depression after combined PMR-aromatherapy lavender therapy compared to before combined PMR-aromatherapy lavender therapy obtained a P value of 0.000 (P <0.05), which means that there is a significant difference in depression levels between before and after combined PMR-aromatherapy lavender therapy. The Tables 5 & 6 shows that the comparison of depression levels at the end of the measurement of the four groups obtained a P value of 0.003 (P < 0.05), which means that there is a difference in depression levels between the control group, the group with PMR therapy, lavender aromatherapy therapy, and combined PMR- lavender aromatherapy therapy. Furthermore, a post-hoc test was conducted, namely the Mann- whitney test to determine the therapy that had the most effect on reducing the level of depression.

**Table 4:** The Effect of Lavender Aroma Therapy on Depression Levels in the elderly at the UPT Social Services for the Elderly and Toddler Children in the GowaRegion.

Level Depression	Beginning of Measurement		End of Measurement		Value P
	F	%	F	%	
Not Depression	2	11,1	1100%	61,1	0,003
Low Depression	16	88,9	7	38,9	
Total	18	100	18	100	

**Table 5:** The effect of PMR-Aromatherapy lavender combination therapy on depression levels in the elderly at the UPT Social Services for the Elderly and Toddler Children GowaRegion.

Level Depression	Beginning of Measurement		End of Measurement		Value P
	F	%	F	%	
Not Depression	5	27,8	1500%	83,33	0,004
Low Depression	13	72,2	3	16,67	
Total	18	100	18	100	

**Table 6:** The Effectiveness of PMR Therapy, Lavender Aromatherapy Therapy, and Combination PMR-Aromatherapy Lavender Therapy in Reducing Depression Levels Compared to the Control Group in the Elderly at the UPT Social Services for the Elderly and Toddler Children GowaRegion.

Level Depression	Control Group		PMR Treatment		Lavender Aromatherapy		Combination PMR Treatment & Lavender Aromatherapy		Value P
	F	%	F	%	F	%	F	%	
Not Depression	5	27,8	1400%	77,8	11	61,1	15	83,33	0,003
Low Depression	13	72,7	4	22,2	7	38,9	3	16,67	
Total	18	100	18	100	18	100	18	100	

## Discussion

The research results obtained the majority of elderly people in UPT Pelayanan. Social Services for the Elderly and Toddler Children in the GowaRegion at the beginning of the measurement experienced mild depression. Muna [16] states that 60% of elderly people living in nursing homes experience depression. [15] Siboro and Rusdi [17] state that of the 76 elderly who were sampled 35 of them suffered from depression, even 40% of them, suffered from severe depression. [17] Meanwhile, Pradnyandari and Diniari [18], stated that the proportion of depression in the elderly, who live with their families is greater than those who live in Nursing Homes, however, based on the level of depression, elderly with severe depression are more in Nursing Homes than those who live with their families, although this difference is not statistically significant. [18] Muna, et al. [16] state that older age, female gender, and basic education factors affect the incidence and level of depression. [15] According to Siboro and Rusdi [17], family communication factors, greatly affect the incidence of depression, the worse the family communication pattern, the incidence of depression increases in the elderly. This communication pattern factor is also very influential on the elderly who live in Werda Nursing Homes, elderly who feel lonely will be very susceptible to depression [17].

Based on the results of the study after giving progressive muscle relaxation therapy, it was found that there was a decrease in the level of depression in the elderly and statistically there was a significant difference between the level of depression before and after giving progressive relaxation therapy. This research is in line with research conducted by Palupi [19] which states that progressive relaxation techniques have an effect on the level of depression in the elderly, at the Tresna Werdha Unit Abiyoso Pakem Sleman Social Home Yogyakarta. [19] Research conducted by Windarwati, et al. [20] also obtained similar results, namely progressive muscle relaxation therapy has a significant effect on. The occurrence of a decrease in the depression score of the elderly at the Pandaan Social Elderly Social Service Unit. [19] Sholihah [21] confirms that there is an effect of progressive muscle relaxation therapy on reducing depression levels in the elderly. [21] Progressive muscle relaxation therapy is a technique that focuses on a muscle activity by identifying tense muscles and then reducing tension by performing relaxation techniques to get a feeling

of relaxation. In progressive muscle relaxation exercises the elderly are asked to tense the muscles with a certain tension and then relax them. Before being relaxed, the tension is felt first so that individuals can distinguish between tense and limp muscles (Setyohadi and Kushariyadi, [20]).

Relaxation can affect the hypothalamus and parasympathetic nerves for metabolism and respiration to reduce oxygen consumption and muscle tension. This is to maintain health and mental balance. According to Jacob, relaxation can reduce neural reflexes that can reduce skeletomuscular neural input and activity output. Furthermore, according to Jacob, neuroanatomic activity will be lowered. This muscle relaxation will inhibit the hypothalamus to stop the secretion of CRH, so that the secretion of ACTH and cortisol also decreases. This will have an impact on reducing the level of depression (Amila, [9]). In this research, there was a significant decrease in depression levels after being given aromatherapy therapy. Based on the literature search conducted by researchers, there has been no similar research, but aromatherapy therapy has been widely used in handling insomnia and lowering blood pressure in the elderly. Adiyati [22] stated that aromatherapy therapy can significantly reduce the degree of insomnia in the elderly [22] Kurnia, et al. [23] and Foerwanto, et al. [24] stated that aromatherapy can improve sleep quality in the elderly. Furthermore, Marina and Kulsum [25] and Soraya, et al. [26] state that the administration of rose and lavender aromatherapy in the elderly with hypertension has a significant effect on reducing high blood pressure. Insomnia and high blood pressure are one of the characteristics of depression. Improving sleep quality and reducing blood pressure in the elderly will have an effect on reducing depression in the elderly.

The scent of fragrances such as lavender scent has a sensitive effect on the limbic system in the brain, which is associated with emotional and memory in humans. The molecules released into the air are as water vapor. When water vapor containing these chemical components is inhaled, it is absorbed by the body through the nose and lungs and then enters the bloodstream. When aromatherapy vapor is inhaled, the vapor molecules will affect the limbic system of the brain which is responsible for the integration and expression of feelings, learning, memory, emotions, physical stimulation, and provide a feeling of relaxation [27]. In this research, giving a combination therapy of progressive muscle relaxation therapy and aromatherapy can sig-

nificantly reduce depression levels in the elderly. Progressive muscle relaxation therapy can work together with aromatherapy therapy in reducing depression. Relaxation can change the brain rhythm from beta (alert) to alpha (relaxed) which can reduce anxiety by activating parasympathetic nerves and also inhibiting the secretion of the hormone cortisol which plays a role in stress conditions. The decrease in depression levels will be strengthened by aromatherapy therapy which according to the literature, aromatherapy can increase the production of endorphin hormone [28].

Hormone endorphin is a hormone that provides a sense of happiness Adiyati [22] This research also examines the therapy that has the most effect on reducing depression. Based on the Kruskal Wallis test, the p value <0.05 was obtained so that there were differences in the four treatments in reducing the level of depression in the elderly. Furthermore, the Post Hoc test found that PMR therapy and PMR-aromatherapy combination therapy can significantly reduce depression levels compared to the control group. The statistical results show that the level of depression in the aromatherapy group is still the same as the control group, which means that when compared to the control group, lavender aromatherapy therapy has not been able to reduce the level of depression in the elderly. However, the results will be different if aromatherapy becomes a complementary therapy to PMR therapy, namely the level of depression will be lower when compared to the control group. The main key in reducing depression is to provide a relaxing and pleasant effect, so that the brain can reduce tension so that it will have an effect in reducing depression. PMR therapy and PMR-aromatherapy combination therapy are able to relax the brain and have a positive effect on reducing depression levels (Setyohadi, et al. [14]).

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