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REDUCTION IN ANXIETY SCORES FOLLOWING PROGGRESIVE MUSCLE RELAXATION THERAPY IN MDR TUBERCULOSIS

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ABSTRACT

Anxiety is an ambiguous fear or concern, characterized by an emotional state devoid of a definite target, accompanied by sensations of uncertainty, powerlessness, isolation, and insecurity. This study is to examine the reduction in anxiety levels following progressive muscle relaxation therapy among drug-resistant tuberculosis patients in Ambon City in 2024. The research design utilized a pre-experimental one-group pre-test post-test methodology. The sample size consisted of 34 individuals who were selected through a comprehensive sampling methodology. We collected data using the HARS (Hamilton Anxiety Rating Scale) questionnaire. The findings indicated that the highest proportion of TBC-RO patients had moderate anxiety (55.9%), which subsequently diminished to mild anxiety (61.8%) following progressive muscle relaxation therapy. Patients with tuberculosis in Romania can considerably reduce their anxiety level by 34.2% following progressive muscle relaxation therapy (p value = 0.001). We observed a substantial reduction in anxiety levels before and after the progressive muscle relaxation therapy intervention, with a p-value of 0.001. Recommendation: Undertake additional research incorporating many factors that may influence the reduction of patient anxiety.

Keywords: *anxiety, MDR TB, Progressive Muscle Relaxation Therapy*

INTRODUCTION

Multidrug Resistance Tuberculosis (MDR TB) is a health problem that still occurs worldwide, including in Indonesia. Data from 2019 in Indonesia found that around 11,500 patients experienced Rifampicin-Resistant Tuberculosis, and approximately 48% of patients who started second-line TB treatment had a treatment success rate of 45% (WHO, 2020). WHO data estimates that there are about 28,000 cases of MDR TB in Indonesia. (Kementerian Kesehatan Republik Indonesia, 2022).

The escalation of multidrug-resistant tuberculosis (MDR TB) incidence contributes to heightened disease transmission across families and communities, culminating in an increased number of TB cases and imposing a burden on both families and society. The elevated incidence of MDR TB cases adversely affects the prevalence of depression and anxiety among TB patients, thus diminishing their quality of life. Research involving 135 MDR-TB patients in Nepal demonstrated that those reporting side effects from MDR treatment exhibited elevated levels of despair and anxiety (Walker et al., 2019).

The increase in anxiety among MDR TB patients highlights the need for care, particularly in enhancing the adaptation process to therapy. This aligns with Callista Roy's adaptation theory, which posits that every individual has the ability to adapt to both internal and external stimuli (Sihombing, R.M., et al., 2023). This can enhance therapy optimization. Nursing interventions such as progressive muscle relaxation therapy can address this issue; however, patients with specific disorders like hypertension predominantly utilize this intervention.

Maluku Province ranks 13th out of 34 provinces in Indonesia with a TB case rate of 40%. The city of Ambon ranks first with the highest TB cases, reaching 65% out of 11 districts/cities in Maluku (Dinas Kesehatan Provinsi Maluku, 2021). Based on data from the Ambon City Health Office in 2022, the number of Tuberculosis cases in Ambon City reached 925 cases. The Ambon City Health Office has 22 community health centers and 4 regional hospitals as implementers of the TB DOTS program. Various control programs carried out in Ambon City include case detection, patient treatment, health promotion, and sputum examination. After the diagnosis is established, adequate treatment is then administered until recovery. In the treatment carried out by patients over a long period, which causes side effects such as anxiety, there has not yet been a non-pharmacological management approach to help reduce this, such as complementary therapy like progressive muscle relaxation therapy that can be performed as an independent nursing action. Based on the background and the phenomenon of the problems described

above, the researcher is interested in knowing the reduction in anxiety scores after administering progressive muscle relaxation therapy to MDR TB patients.

METHODS

The methods of this research was Pre-Experimental One Group Pretest-Posttest Design, which involves conducting research activities on a single group, administering an initial test (pretest) prior to the treatment, and subsequently administering a final test after the treatment. Sample of this research using total sampling that consist of 34 respondents. The study was performed in the city of Ambon, from February to March 2024. The assessment instruments employed included the HARS questionnaire, the family support questionnaire, and modules and films for progressive muscle relaxation therapy. Data analysis utilized univariate and bivariate Wilcoxon tests, as well as the Chi-Square test. This study omits multivariate tests due to the absence of substantial confounding variable correlations. This research has successfully undergone ethical review and obtained research permission.

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RESULTS AND DISCUSSION

Tabel 1. Characteristics of respondents

Characteristics	Frequency	Percentage
Age		
Adolescent	11	32,4 %
Adult	15	44.1 %
Elderly	8	23.5
Gender		
Male	17	50.0%
Female	17	50.0%
Education		
Junior-High school	24	70.6 %
Higher education	10	29,4%
Job		
Not working	19	55,9 %
Working	15	44.1%
Comorbidites		
Yes	7	20,6 %
No	27	79,4 %
Duration of Treatment	19	55.9%
0-12 months	15	44.1%

13-24 months		
Family support		
Positive	**26**	**76,5 %**
Negative	8	23,5 %

The predominant demographic of TB RO patients consists of adults, were 15 respondents (44.1%). The adult category comprises respondents aged 26 to 45 years, classified within the productive age range. Research indicates that the predominant age demographic among Multidrug-Resistant Tuberculosis (TB MDR) patients is the productive age group, those aged 15–55, which comprises 85% of the population (Aini & Rufia, 2019) The research site revealed that the productive age demographic is the most susceptible to TB-MDR as a result of treatment cessation. This finding is consistent with previous studies that show patients in the productive age group have lower compliance with anti-tuberculosis medication (OAT) regimens following previous tuberculosis treatments (Al Qarni Bayan, 2022). Increased activity during a productive age increases the chance of exposure to tuberculosis infection, potentially facilitating its transmission to others (WHO, 2022).

The percentages of respondents are equal between male and female. They were 17 respondents (50.0%) for male and female. The results of this study demonstrate that women and men exhibit the same percentages. The findings reveal that the proportion of women matches that of men, indicating that women also encounter a significant risk of contracting MDR-TB. According to another study, the prevalence of MDR-TB is higher in women (65.4%) compared to men (34.6%) (Nugrahaeni & Malik, 2013). Women participate more in external activities, leading to enhanced social connections.

A considerable percentage of RO TB patients have attained a high school education, were 24 respondents (70.6%). This aligns with the conducted research, which indicated that the majority of respondents possess a high school education(Sukmawati & Galenso, 2021). Education is essential for altering cognitive structures, behavioral inclinations, and decision-making processes. A sufficient level of education enables the recognition of forces both inside and externally(Stuart, 2016).

The majority of MDR-TB patients are unemployed; they were 19 respondents (55.9%). A study of 35 MDR-TB patients at UOBK RSUD R Syamsudin SH indicated that 51.4% of participants were unemployed (Fauziah Maqbullah, 2023). The child's parents pursue employment as a means to generate revenue. Respondents engage in various vocations, leading to differing income levels that range from low to high,

depending on their selected profession (Stuart, 2016). This study primarily included unemployed participants who stopped working due to treatment that required drug administration at healthcare facilities, thereby inhibiting their capacity to work.

The majority of MDR-TB patients are devoid of comorbidities, with 27 people (79.4%) indicating none. The recognized comorbidity was diabetes mellitus (DM). The study found that 78.4% of MDR-TB respondents did not have diabetes mellitus comorbidities, whereas 21.6% did (Anisah et al., 2021). Diabetes mellitus is a condition marked by increased blood glucose levels over the normal threshold (>126 mg/dl). Diabetes mellitus can negatively influence opioid agonist therapy due to differing plasma levels of rifampicin in tuberculosis patients with diabetes compared to those without DM (Rosdiana , 2017).

The majority of MDR-TB patients underwent treatment for a duration of 0–12 months were 19 respondents (55.9%). The majority of MDR-TB patients have positive family support; they were 26 respondents (76.5%). The study revealed that family support for MDR-TB respondents was significant, with 42.9% receiving it (Fauziah Maqbullah, 2023). Family support includes attentiveness to the patient's symptoms, encouragement during health maintenance fatigue, motivation for participation in faith-based practices, companionship in leisure activities such as watching television, listening to the radio, and sharing humor, fostering confidence in the patient's recovery, maintaining affection and care, inquiring about emotional well-being during treatment, sensitivity to behavioral changes, and active listening to the patient's expressions (Murharyati et al., 2021).

Table 2. Level of patient's TB anxiety pre and post relaxation progressive muscle therapy.

Level of anxiety	***Pre-test***		***Post-test***	
	Frequency	%	Frequency	%
No anxiety	0	0	4	11,8
Mild	2	5,9	21	61,8
average	19	55,9	9	26,5
severe	13	38,2	0	0
Total	34	100	34	100

Table 2 shows that MDR-TB patients showed the highest percentage of moderate anxiety in the pre-test, with 19 respondents (55.9%), but this subsequently decreased to mild anxiety in the post-test, with 21 respondents (61.8%). This aligns with the study by Budi Rustandi et al., 2018, which

indicated that in the pre-test, the highest percentage of participants experienced extreme anxiety, totaling 21 persons (70%); however, in the post-test, this number reduced to two respondents (6.7%). Severe anxiety manifests through symptoms including irrational apprehension regarding events, insomnia, irritability, recurrent grievances, imagining distressing negative scenarios, reports of dizziness, headaches, nausea, frequent urination, diarrhea, palpitations, constricted perception, reluctance to engage in effective learning, self-absorption, an intense urge to eradicate anxiety, and feelings of helplessness, confusion, and disorientation. In this study, participants expressed concern regarding their condition, apprehension about transferring it to family, fear of isolation, mortality, and alterations in physical appearance, including changes in skin color and weight loss. Some respondents experienced panic when learning of the deaths of others, even from unrelated illnesses (Stuart, 2016). This study revealed that respondents had anxiety regarding their health, apprehension about passing it on to their family, fear of isolation and mortality, as well as concerns about alterations in physical appearance, including changes in skin color and weight loss. Furthermore, certain respondents experienced terror when learning of the deaths of others, regardless of their differing ailments

Table 3 . Wilcoxon test before and after progressive relaxation muscle therapy

	Before *(Pre-test)*	after *(Post-test)*	% reduction	*P Value*
Anxiety score	27,59	18,15	34,2%	0.001

Table 3 indicates that following progressive muscle relaxation therapy in RO TB patients, the anxiety score diminished considerably by 34.2% (p value = 0.001), with $p < 0.05$. This study aligns with Budi Rustandi et al., 2018, who reported that prior to the progressive muscle relaxation therapy intervention, the anxiety score was 66.97%, which decreased to 47.78% post-intervention, demonstrating a significant difference in anxiety scores with a p-value of 0.001. Chronic health issues contribute to heightened anxiety as they impact both physical health and emotional well-being (Nugraha, 2018). The study by Dewi et al., 2022 revealed that respondents exhibited concern regarding themselves and their family.

Participants expressed apprehension regarding personal transformations, including alterations in physical health, unpredictable emotional fluctuations, and concerns about employment instability and mortality. Previous research indicates that anxiety in tuberculosis patients is significantly associated with concerns regarding personal and familial well-being, the protracted nature of treatment, potential medication side effects,

disease transmission to close relatives, employment insecurity, social rejection and discrimination, as well as fear of mortality (Wang et al., 2018). Progressive muscle relaxation therapy is an intervention that can alleviate patient anxiety according to the Indonesian Nursing Intervention Standards. Progressive muscle relaxation is a method involving the tensing and releasing of muscles to alleviate muscle tension, anxiety, and discomfort while also improving comfort, focus, and physical fitness. The mechanism of action for gradual muscle relaxation induces a soothing impact on bodily regions, engendering a sensation of lightness and warmth that permeates the entire body. The alterations that transpire during and subsequent to relaxation influence the autonomic nervous system and facilitate the alleviation of stress and anxiety in the human body through the progressive tensing and relaxing of muscles (Meyer et al., 2016). The emotional response and soothing effects of this relaxation transition the physiology from sympathetic dominance to parasympathetic dominance. In this condition, the hyper secretion of catecholamine's and cortisol diminishes, while there is elevation of the levels parasympathetic hormones and neurotransmitters, including *Dehidroepinandrosteron* , dopamine, and endorphins. Endorphins are biochemical substances that induce feelings of happiness. The pituitary gland, located near the base of the brain, synthesizes endorphins. The pituitary gland synthesizes this hormone, which functions similarly to morphine but is reportedly 200 times more effective than it. Endorphins can elicit sensations of joy and solace, resulting in increased energy levels. The modulation of the parasympathetic system finally produces a tranquilizing effect. Progressive muscle relaxation therapy promotes the release of endorphins and encephalin, activating brain signals that induce muscular relaxation and enhance cerebral blood flow(Stuart, 2016).

CONCLUSION

Progressive muscle relaxation is a non-pharmacological technique that alleviates anxiety by stimulating the parasympathetic nervous system. The alleviation of anxiety following non-pharmacological therapy will enhance the patient's quality of life, facilitating optimal functioning and adaptation to the condition and its treatment. This may promote the successful completion of MDR-TB treatment.

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