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THE RELATIONSHIP BETWEEN STRESS LEVELS AND QUALITY OF LIFE IN PULMONARY TUBERCULOSIS PATIENTS

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ABSTRACT
Tuberculosis (TB) infection is one of the diseases whose spread is influenced by environmental and behavioral factors. One of the psychological impacts felt by pulmonary TB patients is stress. Stress that the patient experiences over a long period of time and is not overcome will affect the patient's quality of life. The purpose of this study was to determine the relationship of quality of life of pulmonary tuberculosis patients who experience stress with the disease. The research design used in this study is correlation analytic. The population of this study was 62 and a sample of 54 respondents with a sampling technique that is consecutive sampling. Stress levels were measured using the Depression Anxiety Stress Scale (DASS 42) questionnaire. The quality of life of the respondents was measured by the St. George Respiratory Questionnaire (SGRQ) questionnaire. The research data was compiled using Microsoft Excel and then reviewed for completeness. The complete data was coded or underwent the coding process. Data on stress levels and quality of life for tuberculosis (TB) patients were categorical with a nominal scale, so the statistical test used was the Chi-Square Test. The results of analysis using Chi Square test obtained p-value of 0.000 or <0.05. The conclusion of this study is that there is a relationship between the level of stress with the quality of life of patients with pulmonary TB in the working area of the State Health Center II.

Keywords: pulmonary tuberculosis; quality of life; stress

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INTRODUCTION

Tuberculosis (TB) infection is a disease influenced by environmental and behavioral factors. Long-term treatment with side effects can lead to psychological impacts on TB patients. Patients with pulmonary TB also experience psychosocial effects due to changes in attitudes and social stigma (Rezki, 2017). Psychological impacts reported by TB patients include stress, low self-esteem, shame, isolation, rejection, and discrimination (Diamanta et al., 2020). Research on the interaction between mind and body suggests that approximately 80% of health-related issues are caused or exacerbated by stress (Diamanta et al., 2020). A study by Fuadiati et al. found that patients with pulmonary TB experience mild stress (52.4%), moderate stress (13.1%), and severe stress (4.8%) (Fuadiati, 2019). Stress affects physical health, leading to mental fatigue, irritability, insomnia, loss of appetite, and reduced libido (Kurniyawan et al., 2022). Chronic, unmanaged stress can significantly impact the quality of life of patients (Putri et al., 2018).

Quality of life is an individual's perception of their life in the context of cultural and personal values to achieve life goals. In recent years, in developing countries, there has been an increasing burden of chronic disease or disability, making quality of life a focus of healthcare services (Kurniasih & Sa'adah, 2020). Quality of life is influenced by medical factors, including disease and the medical treatment received (Nurwidia & Hadi, 2022). Improving

quality of life is a crucial goal of treatment and key to the recovery of TB patients (Suriya, 2018). Health problems experienced by TB patients disrupt daily life, cause prolonged stress, and can adversely affect their quality of life (Putri et al., 2018). Reduced quality of life in TB patients is associated with their health status, potentially leading to delays or negative impacts on treatment continuity, resulting in treatment interruption (Pariyana et al., 2018b).

TB cases in Indonesia rank second after India, with 969,000 cases reported (Pramono, 2021). In Bali, the highest number of positive BTA cases are found in Denpasar, and Jembrana ranks second with 49.10% (Balitbangkes, 2018). TB cases in Jembrana Regency have shown an upward trend. In 2020, there were 138 TB cases, which increased by 29.90 cases in 2021. From January to June 2023, 139 positive TB cases were recorded (Badan Pusat Statistik Provinsi Bali, 2023). This study aims to examine the relationship between the quality of life of TB patients experiencing stress and their disease, to provide insights for developing appropriate interventions in the Puskesmas II Negara area.

METHOD

This study used a correlational analytic design. The subjects were all pulmonary TB patients in the working area of Puskesmas II Negara, totaling 62 patients. The sampling technique used was consecutive sampling, resulting in 54 respondents who met the inclusion criteria. The inclusion criteria were: patients with pulmonary TB who were willing to participate and sign the informed consent, currently undergoing anti-TB treatment (OAT), and able to read and write. Data collection was conducted over one month, from August to September 2023. Stress levels were measured using the Depression Anxiety Stress Scale (DASS 42) questionnaire, and quality of life was assessed using the Indonesian version of the St George Respiratory Questionnaire (SGRQ), which has been validated and reliable. The results of the DASS-42 questionnaire in the Indonesian version showed that the reliability values obtained through Cronbach's alpha were above 0.9 for each dimension. Construct validity, analyzed using confirmatory factor analysis, yielded a model with an acceptable fit. Criterion validity showed significant values (Arinda Diah et al., 2021). The Indonesian version of SGRQ is well validated with the 6 MWD as the functional capacity test for COPD patients. The reliability test also showed that the Indonesian version of SGRQ is a reliable test based on the test-retest reliability and internal consistency results (0,73-0,86) (Nury Nusdwinuringtyas et al., 2020).Each respondent was provided with an informed consent form for participation. The ethical clearance for this research was obtained from the Faculty of Health at Triatma Mulya University with the letter number 052/EC/KEPK-UNTRIM/III/2024.

RESULTS

Data on respondent characteristics were collected after respondents completed the demographic questionnaire. Data on stress levels and quality of life were gathered using the Depression Anxiety Stress Scale (DASS 42) and the St George Respiratory Questionnaire (SGRQ). The data were then processed using statistical software (SPSS). The bivariate test used was the Chi-Square test due to the categorical nature of the data.

Table 1.
Frequency Distribution of Respondent Characteristics by Age

Category	f	%
Age		
Teenagers (14 - < 26 years)	13	24,1
Adults (26 - < 46 Years)	37	68,5
Eldery (46 - < 66 years)	4	7,4
Gender		
Woman	13	24,1
Man	41	75,9
Education		
No school	5	9,3
SD	5	9,3
Junior high school	4	7,4
High school/vocational school	40	74,1
Work		
Work	19	35,2
Doesn't work	35	64,8

The analysis based on respondent characteristics revealed that the majority of respondents were in the adolescent category (26-<46 years), totaling 37 respondents (68.5%). The analysis by gender showed that most respondents were male, with 41 respondents (75.9%). The analysis based on education level found that the majority of respondents had a high school education (SMA/SMK), totaling 40 respondents (74.1%). The analysis based on employment status indicated that the majority of respondents were unemployed, with 35 respondents (64.8%).

Table 2.
Frequency Distribution of Respondent Characteristics by Duration of Pulmonary TB

Long-term TB Suffering	**f**	**%**
<6 Months	14	25,9
>6 Months	40	74,1

The analysis of the duration of pulmonary TB showed that most respondents had been suffering from TB for more than 6 months, totaling 40 respondents (74.1%).

Table 3.
Frequency Distribution of Stress Levels in Pulmonary TB Respondents

Stress Level	f	%
Normal	0	0
Light	16	29,6
Moderate	31	57,4
Savere	7	13,0
Very severe	0	0
Total	54	100,0

The analysis of stress levels among respondents revealed that the majority experienced moderate stress, with 31 respondents (57.4%).

Table 4.
Frequency Distribution of Quality of Life in Pulmonary TB Respondents

Quality of Life	f	%
Good quality of life	12	22,2
Poor quality of life	42	77,8

The analysis of quality of life among respondents showed that the majority experienced poor quality of life, with 42 respondents (77.8%).

Table 5.
Relationship Between Stress Levels and Quality of Life in Pulmonary TB Patients

Stress Level	Quality of Life		Total	*P-Value*
	Good	Poor		
	f	f	f	
Normal	0	0	0	0,000
Light	11	5	16	
Moderate	1	30	31	
Savere	0	7	7	
Very Savere	0	0	0	

The Chi-Square test analysis yielded a P-Value of 0.000 <0.05. Statistically, this P-Value indicates a significant relationship between the tested variables. Based on these research findings, it can be concluded that there is a significant relationship between stress levels and the quality of life of pulmonary TB patients in the working area of Puskesmas II Negara.

DISCUSSION

The results of this study are consistent with the research conducted by Juliasih et al., (2020) titled "Factors Affecting Tuberculosis Patients' Quality of Life in Surabaya, Indonesia" which found that 70.0% of respondents were in the adult age category (<45 years). Pulmonary tuberculosis (TB) predominantly affects adults who had primary infections in childhood that were not properly managed. Both adults and the elderly are the most frequently affected groups (Juliasih et al., 2020). According to the researchers, adults are particularly vulnerable to pulmonary TB due to outdoor activities and a weakened immune system with age, as well as unresolved infections from early life.This study's findings are also in line with the research by Amalia & Arini (2022) titled "Analysis of the Relationship Between Adherence to Anti-Tuberculosis Medication and Quality of Life of Pulmonary Tuberculosis Patients." Their study revealed that the majority of respondents were male, totaling 31 individuals (59.6%). Men are more frequently affected by pulmonary TB due to lifestyle factors, such as higher smoking rates (Amalia & Arini, 2022). Women, often responsible for household duties, tend to be more aware of health changes and seek treatment, playing a leading role in family health (Purwaningsih, 2022). Men's higher TB incidence is linked to their more frequent outdoor activities, increasing their risk of TB infection (Papaeo et al., 2021). The researchers assume that men are more vulnerable to pulmonary TB due to lifestyle factors, including smoking, and spending more time outdoors, which increases exposure to TB.

The findings are also consistent with the study by Diamanta et al. (2020) titled "The Relationship Between Stress Levels and Income with the Quality of Life of Pulmonary Tuberculosis Patients in Kupang City," which showed that 57.5% of respondents had a high school education (SMA/SMK). Low educational levels result in a lack of awareness and information about TB transmission and treatment (Diamanta et al., 2020). Education influences an individual's ability to receive and process information; higher education levels typically correlate with better information absorption. Those with only basic education often lack knowledge about the causes, prevention, care, and long-term impacts of untreated diseases (Papaeo et al., 2021). The researchers assume that education is a significant factor influencing an individual's ability to receive information and manage their condition effectively.

The results also align with the study by Noviana et al. (2021) titled "Correlation Between Duration of Tuberculosis Treatment and Depression Scores in Pulmonary Tuberculosis Patients Receiving Treatment at Dr. Pirngadi Medan Hospital's Pulmonary Clinic," which

found that 44.2% of respondents were unemployed. Employment status affects healthcare utilization, and a person's job level can influence their access to health information (Noviana et al., 2021). Those with better employment status are likely to seek better healthcare services, whereas individuals with lower job levels may focus more on daily survival needs (Papaeo et al., 2021). The researchers assume that employment status impacts healthcare utilization; better employment can enhance access to healthcare services, whereas unemployment may limit it.

Additionally, the findings correspond with Amalia & Arini's (2022) research, which indicated that most respondents had TB for more than 6 months, totaling 37 individuals (71%) (Amalia &Arini's, 2022). Deterioration in quality of life is linked to both the disease and medication side effects (Ita & Sety, 2020). TB symptoms such as cough, sputum production, fever, and weight loss generally improve in the initial months of treatment; however, longer treatment duration affects quality of life (Pariyana et al., 2018a). Shorter treatment durations are associated with better quality of life and more effective healthcare (Diamanta et al., 2020). Stress that experienced by respondents is 56.4% moderate stress. Prolonged TB treatment exacerbates stress levels in patients (Diamanta et al., 2020). Patients may experience fatigue from taking numerous medications daily for extended periods, as well as side effects that disrupt daily activities, leading to increased stress (Athiutama et al., 2022). Stress can result in feelings of worthlessness, loss of motivation, and decreased life purpose (Marselia et al., 2017). Physically, stress can affect the healing process, as stressed individuals experience changes in their immune system to cope with stress (Bioladwiko et al., 2022).

Field data suggest that psychological issues in TB patients are partly due to the lengthy duration of the illness. Stress can result from medication side effects and insufficient social support, which makes patients feel isolated and unsupported. Stress worsens with significant lifestyle changes among TB patients. The study is also consistent with Diamanta et al. (2020), which found that 60.9% of respondents had poor quality of life. The duration of TB treatment, which typically lasts 6 months, affects patients' quality of life (Diamanta et al., 2020). Irregular medication intake can lead to drug-resistant TB, prolonging treatment and impacting quality of life. Prolonged treatment affects self-esteem, body function, activity tolerance, and the ability to manage chronic disease, further impacting self-esteem (Jasmiati et al., 2017). The researchers assume that prolonged TB medication leads to physical and psychological effects, decreasing quality of life. An increase in symptoms corresponds with higher stress levels. Prolonged treatment, lasting at least 6 months, can cause frustration, which over time can become stress and lower quality of life. Psychologically, stress can make patients feel worthless and lose motivation and life goals. Physically, stress can disrupt the healing process by altering the immune system's response to stress.

CONCLUSION

Based on the research results and discussion regarding the relationship between stress levels and quality of life among pulmonary tuberculosis (TB) patients in the working area of Puskesmas II Negara, it can be concluded that there is a relationship between stress levels and the quality of life of pulmonary TB patients in this area. This study is expected to serve as a reference for healthcare services, especially nurses, in providing nursing care to pulmonary TB patients. It highlights the importance of addressing the psychological state of patients and offering education on coping mechanisms to reduce their stress levels.

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