Description Of Stress Levels In Pulmonary Tuberculosis Patients Undergoing The Intensive Phase Of Treatment In Hospital And Puskesmas

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Abstract.

The purpose of this study is to characterize the amount of stress experienced by tuberculosis patients receiving intensive phase therapy in hospitals and healthcare facilities. This study has a cross sectional design and is a descriptive observational study. 100 samples of tuberculosis patients who were receiving intense phase treatment were used in this investigation. With the consecutive sampling technique, how to choose the sample. Direct interviews with the research sample were used to gather data. Utilizing univariate analysis, research data were examined. According to the study's findings, 75% of the research sample's participants were men and 25% were women. The majority 26% are between the ages of 56 and 65. Up to 42% of people are receiving treatment for 6 to 8 weeks. The majority of pulmonary tuberculosis patients (33%) were found to have moderate levels of stress. Patients with pulmonary tuberculosis who were male, aged 36 to 45, and receiving treatment for the disease for six to eight weeks were found to have the most mild levels of stress. The study's findings indicate that the most mild levels of stress are felt by tuberculosis patients who are undergoing the intensive phase of therapy.

Keywords: *Stress level, and tuberculosis.*

I. INTRODUCTION

Mycobacterium tuberculosis, an acid-resistant bacteria, is the cause of the infectious disease pulmonary tuberculosis, which can affect any organ of the body but most frequently affects the lungs [1]. The World Health Organization reports that one of the top 10 global causes of death in 2019 is tuberculosis (TB) [2]. Global estimates indicate that TB caused an estimated 1.3 million deaths in 2017. About 10 million people contracted TB in 2017. According to data from throughout the world, 41% of all TB incidence occurs in Southeast Asia. Indonesia is ranked third behind China and India among the top 8 nations that contribute to the incidence of TB, according to World Health Organization data from 2018. [2] According to the National Guidelines for Medical Management of Tuberculosis Services Decree of the Minister of Health of the Republic of Indonesia number HK.01.07/MENKES/755/2019, tuberculosis is a public health issue in Indonesia and the third leading cause of death, behind ischemic heart disease and cerebrovascular disease [3]. Health Studies According to the 2017 Basic Research (Riskesdas), 0.42% of Indonesians had been diagnosed with TB by medical professionals. 69.2% of all TB patients who received a diagnosis from medical personnel underwent regular therapy [4].According to the 2018 Global TB Report, there were 842,000 new cases of TB, or 319 per 100,000 people, and 116,400 people died from TB-related causes, or 44 per 100,000 people. Despite the fact that Indonesia has made strides in combating TB, the disease is still one of the country's largest health challenges, one that requires the attention of all parties because it places a heavy weight on mortality and morbidity [3].The prevalence of pulmonary TB in the province of North Sumatra was 0.2% in 2013, according to data from Basic Health Research (Riskesdas) [5].

Meanwhile, according to Riskesdas data for 2018, the prevalence of pulmonary TB increased to 0.30 % in North Sumatra Province [4]. This indicates a rise in the number of pulmonary TB cases in North Sumatra. Pulmonary TB cases in North Sumatra Province have significantly increased from 26,418 cases in 2018 to 33,779 cases in 2019 [6, health profile data]. Additionally,the success rate of treating pulmonary tuberculosis has fallen as well, from 92.19% in 2016 to 84.46% in 2019 [6].The goal of treating pulmonary tuberculosis is to stop the spread of the bacteria that causes the disease. The premise guiding pulmonary TB treatment is that it must be administered correctly, including with regard to the dosage of anti-tuberculosis medications (OAT) given, the makeup of the OAT delivered, supervision of drug administration, and the length of treatment [7]. The duration of the treatment for pulmonary tuberculosis is sufficient, and it is

separated into two stages: the early stage and the advanced stage [3].From the beginning of the infection, the primary goal of treatment is to lessen the quantity of bacteria and their effects. OAT must be taken every day over the course of the 2-month treatment at this point. The goal of the advanced stage of treatment is to eliminate any persistent bacteria that is still present while also addressing recurrence. The duration of TB treatment should be carried out for 6 months, which is a combination of the two phases of treatment, since the advanced stage of treatment lasts for 4 months [7].An individual's general reaction to demands is stress. Stress is something that everyone encounters on a daily basis and can be brought on by a variety of internal and external factors [8]. Different bodily and mental states are negatively impacted by stressful situations. High stress levels will have an impact on the immune system and increase infection susceptibility.

Stressful situations can be brought on by a variety of ordinary events, including mental or physical exhaustion, pain, and drug overdose [9].Any incident or event that can cause a shift in a person's life and need them to adapt to it is referred to as a stressor. But not everyone is capable of adjusting to and overcoming challenges. There are many stressors in daily life, and physical disease and injury are one of them. Pulmonary TB is one of many health conditions, particularly chronic ones, that can make a person stressed out [10].It takes a long period for treatment, a lot of medications, and constancy in taking OAT to treat pulmonary tuberculosis [3]. According to Diamanta et al.'s study, which included 87 tuberculosis patients as participants, results showed that patient fear and humiliation over their condition may be a component in producing stress. A patient's stress reaction can also be influenced by the length of the treatment and the quantity of medications they take [11]. Stress might also be brought on by the pain brought on by pulmonary TB disease symptoms. Fever, nocturnal sweats, chest pain, and persistent coughing are among the clinical signs of pulmonary TB [3]. The study by Nurul Eka Putri et al., which included 59 tuberculosis patients as research participants, indicated that the number of symptoms experienced by patients had an impact on their degree of stress [12]. Selestina Mikan, et al.'s study, which included 45 teenage tuberculosis patients as a sample, found that 71.1% of the participants had moderate stress and 2.2% suffered severe stress [13].The researcher is interested in studying stress levels in tuberculosis patients who are receiving intense phase treatment based on the background information provided above.

II. METHODS

With a cross-sectional study design, participants were only measured once at the same time, the descriptive observational research method was used to describe the degree of stress in pulmonary TB patients undergoing intensive phase treatment. The RSUD Dr. Pirngadi Medan and the Glugur Darat Health Center in East Medan were the sites of this study. This study was carried out in September and October of 2022.Patients in the city of Medan who had pulmonary tuberculosis were the study's target population. Patients with pulmonary tuberculosis at the RSUD Dr. Pirngadi Medan and Glugur Darat Health Center in Medan Timur in 2022 were the study's target group. Members of the research population who complied with the inclusion and exclusion requirements made up the samples for this investigation. According to the sequential sampling technique, subjects who fit the study's eligibility requirements were added to the sample pool until the needed number of samples was reached. The following formula will be used to determine the sample size for this study:

$$n = \frac{(Z\alpha)^2 P.Q}{d^2}$$

n = sample size

$Z\alpha$ = Alpha standard deviation

P = The proportion of a particular case to the population, if the proportion is not known, is set at 50% (0.50)

Q = 1 – p = 0,5

d = 10% precision (0.1)

The sample size for this investigation was determined using the formula above as follows:

$$n = \frac{(1,96)^2.0,5 \times (1-0,5)}{0,1^2}$$

$$n = \frac{3,8416 \times 0,25}{0,01}$$

n = 96,04 = 97 subject

Then 97 participants made up the sample used in this study.The stress experienced by pulmonary tuberculosis patients during intensive phase treatment was the study's variable, and it was classified into four categories: mild, moderate, severe, and extremely severe. The measuring scale for this variable is ordinal.

Tabel 1. Operational definition

No	Variable	Operational definition	Measuring instrument	Measuring scale	Scores and categories
1.	Pulmonary TB patient stress level	The body's reaction that is not specific to a demand brought on by a stressor may be due to the need to take medication for a specified amount of time or from the emergence of pulmonary TB disease symptoms.	Questionnaire (Depression, Anxiety, and stress scale) DASS 42 consisting of 14 questions for measuring stress	Ordinal	Score : 0 = never 1 = Rarely 2 = Sometimes, often 3 = often Category : Normal (value 0-14) Mild (score 15-18) Moderate (score 19-25) Weight (score 26-33) Very severe (score ≥ 34)
2.	Age	Respondent's age in years when the research took place	Questionnaire	Intervals	18 – 25 years 26-35 years 36-45 years 46-55 years 56-65 years > 65 years
3.	Gender	Differences in form, nature and biological function between men and women in the respondents	Questionnaire	Nominal	Man Woman
4.	Treatment duration	When the patient was taking antituberculosis drugs in the intensive phase	Questionnaire	Interval	2-4 weeks 4-6 weeks 6-8 weeks

Utilizing univariate analysis, computer software was used to examine the data that was gathered. Pie charts and bar graphs are used to represent frequency distributions of data on a categorical scale.

III. RESULT AND DISCUSSION

This study was conducted at the Glugur Darat Health Center in East Medan and the Dr. Pirngadi City of Medan. The address of RSUD Dr. Pirngadi is Jalan Prof. H. M. Yamin, SH Number 47, Perintis Village, East Medan District. At the RSUD Dr. Pirngadi, Medan City, pulmonary poly, outpatient installation, and inpatient installation, data was collected. The second place is the Glugur Darat Health Center, Medan Timur, which is situated in the East Medan neighborhood of Pendidikan Street No. 8. The Glugur Darat Health Center's operational area in Medan Timur is 776 hectares and is made up of 128 communities and 11 sub-districts. With a total of 100 respondents, the study was conducted from September to October 2022. Direct data collection and survey administration were done.

Research Results

Description of Research Location and Time

The conclusion from the results of research and discussion that has been carried out on the percentage comparison between 70:30%;60:40%;50:50%;40:60% and, 30:70% using the oven method which has good analytical results on the ash content at 30:70% treatment is 6.73%, the analysis of the best protein content in 50:50% treatment is 12, 43% and the value of salt content is the same in each treatment. The Glugur Darat Health Center's operational area in Medan Timur is 776 hectares and is made up of 128 communities and 11 sub-districts. With a total of 100 respondents, the study was conducted from September to October 2022. Direct data collection and survey administration were done.

Univariate analysis

Description of the Characteristics of Research Subjects

RSUD Dr. Pirngadi Medan City and Glugur Darat Medan Health Center treated tuberculosis patients who met the inclusion and exclusion criteria established by the researchers. The graphic shows the characteristics of research participants based on their gender, age, and length of therapy.

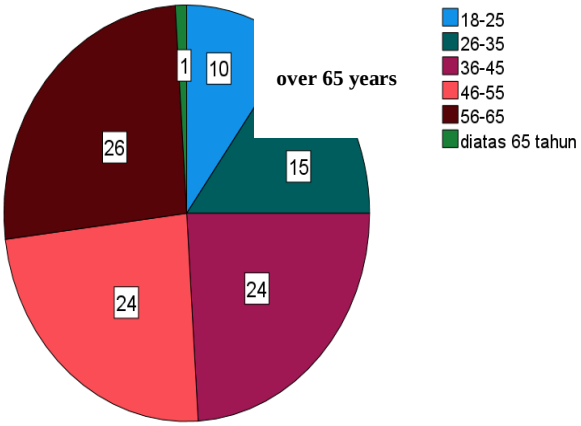


Fig 1.Characteristics of the age of the respondents

According to the image above, 26 responders (26%), or the majority, are between the ages of 56 and 65.

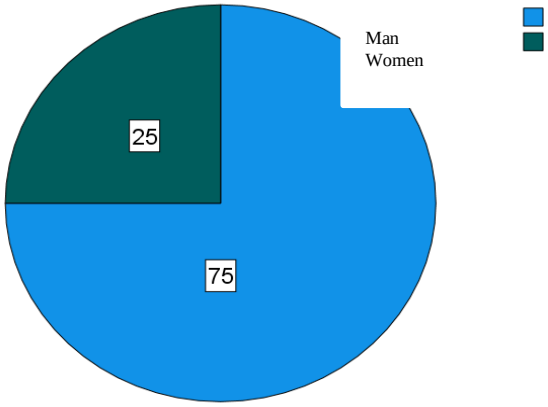


Fig 2. Characteristics of the sex of the respondents

The majority of the patients, or 75 individuals, or 75% of the study subjects, were men, as can be seen in the image above.

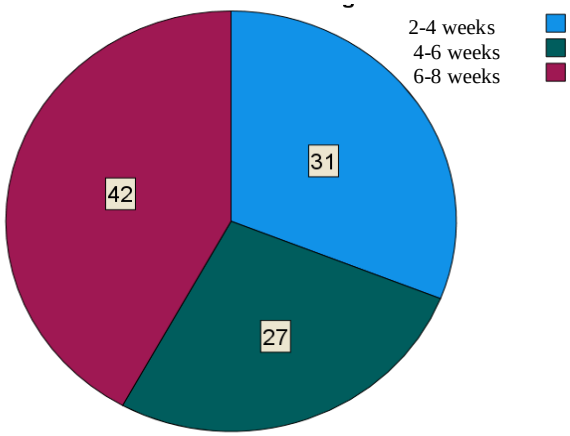


Fig 3.Characteristics of the length of treatment of patients

As can be seen from the image, 42 participants (or 42% of all respondents) were among the patients who were receiving treatment for 6–8 weeks.

Description of the Stress Level of Pulmonary Tuberculosis Patients Undergoing Intensive Phase Treatment

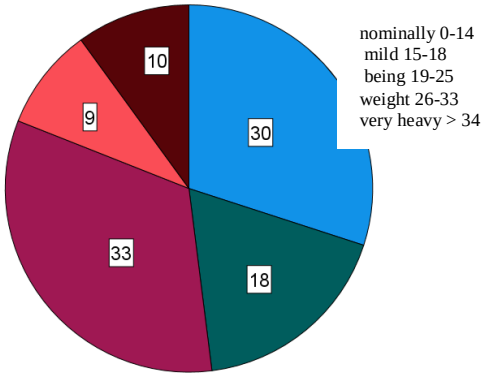


Fig 4. Stress level of pulmonary tuberculosis patients

According to the image above, patients with pulmonary tuberculosis who were undergoing intensive phase treatment made up as many as 70 respondents (70%) who reported experiencing mild to very severe stress, and 33 respondents (33%) who reported experiencing moderate stress levels the most.

Description of the Stress Level of Pulmonary Tuberculosis Patients Based on the Patient's Age

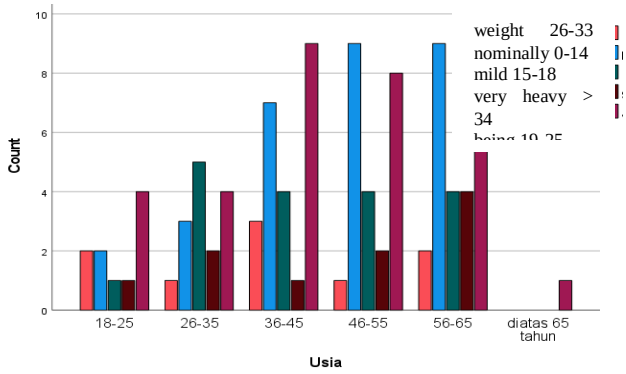
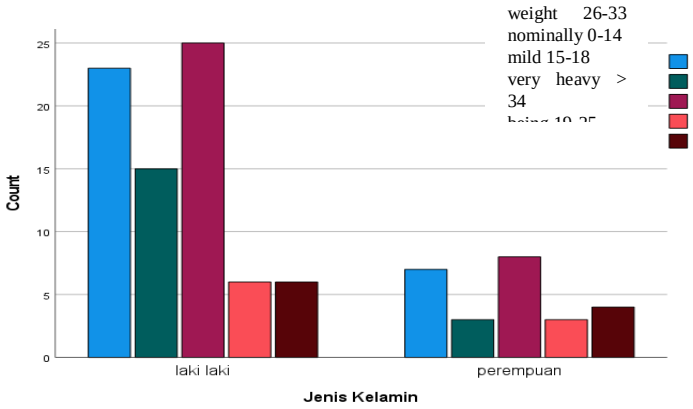


Fig 5. Stress level of pulmonary tuberculosis patients by age

According to the image above, 9 individuals who have tuberculosis reported experiencing moderate levels of stress as their most prevalent level of stress. Additionally, it is clear that patients between the ages of 36 and 45 are most likely to experience moderate stress levels.

Description of the Stress Level of Pulmonary Tuberculosis Patients Based on the Patient's Gender



a)

Fig 6. Stress level of tuberculosis patients by sex

The majority of tuberculosis patients are men, as can be seen in the image above, and research has shown that men tend to endure moderate levels of stress the most.

Description of the Stress Level of Pulmonary Tuberculosis Patients Based on the Length of Patient Treatment

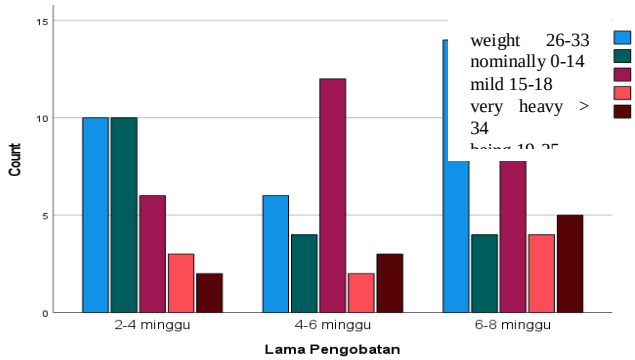


Fig 7. Stress level of tuberculosis patients based on length of treatment

Based on Figure 4.7 above, it can be seen that patients suffer moderate levels of stress during weeks 6 to 8 of their therapy, which is also the time when tuberculosis patients feel the highest stress.

Discussion

Stress Level of Pulmonary Tuberculosis Patients Undergoing Intensive Phase Treatment

Based on data from a univariate analysis of the stress levels of tuberculosis patients receiving intensive phase treatment, it was determined that 33 patients, or 33% of the total population, had moderate stress levels, compared to 30 patients (30%) who had normal stress levels, 18 patients (18%) who had mild stress levels, 9 patients who had severe stress levels, and 10 patients who had very high stress levels. According to research by Selestina Mikan et al. at the Sentani Health Center in Jayapura Regency, patients with moderate levels of stress made up 71.1% of the population, [13] A stressor is something that can make a person's body or mind less adaptable. Stress is a mental or physical phenomenon that results from a person's contact with the environment. 14 Everyone must be able to adjust to the challenges and events they meet in life. Stress problems will result from a person's inability or failure to cope with the stressor. Physical disease is one of many aspects of life that can cause stress. Numerous physical conditions, especially long-term ones, like pulmonary tuberculosis, can make a person stressed out, [14] The body will react by generating stress hormones and engaging the generalized sympathetic nervous system when it encounters a scenario that has the potential to produce stress [14].The body will undergo a number of circumstances as a result of the body's reaction to a stressor, including hyperglycemia due to enhanced storage metabolism of carbs and fat and vasoconstriction of blood vessels due to activation of the renin-angiotensin-aldosterone hormone system, [25].

This response is a natural bodily reaction, but if it goes unchecked, it will disrupt the neuro-chemical cells of the body's organs, which will lead to disruption and abnormalities in the tissues of these organs, or, to put it another way, these organs will become unwell [14]. Moderate stress is one of the several levels of stress. Stress at a moderate level can endure for a few hours to many days. Muscle stiffness, tension sensations, and sleep problems are signs of moderate stress [26].The initial or intensive phase of the treatment for pulmonary tuberculosis lasts for two months, and the advanced or advanced phase lasts for four months. Patients with pulmonary tuberculosis are required to take quite a bit of OAT during their therapy, which must be taken every day during the intensive phase [3]. A person with tuberculosis must be able to handle requests to take anti-tuberculosis medications according to the prescribed schedule in order to recover from their condition, and this can be stressful. The length of the treatment and the quantity of medications required make the patient frustrated, which progressively triggers a stress response in the patient. The symptoms brought on by pulmonary tuberculosis can be stressful for those who experience them, in addition to being brought on by the therapy that tuberculosis patients must through [27]. Some of the symptoms include phlegm-producing coughing that lasts longer than two weeks, chest pain, shortness of breath, fever, weight loss, night sweats, and malaise, all of which can make it difficult for people with TB to carry out their daily activities and add stress to their lives, [3].

Lung Tuberculosis Patients' Stress Level Based on Patient's Age

According to research findings, patients between the ages of 36 and 45 have the highest levels of stress. This is consistent with research done at Ibnu Sina Makassar Hospital by Fajriah Saraswati et al., which revealed that the majority of pulmonary tuberculosis patients were between the ages of 26 and 59. This is because adults tend to be more active and mobile, which increases their risk of contracting tuberculosis, [28]. Stress can be brought on by persistent pressure to complete a task by a given date. as those who have tuberculosis and must receive treatment within a set amount of time. Patients with tuberculosis may experience stress as a result. Age-related declines in physical capability and function can stress a person out, [29].Every stage of life, including infancy, childhood, adolescence, and old age, is characterized by stress. Lifetime stress can start at any point. Pain is a common cause of stress in daily living. A person's bodily and psychological systems must work harder to cope with pain. Age has an impact on stress because as we get older, our bodies become less capable of defending itself. This is not the same as a child or a young person's age. The body still has a strong capacity to resist disease when one is young or in childhood, [29]. The age phase is of course variable for variations in stress levels in a person, including in each phase. This is so because each person's level of stress is unique and depends on their own stressors and sources, [30].

Lung Tuberculosis Patients' Stress Level Based on Patient's Gender

Based on research findings, it was shown that patients with male sex had the highest degrees of stress, specifically moderate levels. This contradicts Desri Fonita Ukat's research, which indicated that patients of any gender can suffer stress to the same degree. Despite the fact that men and women react to stress in different ways, women are more likely than men to become stressed out as a result of hormonal differences. But prior research has demonstrated that stress is equally likely to affect both men and women, [31].

Lung Tuberculosis Patients' Stress Levels Based on Patient's Length of Treatment

According to research data, the majority of respondents were receiving therapy between weeks six and eight of the intense phase, and most had up to 15 people experience moderate stress. This is consistent with Chilyatiz Zahroh's Sampang District research, which demonstrates that patients with tuberculosis are receiving category 1 treatment, which requires constant medication intake due to the disease's significant impact on recovery. Most patients receiving treatment in category 1 experienced mild stress. In line 1 of treatment, it was discovered that patients might still effectively manage their stress since those who are afflicted still have hope of making a full recovery provided they take their medications as prescribed.

IV. CONCLUSION

According to research findings and discussions regarding research on the description of the stress level of pulmonary tuberculosis patients undergoing intensive phase treatment, it can be said that:

1. The majority of pulmonary tuberculosis patients experience moderate stress, which can affect up to 33 people (33%).
2. Male patients made up 75 (75%) of the patients with pulmonary tuberculosis.
3. There are 26 individuals (26%) who have pulmonary tuberculosis, with the majority of them being between the ages of 56 and 65.
4. Currently, 42 persons (42%), or the majority of patients with pulmonary tuberculosis, are receiving treatment for 6 to 8 weeks.
5. Patients with the highest levels of stress, defined as moderate stress, were those who were between the ages of 36 and 45. Patients with the lowest levels of stress, defined as low stress, were those under the age of 36.

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