



Quality of Life in Tuberculosis Patients in Yogyakarta

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Abstract

Background: Tuberculosis is still a health problem globally and in Indonesia. Case findings that are still low have an impact on the control and achievement of tuberculosis treatment. Patients diagnosed with tuberculosis will experience several clinical symptoms that can affect their comfort in life, reducing their quality of life. The findings of many cases of tuberculosis have a low quality of life. Whether or not the quality of life can affect the success of treatment. This study aimed to determine the factors associated with the quality of life of tuberculosis patients.

Methods: This research is a descriptive study with a cross-sectional design. The population is all tuberculosis patients, and a sample of 75 people is obtained, which is calculated based on the sample size formula. The sampling technique used was purposive sampling. The data obtained were then analyzed using Spearman's rank test.

Results: The results of factors that related are stigma ($\text{sig}=0.049$) and self-efficacy ($\text{sig}=0.035$), while the elements that are not related are knowledge, attitudes, motivation, family support, support from health workers, and medication adherence.

Conclusions: Stigma is a factor that affect the low quality of life of tuberculosis patients.

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INTRODUCTION

Tuberculosis is still a problem worldwide to the point of causing death. The disease ranks second among infectious diseases that cause death, which affects millions of people every year and poses a health risk to them (Abioye et al., 2011). The speed of spread and infection of tuberculosis is very high, so this disease can spread to various countries worldwide. However, since 2019 the discovery of tuberculosis cases has decreased globally due to the COVID-19 pandemic harming access to diagnosis and treatment. In 2020, there were 5.8 million cases, an 18% decrease from 7.1 million in 2019. The three countries that contributed the most to the decline were India, Indonesia, and the Philippines. They are recovering so that in 2021 there will be another increase of 6.4 million cases (World Health Organization, 2022). The number of tuberculosis cases in Indonesia in 2020 was found to be 351,936 cases. This data tends to decrease compared to data on tuberculosis cases in 2019, of 568,987 cases. The findings of tuberculosis cases increased again in 2021, with as many as 397,377 cases. The highest proportion of tuberculosis cases by age group in 2021 occurs in males at 57.5% and ages 45-54 years with a total percentage of 17.5% (Kementerian Kesehatan Republik Indonesia, 2022).

Daerah Istimewa Yogyakarta (DIY) is one of the provinces with a relatively high incidence of tuberculosis in Indonesia; an increase in cases occurred in 2021, as many as 3,038 cases with a Case Notification Rate (CNR) of 82 per 100,000 population with Yogyakarta City as the second highest district/city in case findings in DIY (Dinas Kesehatan D.I Yogyakarta, 2022). The number of cases in Yogyakarta City was 1,178 cases, Bantul Regency had 1,075 cases, Kulon Progo Regency had 1,048 cases, Sleman Regency had 481 cases, and Gunung Kidul Regency had 319 cases (DIY Health Office, 2020). Compared to 2019, the CNR for tuberculosis in the City of Yogyakarta decreased from 145.18 per 100,000 residents in 2019 to 103.45 per 100,000 in 2020 and 115.73 per 100,000 in 2021. This decrease was related to the COVID-19 pandemic, which made it challenging to contact investigation activities in the region and led to a decrease

in visits to health facilities. There is a slight increase in tuberculosis cases found in the City of Yogyakarta in 2021 compared to 2020 due to active case-finding efforts. In the City of Yogyakarta, the success rate for tuberculosis treatment in 2021 is 86.4%, still below the national target due to patient deaths, dropout of treatment, and treatment failure (Dinas Kesehatan Kota Yogyakarta, 2022).

Tuberculosis is caused by the *Mycobacterium tuberculosis* by attacking the lungs. The lungs are organs that continuously interact with the environment outside the human body and cause infection (Tangkilisan et al., 2020). The main symptoms of tuberculosis patients are coughing for two weeks or more, accompanied by additional symptoms such as phlegm mixed with blood, shortness of breath, weakness, decreased appetite, night sweats without physical activity, and fever lasting more than one month (Suryalaga, 2020). These various clinical symptoms will disturb the patient and decrease the quality of life of tuberculosis patients. The quality of life of tuberculosis patients decreases when they are on treatment. Patients who show positive symptoms will indirectly affect their daily physical activity. The physical decline in tuberculosis patients can trigger stress levels in patients (Hendrik et al., 2015). Low quality of life in tuberculosis patients can cause delays in treatment and hurt the continuity of treatment to be interrupted or incomplete (Pariyana et al., 2018). Patient's quality of life is an essential issue as a treatment and is the key to healing tuberculosis patients. People with chronic diseases can survive for a long time even if they carry a burden of chronic illness or disability, so their quality of life must receive attention from health services (Muflihatin et al., 2018). Measuring the quality of life in tuberculosis patients helps assess the impact or consequences of health problems when the disease comes (Pariyana et al., 2018).

The extent to which a person can carry out everyday activities is a measure of their quality of life, which may be evaluated from various angles, including physical, psychological, social, and environmental (Wulfovich et al., 2022). Several studies have been conducted to look for factors related to the quality of life of tuberculosis patients. Based on the results of

the study, many who have low quality occur in male TB patients living in rural areas (Salehitali et al., 2019), and financial difficulties (Pokam et al., 2020). The quality of life of tuberculosis patients can be improved by adhering to taking anti-tuberculosis drugs, increasing self-efficacy, and having good knowledge about their disease (Ardiansyah, 2012, Tambunan, 2014, Andriana, 2016). Compliance with taking medication also affects the quality of life; the higher the adherence to taking medication in TB patients, the greater the likelihood of successful treatment (D. P. Sari et al., 2016). Compliance directly correlates with the quality of life (Marchiella, 2018). Quality of life in all domains is also influenced by social support (Anisah et al., 2020), one of which is family social support, family affection, support, and a sense of security, which influence the quality of life (Rachmawati et al., 2020). Based on the incidence of tuberculosis above, only the physical aspects of development regarding tuberculosis are often evaluated, but other aspects are often ignored. Based on these problems, research is still needed on the factors influencing the quality of life covering four domains. This study aims to determine the factors associated with the quality of life of tuberculosis patients.

METHODS

This type of research is analytical observational research with a cross-sectional design. The population in this study were tuberculosis sufferers in Yogyakarta, based on patient data recorded in medical records. Calculating the sample size using the sample size formula for cross-sectional research obtained 75 people using purposive sampling with the following criteria: patients aged ≥ 15 years, domiciled in Yogyakarta, tuberculosis patients still undergoing treatment, and not having comorbidities such as HIV and diabetes mellitus. The criteria for comorbid diseases were excluded from the sample to get results on the impact on quality of life caused by tuberculosis and how to identify respondents who have comorbid diseases or not through medical records. The variables collected included knowledge, attitudes, self-efficacy, motivation, medication adherence, family support, support from health workers, stigma, and quality of life.

The instruments used in data collection were questionnaires, and the WHOQOL-BREF was used to measure the quality of life (World Health Organization, 1996). The instrument used uses a Guttman scale coded 1 ("yes") and 0 ("no") and a Likert scale with a rating scale having five ordinal repetitions coded 1 ("very dissatisfied") to 5 ("very satisfied"). Using a Likert scale causes the assessment of instrument items depending on the orientation of the questions (Nielsen et al., 2017). Using the Rasch model, data obtained from the instrument in the form of ordinal data so that it meets the measurement requirements can be processed into interval (logit) data (Irma Sukarelawan et al., 2021). Data analysis used the Spearman correlation test because the data were not normally distributed; this test was to determine the relationship between variables. This research received ethical approval from the ethics committee of Ahmad Dahlan University with registration number 012203022, which was issued on April 18, 2022.

RESULTS AND DISCUSSIONS

Characteristics of respondents

Respondent characteristics describe the respondent's identity, including sex, age, education level, marital status and quality of life (table 1).

Table 1. Frequency distribution of respondent characteristics based on sex, age, education, employment status and quality of life

Variable	Frequency	Percentage (%)
Sex		
a. Male	51	68.0
b. Female	24	32.0
Age		
a. Non-productive	11	14.7
b. Productive	64	85.3
Education level		
a. Not school	1	1.3
b. Primary school	10	13.3
c. Junior high school	15	20.0
d. Senior high school	37	49.3
e. Bachelor degree	12	16.0
Marital status		
Not married yet	23	30.7
Married	52	69.3
Quality of life		
a. Good	40	53.3
b. Less	35	46.7

Table 1 shows the distribution of tuberculosis cases by sex; out of 75 respondents, 51 people (68%) were male, and 24 (32%) were female. Tuberculosis can attack all sex, but in this study, the frequency of cases was found in men. The prevalence of tuberculosis is higher in men associated with the habit of men who are often staying up late and smoking habits (Umam & Irnawati, 2021, Muchtar et al., 2018, Sofiana et al., 2022). Smoking triggers the spread of tuberculosis infection rapidly compared to non-smokers (Namuwali, 2019), which can also reduce the body's immunity (Pranda & Andatani, 2018). Likewise, based on age, tuberculosis cases can also attack all ages. The age most affected by tuberculosis was the productive age of 85.3% (table 1); someone of productive age is a condition with a lot of activity and mobility, so environmental exposure obtained during activities can increase the possibility of contracting pulmonary tuberculosis through close contact (Pranda & Andatani, 2018).

The distribution of tuberculosis cases is based on the prior educational status of the respondents; some of them had a high school education, as much as 49%, and those with low educational status (junior high school, elementary school, and did not school), as much as 34.7% (Tabel 1). Previous research stated that the lower a person's education, the less health-related information a person has (Christine, 2021). The level of education influences a person's lifestyle and knowledge about tuberculosis (Arif et al., 2022). Meanwhile, based on marital status, as many as 52 patients (69.3%) of tuberculosis patients were married (Tabel 1). Married people have more obligations in the household, so the possibility of health problems is also reduced (Bakhtiar et al., 2021). Married patients will have stronger self-esteem and sufficient cognitive change from their partners, making coping mechanisms more adaptable to stress. Someone bound by their marital status will enjoy a higher quality of life than someone who is not married (Jasmianti et al., 2017).

Table 2. Average Quality of Life Score per Dimension

Dimensions of quality of life	Mean per dimensions	Cut off Point quality of life
Physical	51.81	
Psychological	57.03	57.42
Social	60.56	
Environment	60.28	

The number of patients with a good quality of life was 40 patients (53.3%), more than those with a poor quality of life. Quality of life consists of 4 dimensions: physical health, psychological dimensions, social relationships, and the environment. Comparison of the average quality of life score per dimension with the average overall quality of life score in 75 patients (table 2). The disorders most often experienced by sufferers due to the treatment process are physical and psychological. Thus, most sufferers have a poor quality of life in the physical and psychological domains. TB has a dominant influence on the quality of life, including in the physical and psychological domains, so routine examinations are very important to monitor the patient's depression and anxiety conditions so that they can improve the quality of life (Febi et al., 2021).

Factors related to the quality of life of tuberculosis patients

The relationship between the independent and dependent variables can be seen from the results of bivariate analysis using the Spearman test to determine the factors associated with the quality of life of tuberculosis patients in Yogyakarta (table 3).

Table 3. Factors related to the quality of life of tuberculosis patients in Yogyakarta

Variable	Sig	r
Knowledge	0.343	-0.111
Attitude	0.219	0.144
Self-efficacy	0.035	0.244
Motivation	0.087	0.199
Medication adherence	0.712	0.043
Family support	0.183	0.155
Health worker support	0.512	0.077
Stigma	0.049	-0.229

Table 4. Linear regression analysis of factors associated with the quality of life of tuberculosis patients

Model	Sig	Correlation coefficient (r)	Adjusted R Square
(Constant)	0.007		
Stigma	0.009	-0.300	0.078

Based on table 3, the factors related to the quality of life in tuberculosis patients are self-efficacy (sig=0.035) and stigma (sig=0.049); these two factors have a weak relationship. While factors that are not related to the quality of life are knowledge (sig=0.343), attitude (sig=0.219), motivation (sig=0.087), medication adherence (sig=0.712), family support (0.183), health workers support (sig=0.512), among other factors that are not related. The medication adherence factor has a high strength relationship with the quality of life of tuberculosis patients but is not statistically related. Table 3 explains the results of the multivariate regression model; the factor associated with quality of life is the stigma (sig = 0.009) with a weak relationship strength and a negative direction (correlation coefficient = -0.300). The coefficient of determination is 0.078; this means that the ability of the stigma variable to explain the quality of life variable is 7.8%.

Knowledge is separate from the quality of life of tuberculosis patients in Yogyakarta City. The results of this study are the same as those conducted in Sleman in that knowledge is not related to the quality of life of tuberculosis patients (Sofiana et al., 2022). The absence of a relationship made it possible that the information received by the respondents was more about tuberculosis in general. At the same time, there needed to be more information regarding the quality of life that must be carried out every day. The level of knowledge influences the quality of life possessed because good knowledge makes patients understand health and take part in treatment programs so; that it is hoped that the patient's condition will be better so that the physical and psychological condition of the patient improves, the higher the level of knowledge of tuberculosis patients, the quality of life of patients is getting better (Dedi Pahrul et al., 2021). The level of education

influences a person's knowledge; in general, the higher a person's education, the easier it will be to understand the meaning and importance of health and the utilization of health services (Priambada et al., 2019). This is also supported by the theory that someone with a high educational background has better knowledge, especially health knowledge, obtained through an educational background (Himawan et al., 2015).

Based on the results, it was found that there was no relationship between attitude and quality of life in tuberculosis patients. Tuberculosis patients with a positive attitude towards tuberculosis can experience significant life changes. Based on the facts found, most tuberculosis patients can adjust their treatment and experience changes in their condition for the better; This affects the patient's quality of life. A response-oriented attitude is a feeling of support or not support and readiness to react to an object (Hendesa et al., 2018). Attitudes influence how a person behaves and makes decisions in the healing process. In addition, a positive attitude that a person has toward his illness will have an impact on a person's search behavior, so a positive attitude will encourage the completion of treatment so that the quality of life is good (Mientarini et al., 2018).

Based on the research that has been done, the correlation analysis results show a weak positive relationship between self-efficacy and the quality of life of tuberculosis patients. High self-efficacy in the quality of life of tuberculosis patients requires an action that comes from the patient's thoughts so that these thoughts provide direction for actions to be taken. Besides, that self-efficacy can motivate people to engage in behavior in paying attention to the personal quality of life about tuberculosis. Previous research stated that the better the self-efficacy, the higher the quality of life for tuberculosis patients, so the quality of life for pulmonary tuberculosis patients can be improved by increasing self-efficacy (Suardana et al., 2020). Tuberculosis patients who can control themselves to continue to monitor their poor mental state, and always think positively, accept all the disease processes that are experienced sincerely, then of course, their self-efficacy will also be good. The occurrence of

tuberculosis complications will also be minimal (Suryalaga, 2020). Self-efficacy in tuberculosis patients affects the belief that they can access medical services, have enough money for treatment, use vehicles, and have enough time to complete health checks (Ahmadi & Hakim, 2019). The absence of family support influences high self-efficacy with low quality of life, and there are still family members who are still hesitant to approach patients, alienate them, and raise a cautious attitude towards patients; of course, patients will experience pressure and feel isolated, which will harm the quality of life—psychological life of patients (Yunding et al., 2021).

The results of the research that has been done show that there is no relationship between motivation and quality of life in tuberculosis patients. Tuberculosis patients have not received a strong stimulus to improve their quality of life, so they do not have high motivation to act to improve their quality of life in order to achieve recovery. In addition, the boredom due to the length of treatment made many of them lazy to take medication, and their lack of motivation led to uncertainty about taking medication for six months. Lack of motivation can occur due to insufficient supervision or the patient's boredom, so it must be further improved (Fitriani et al., 2019). The existence of a strong motivation within oneself to recover also plays a role in improving one's quality of life (Diamanta et al., 2020). The quality of life of tuberculosis patients will be higher if the family provides support, enthusiasm, and motivation for their recovery so that they do not feel alone in facing their illness (Suriya, 2018). Decreasing quality of life is related to elderly tuberculosis patients who require decision assistance from the family; individuals who get motivation and family support can carry out daily activities and self-actualize (Abrori & Ahmad, 2018).

The results of the analysis show that there is no relationship between medication adherence and the quality of life of tuberculosis patients. Based on the results of this study, it is known that most of the respondents were tuberculosis patients in the intensive phase. Patients often show a high level of adherence during the intensive period by maintaining discipline in their medication adherence. This is

because the relapse factor concerns respondents who need to undergo treatment properly. After all, recurrence means that respondents need to repeat therapy from the beginning (D. P. Sari et al., 2018). Nonadherence to treatment for tuberculosis is the most common cause of the disease's initial treatment failure and relapse worldwide (Muflihatin et al., 2018). Non-compliance with treatment is caused by various things, including incomplete information regarding how to use drugs and the risk of resistance, lack of awareness of the dangers of antibiotic resistance, and lack of support from the surrounding environment, both family and relatives in increasing awareness of tuberculosis treatment compliance, given the length of treatment being undertaken by patients so that enthusiasm becomes ups and downs (Barza A. et al., 2021). Patients feel bored and busy, and drug side effects and lack of knowledge about the treatment being undertaken also affect non-compliance with treatment (Febrianti & Perwitasari, 2021). Based on the research that has been done, the correlation analysis results show no relationship between family support and the quality of life of tuberculosis patients. Undergo treatment and complete treatment until healed. The support provided by the family will increase a person's confidence in dealing with problem situations so that this support will improve the quality of life (Hariadi et al., 2019). Family support can also reduce anxiety and hopelessness when the environment isolates patients. Family support is essential for the recovery of tuberculosis patients, so with this support, the quality of life for tuberculosis patients will increase (Suriya, 2018). Family support makes the highest contribution compared to other social support in improving the quality of life of tuberculosis patients (Anisah et al., 2020). Patients with high family support will have a good quality of life compared to those with low family support (Jasmiati et al., 2017).

The results showed no relationship between the support of health workers and the quality of life in tuberculosis patients; some patients still lacked information support and motivational support, so their behavior and adherence during treatment resulted in a poor quality of life. One of the factors that influence

drug consumption for tuberculosis patients is the lack of attention given by health workers; giving this praise can be beneficial for patients in improving their quality of life so that they feel they are being cared for. Support in the form of motivation and interpersonal communication provided by health workers can increase medication adherence (Nadila et al., 2019). Depression in tuberculosis patients who are not treated promptly is associated with poor treatment outcomes, poor quality, and more significant disability, requiring the support of health workers to provide care for tuberculosis patients (Ambaw et al., 2018). The negative impact patients feel they can turn positive into high hopes for achieving recovery and quality of life is inseparable from the support of health workers and family members (Asuquo et al., 2014).

This study's results indicate a relationship between stigma and the quality of life of tuberculosis patients based on both bivariate and multivariate analysis. Aspects of individuals who get stigma due to incomplete treatment lead to a decrease in the quality of life domain, especially in the psychological domain, which will impact other domains and change the quality of life of tuberculosis patients. Based on the instrument items, some tuberculosis patients said they sometimes felt stigmatized by the surrounding community. However, this stigma was ignored, and it was better to keep their feelings of discomfort regarding their disease. Patients who experience mild and moderate self-stigma have a poor quality of life, especially self-stigma, which affects all domains of the quality of life (Y. Sari, 2019). Stigma occurs because the respondent has negative thoughts, has no confidence in his recovery, and stays quiet without activity even though he can do it (Endria & Yona, 2019). Reduced capacity to work, social stigmatization, and psychological problems worsen the quality of life of tuberculosis patients (Aggarwal, 2019). Based on previous research, patients who have received treatment for more than three months feel unpleasant emotions and try to develop the belief that, when they are sick, they try to contribute to their surroundings and feel comfortable with other people. Tuberculosis patients who have been treated for a long

time will experience a decrease in the negative impact of their disease, both physically, emotionally, and psychologically (Unalan et al., 2008). Tuberculosis patients with poor quality of life are likely to experience depression. In contrast, high-risk depression is found in tuberculosis patients with stigmatization and a more extended treatment length of more than six months (Jaber et al., 2016).

Based on the research results, several implications can be used as material for studying tuberculosis control by controlling the good stigma that arises from oneself and society and increasing self-efficacy for tuberculosis patients so that they have high motivation to behave healthily and recover. Limitations in this study may occur in the data collection process, where the information provided by the respondents through the questionnaire needs to show the actual opinions of the respondents, such as the factor of honesty in filling out the questionnaire. Researchers have made efforts to minimize bias by testing research instruments that will be used for data collection, determining samples using a minimum sample size according to the research design, and using criteria in sampling, namely respondents who are patients aged ≥ 15 years.

CONCLUSION

Based on the study results, factors that are related and become risk factors for the quality of life of tuberculosis patients are self-efficacy and stigma. In contrast, factors that are not related are knowledge, attitude, motivation, family support, health worker support, and medication adherence. For this reason, it is recommended that families, health workers, and the community increase support to increase efficacy and motivation and reduce the stigma that arises from the environment to improve quality of life and treatment success.

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