**Original Research**

# The Study of Relationship between the Knowledge and Attitude of Tuberculosis (TB) Patients about Drug Compliance at the Health Centre

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## Abstract

Tuberculosis (TB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis, which most often attacks various organs, especially the lungs. This study aimed to determine the relationship between knowledge and TB patients' attitudes toward compliance with tuberculosis drugs at the Helvetia Medan Health Center. This type of research used an analytical observational method with the cross-sectional approach. The sampling technique used was quota sampling, with 75 respondents. Data collection in this study used to form sheets in questionnaires given to respondents directly and data analysis using the chi-square test. The results showed that respondents with good knowledge were 29 respondents (38.7%), good enough 33 respondents (44%), not good enough 12 respondents (16%), and not good one respondent (1.3%). A good attitude was 23 respondents (30.7%), good enough 37 respondents (49.3%), not good enough 14 respondents (18.7%), and not good one respondent (1.3%). Obedient compliance to TB medication was 25 respondents (33.3%), quite obedient 33 respondents (44%), and less obedient 17 respondents (22.7%). This study concluded that knowledge and attitude had a significant relationship with adherence to tuberculosis medication, with a knowledge p-value of $0.003 < 0.05$ and an attitude p-value of $0.037 < 0.05$. Healthcare professionals must employ innovative strategies to enhance knowledge and attitudes, raise public awareness, and ensure full compliance with the TB treatment program. It is crucial to implement this measure to mitigate the future prevalence of antibiotic resistance in treating tuberculosis.

**Keywords**: Knowledge, Attitude, Compliance, Tuberculosis

## INTRODUCTION

Tuberculosis (TB) continues to be a substantial global health concern, impacting millions of individuals around the globe. This persistent illness, caused by Mycobacterium tuberculosis and transmitted through airborne means, predominantly affects the respiratory system. However, its influence can extend to other bodily regions, resulting in diverse symptoms(Zaman, 2010). The global significance of TB as a health concern underscores the urgent need for sustained efforts in prevention, diagnosis, and treatment to mitigate its substantial influence on public health effectively (Rajagopalan, 2001)(Chakaya et al., 2021).

Tuberculosis is an infectious disease and one of the ten leading causes of death. Geographically, TB in 2019 was mainly in the South-east Asian Region (44%), Africa (25%), and the Western Pacific (18%), with smaller percentages in the Eastern Mediterranean (8.2%),

the Americas (2.9%) and Europe (2.5%). The global total was contributed mainly by eight nations, namely India (26%), Indonesia (8.5%), China (8.4%), the Philippines (6.0%), Pakistan (5.7%), Nigeria (4.4%), Bangladesh (3.6%), and South Africa (3.6%). Together, these countries accounted for two-thirds of the total. Only 30% of the intended goal of treating 3.5 million children with tuberculosis within five years was achieved (Chakaya et al., 2021).

TB is a primary worldwide health concern, especially in the South Asia. TB continues to be the leading cause of mortality from infectious diseases globally. In 2015, the global number of TB cases was around 4,028,165. A significant proportion of these cases were found in South Asia. TB was responsible for 38% of the total worldwide burden, resulting in 681,975 fatalities in South Asia alone (Basnyat et al., 2018). The WHO South-East Asia Region, encompassing nations such as India, Bangladesh, and Indonesia, plays a pivotal role in the worldwide battle against tuberculosis. In 2021, this region was responsible for 45% of newly diagnosed tuberculosis cases and 50% of global tuberculosis-related deaths (Bhatia et al., 2023).

Indonesia ranks second in terms of the number of persons affected by tuberculosis (TB) globally. It is estimated that there are 969,000 individuals infected with TB and 545,000 individuals who have been exposed to TB before the COVID-19 pandemic. The remaining 400,000 individuals went undetected, underscoring the necessity for enhanced initiatives focused on detection and treatment (WHO, 2021)(Cabinet Secretary of The Indonesia Republic, 2023). Sumatra has a significant TB burden, with an estimated prevalence rate of 913 cases per 100,000 individuals. This figure is far higher than the worldwide average of 134 cases per 100,000 individuals and the average in Indonesia, which stands at 759 cases per 100,000 people (Noviyani et al., 2021). As reported by Riskesdas in 2018, tuberculosis from a history of doctor's diagnosis in Indonesia is 0.42%, while according to the province, the highest number of TB cases is in Papua Province (0.77%). The lowest is in Bali Province (0.31%), while North Sumatra Province has a prevalence of 0.30% (Kemenkes, 2019). In 2021, the Tuberculosis Case Notification Rate (CNR) ranged from 102 to 501 per 100,000 inhabitants across different provinces. The province with the highest CNR was DKI Jakarta, while the lowest CNR was observed in Bali. Furthermore, the rate in North Sumatra is 275 per 100,000 population (Ministry of Health, 2022).

The number of people affected by tuberculosis continues to increase. The government issued a policy to control tuberculosis by providing Anti-Tuberculosis Drugs (OAT) and Directly Observed Treatment Short-course (DOTS). The patient's compliance strongly influences the success of tuberculosis treatment using drugs, but there are still tuberculosis patients who have not received complete and regular treatment. Various factors cause this situation, but the most common is the non-compliance of TB patients in treatment. This non-compliance is caused by the increase in TB patients who are irregular and forget to take medicine regularly; considering that the treatment time is quite long, with a minimum period of 6 months, TB patients are at risk of becoming bored, which causes discontinuation of treatment while treatment will only be effective if patients comply with the rules in the use of drugs (Kemenkes, 2019).

Factors that can affect a person's level of adherence to taking medication are age, occupation, leisure time, supervision, type of drug, drug dose, knowledge, attitude, action, and counseling from health workers. A person with knowledge is likely to utilize all health facilities so that health information is easy to obtain. Someone with knowledge will be more aware of health and recovery (Saragih & Sirait, 2020).

According to research on the relationship between knowledge and attitudes towards adherence to anti-tuberculosis drugs in TB patients at Medan's exemplary health center, there

were 35 respondents who had compliance with taking anti-tuberculosis drugs; most of them were compliant, as many as 23 respondents (65.7%), 12 respondents (34.3%) who were not compliant, 51.4% of patients with good knowledge were compliant with taking anti-tuberculosis drugs, 14.3% were not compliant, 20% of patients with poor knowledge were not compliant with taking anti-tuberculosis drugs and 14, 3% complied with taking anti-tuberculosis drugs, the attitude value of 54.3% of patients was positive and 17.1% were not compliant with taking anti-tuberculosis drugs with the results of statistical tests obtained a p-value = 0.03 for knowledge and attitudes the p-value-0.043, meaning a significant relationship between knowledge and compliance with taking anti-tuberculosis drugs in pulmonary tuberculosis patients at the Teladan Health Center, Medan in 2019 (Saragih & Sirait, 2020).

Based on the results of an initial survey conducted by researchers in 2021, the number of TB patients who came for treatment to the Helvetia Health Center was 105 people, then experienced an increase in the number of patients who went to the Helvetia Health Center in 2022 to 156 people. At the beginning of 2023, from January to March, 24 patients received treatment at the Helvetia health center.

## METHODS

This type of research used analytical observational methods, with the research design being cross-sectional research, where the cause or risk and effect variables or cases that occur in the research object are measured or collected simultaneously. The sampling technique used was quota sampling, with 75 respondents. The primary and secondary data used in this study were primary data and questionnaire data containing questions given to respondents. They selected answers that had been prepared, while secondary data was obtained from the Helvetia Health Centre. Data analysis used the chi-square test to see the statistical relationship between variables. The research has received ethical clearance from the health research ethics commission of the Poltekkes Kemenkes Medan, No: 01.1714/KEPK/2023.

## RESULTS

The analysis of the relationship between knowledge and compliance with taking tuberculosis drugs at the Helvetian Health Center in Medan, as shown in Table 1, revealed that out of the 29 respondents with good knowledge, nine respondents (12%) demonstrated sufficient compliance, three respondents (4%) exhibited inadequate compliance, and 17 respondents (22.7%) displayed high compliance with taking tuberculosis drugs. Moreover, of the 33 participants who possessed sufficient knowledge, 20 individuals (26.7%) showed moderate adherence, nine individuals (12%) exhibited low adherence, and 33 individuals (44%) displayed strong adherence to the consumption of tuberculosis medicine. In addition, out of the 12 participants who lacked sufficient knowledge regarding adherence to tuberculosis treatment, four respondents (5.3%) showed moderate adherence, five respondents (6.7%) exhibited low adherence, and three respondents (4%) displayed high adherence. In addition, among the 33 respondents with limited knowledge, there was no significant decrease or moderate level of adherence to tuberculosis medicine. However, only one respondent (1.3%) demonstrated high compliance in taking tuberculosis medication. The chi-square test yielded a p-value of 0.003, less than the significance level of 0.05. Therefore, it can be inferred that there is a statistically significant association between knowledge and compliance with tuberculosis medications.

**Table 1**. Analysis of the Relationship between Knowledge and Compliance with Taking Tuberculosis Medication

| Variable | Compliance with tuberculosis medication | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | Moderate Compliant | | Less Compliant | | High Compliant | | Total | | |
| | N | % | N | % | N | % | N | % | |
| **Knowledge** | | | | | | | | | |
| Good | 9 | 12% | 3 | 4% | 17 | 22,7% | 29 | 38,7% | |
| Sufficient | 20 | 26,7% | 9 | 12% | 4 | 5,3% | 33 | 44% | 0,003 |
| Lacked Sufficient | 4 | 5,3% | 5 | 6,7% | 3 | 4% | 12 | 16% | |
| Limited | 0 | 0% | 0 | 0 | 1 | 1,3% | 1 | 1,3% | |
| **Total** | **33** | **44%** | **17** | **22,7%** | **25** | **33,3%** | **75** | **100%** | |

**Table 2**. Analysis of the Relationship between Attitude and Compliance with Taking Tuberculosis Medication

| Variable | Compliance with tuberculosis medication | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | Moderate Compliant | | Less Compliant | | High Compliant | | Total | | |
| | N | % | N | % | N | % | N | % | |
| **Attitude** | | | | | | | | | |
| Positive | 7 | 9.3% | 2 | 2,7% | 14 | 18,7% | 23 | 30,7% | |
| Satisfactory | 19 | 25,3% | 10 | 13,3% | 8 | 10,7% | 37 | 49,3% | 0,037 |
| Suboptimal | 6 | 8% | 5 | 6,7% | 3 | 4% | 14 | 18,7% | |
| Negative | 1 | 1,3% | 0 | 0% | 0 | 0% | 1 | 1,3% | |
| **Total** | **33** | **44%** | **17** | **22,7%** | **25** | **33,3%** | **75** | **100%** | |

The results of the investigation on the correlation between attitude and adherence to tuberculosis medication at the Helvetian Health Centre in Medan are presented in Table 2. Of the total number of respondents, 23 displayed a positive attitude. Additionally, 9.3% of the respondents showed moderate adherence, while 2.7% exhibited lower adherence. On the other hand, thirty-seven percent of the respondents displayed a high level of adherence to taking tuberculosis drugs. Moreover, among the 37 participants who had a satisfactory attitude, 19 individuals (25.3%) exhibited moderate adherence, 10 individuals (13.3%) displayed lower adherence, and eight individuals (10.7%) showed high adherence to their tuberculosis drug regimen. Of the total respondents, 14 displayed a suboptimal attitude towards adhering to tuberculosis treatment. Six respondents (8%) exhibited moderate adherence, while five respondents (6.7%) showed less adherence. On the other hand, three respondents (4%) showed high adherence to tuberculosis medication. In addition, among the respondents who had a negative attitude towards TB, only one individual (1.3%) had a moderate level of adherence to tuberculosis medication. There were no instances of low or high adherence to taking tuberculosis medication. The chi-square test yielded a p-value of 0.037, less than the significance level of 0.05. Therefore, it can be inferred that there was a statistically significant association between attitude and compliance with tuberculosis medication. Enhanced understanding and a favorable mindset towards tuberculosis (TB) result in heightened adherence to treatment-seeking behavior at the Primary Health Center.

ORIGINAL RESEARCH

## DISCUSSIONS

The study results from 75 respondents showed a direct correlation between the patient's degree of education and their likelihood of adhering to TB therapy. The more knowledgeable the patient is, the more likely they will stick to the treatment. When examining the formation of knowledge and attitudes, education significantly shapes how individuals react to stimuli they encounter in their surroundings. Good knowledge will influence TB patients to be able to carry out something regularly, which can affect their behavior. The better the knowledge about how to take medicine regularly, the more the sufferer increases the regularity of taking medicine and, in the end, will tend to behave obediently in treatment to cure the disease. The finding of this study is similar to research conducted at the Bekasi Jaya Health Center, which revealed that 65% of the participants possessed a higher level of education, 65% were unemployed, and 65% showed a commendable understanding of TB therapy. 65% of respondents reported that the availability of health facilities and services was comprehensive. The study found a correlation between educational attainment and adherence to medicine, suggesting that individuals with greater levels of education were more likely to comply with their prescribed treatment (Rindy et al., 2022).

The chi-square test results showed that knowledge had a significant relationship with adherence to tuberculosis medication. The similar findings, according to the study, explain the results of statistical tests obtained a value of $p = 0.03$, which means that there was a significant relationship between knowledge and compliance with taking anti-tuberculosis drugs in patients with pulmonary TB at the Teladan Medan Health Centre in 2019. Based on the data obtained from the questionnaire, it is known that most Lung TB patients who take anti-tuberculosis drugs have good knowledge of as many as 18 respondents (51.4%) (Saragih & Sirait, 2020).

In this study, knowledge is significantly related to adherence to tuberculosis drugs. In Saragih & Sirait's research (2020), 54.3% of patients with a positive attitude adhered to anti-tuberculosis drugs, and 17.1% were not obedient. Furthermore, 11.5% of patients with negative attitudes adhered to taking anti-tuberculosis medicines, and 17.1% did not adhere to taking anti-tuberculosis drugs. Based on the results of statistical tests, a $p\text{-value} = 0.043$ was obtained, which means that there is a significant relationship between attitude and compliance with taking anti-tuberculosis drugs in patients with pulmonary tuberculosis at the Teladan Medan Health Centre in 2019 (Saragih & Sirait, 2020). Attitude is a readiness or willingness to act and is not an implementation of certain motives. In this case, the benefits of attitude predispose to behavior formation. This explains if attitude will influence a person's behavior to take action (Notoatmodjo, 2012).

Nevertheless, the study by Utami and Ariyanti (2021) highlighted the importance of enhancing the quality of professional health services and infrastructure to promote patient comfort and compliance. The findings indicated that 51% of tuberculosis patients adhered to their drug regimen. The study employed the Quote TB Light framework to evaluate patient perceptions. It revealed that most patients held positive perceptions of TB services, health worker consultations, and the affordability of TB medicines (Utami & Ariyanti, 2021).

Family support, alongside knowledge, is a crucial component that influences treatment adherence in TB patients. A study conducted at the Benjeng Health Center in Gresik Regency found that family support and help from health workers substantially impacted medication adherence. The study revealed that 45.71% of the participants reported having sufficient family support, while 57.1% had a moderate attitude. The multiple linear regression analysis findings indicate that attitude, motivation, and family support substantially and

statistically significantly influence medication adherence, accounting for 82.7% of the observed effect (Susilo & Peristiowati, 2023).

A Similar finding in a Gamping II Health Center study revealed that 90% of patients adhered to their drug regimen. The study found knowledge, family support, and health worker support as the primary factors influencing medication adherence. The chi-square test indicated statistically significant associations between knowledge ($\rho=0.009$), family support ($\rho=0.022$), and health worker support ($\rho=0.025$) with compliance in medication adherence (Rohmawati et al., 2024). These studies collectively emphasize the significance of patient information, attitude, family support, and health worker assistance in guaranteeing drug adherence among TB patients. Enhancing these parameters can greatly augment the efficacy of TB treatment treatments.

The result of this study was an evident and meaningful correlation was observed between individuals' attitude and their adherence to tuberculosis therapy. Increased comprehension and a positive attitude toward TB improve compliance with obtaining treatment at the Primary Health Center. The importance of attitudes towards TB and its treatment cannot be underestimated. Patients who comprehend the significance of finishing their therapy and regard it as efficacious are more inclined to comply with their pharmaceutical regimens. On the other hand, unfavorable views towards treatment, such as perceiving it as inefficient or excessively time-consuming, can impede adherence (Motappa et al., 2022; Wahyuni et al., 2018). Patients' perceptions of treatment effectiveness and their attitudes regarding treatment duration and the potential repercussions of not following the prescribed treatment have a substantial impact on adherence. Strong convictions in the efficacy of treatment and a readiness to finish the entire treatment regimen are linked to improved adherence (Du et al., 2020; Motappa et al., 2022).

## CONCLUSIONS

Knowledge and attitude significantly correlated with adherence to tuberculosis medication at Helvetia Health Center, Medan. Health workers must innovate to improve knowledge and attitudes and increase public awareness of completing the TB treatment program. This is certainly needed to reduce the occurrence of antibiotic resistance in the future in the TB treatment process.

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