



## The Effect of Treatment Education Techniques on Medication Adherence in Tuberculosis Patients at Dr.H Aloe Saboe Hospital

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### ABSTRACT

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis and is one of the leading causes of death worldwide. In Indonesia, the number of TB cases is quite high, and patient adherence to taking medication is very important for the control of this disease. The purpose of this study is to find out whether there is an influence of educational techniques on patient adherence in taking anti-tuberculosis drugs. The design of this study uses a quasi-experimental design with a one group pretest-posttest approach. The sample consisted of 17 respondents, Data was collected through questionnaires before and after educational interventions using video media. data analysis using the wilcoxon test  $p < 0.05$ . Results Before the intervention, only 5.9% of respondents showed adherence in taking medication. After the educational intervention, the compliance rate increased to 82.4%. The Wilcoxon test showed a  $p < 0.05$ , which indicates a significant difference between pre- and post-education compliance. This shows that educational techniques effectively increase patients' understanding of the importance of taking medication regularly Conclusion There is a significant influence of educational techniques on medication adherence in tuberculosis patients at Prof. Dr. H. Aloe Saboe Hospital. This research shows that effective education can increase patient adherence to treatment, which contributes to a faster healing process.

### INTRODUCTION

Tuberculosis is an infectious disease caused by mycobacterium tuberculosis. According to the World Health Organization (WHO), Tuberculosis is one of the leading causes of death worldwide. WHO states that 25% of the world's population is estimated to have been infected with tuberculosis (WHO, 2022). Various strategies for handling Tuberculosis continue to be carried out by WHO as an effort to eliminate Tuberculosis globally. (Rizki, 2024)

Tuberculosis (TB) in Indonesia ranks second after India, with 969 thousand cases and 93 thousand deaths per year or equivalent to 11 deaths per hour. Based on the 2022 Global TB Report, the highest number of TB cases in the world is in the productive age group, especially at the age of 25 to 34 years. In Indonesia, the highest number of TB cases is in the productive age group, especially at the age of 45 to 54 years.

Based on data from the Gorontalo Provincial Health Office in 2021, 11,855 suspected TB cases were reported, 2,777 people were notified, and 2,551 people underwent treatment with details of Gorontalo Regency 893, Bone Bolango Regency 514, Gorontalo City 423, Boalemo Regency 274, North Gorontalo Regency 225, and Pohuwato Regency 222. (Pomalango & Fatimah Arsyad, 2024)

One of the efforts to control tuberculosis is by treatment. The indicator used to evaluate tuberculosis treatment is the Success Rate. The treatment success rate is the sum of all recovered and complete treatment tuberculosis cases among all treated and reported tuberculosis cases. Thus, this number is the sum of the recovery rate of all cases and the complete treatment rate of all cases. This figure illustrates the quality of tuberculosis treatment. Even though the recovery rate has been achieved, other treatment results still need to be considered, including cases of death, failure, loss to follow up, and not evaluated. (Baliasa et al., 2020)

Tuberculosis treatment involves two stages, namely the initial stage (intensive) and the advanced stage with the administration of anti-Tuberculosis drugs (OAT) which are given in the form of a combination of several drugs with sufficient amounts and the right dose according to the treatment indications. In the initial (intensive) stage, the patient will be given OAT which is consumed daily. Meanwhile, in the advanced stage, patients will get fewer drugs. However, over a fairly long period of time (Amalia et al., 2022).

Based on the results of observations and interviews with the head of the isolation room in early August 2024 at Prof. Dr. Aloei Saboe Hospital, Gorontalo City, showed that there were 959 pulmonary tuberculosis patients, with 477 patients receiving outpatient treatment and 482 patients being hospitalized. Currently, the educational techniques used are only in the form of verbal communication, without any other educational methods. In addition, there has been no research that discusses the use of video as an educational medium in the isolation room of Prof. Dr. Aloei Sabue Hospital

The success of a treatment for TB is supported by adherence to taking anti-tuberculosis drugs with a predetermined dose. Patients who are repeatedly admitted to the hospital due to non-compliance in taking anti-tuberculosis drugs (OAT) regularly. This will certainly have a drop out impact, which is one of the causes of failure in treatment and this has the potential to increase the likelihood of drug resistance or what is called Multi Drug Resistance (MDR) TB. If there is resistance to drugs, the costs incurred for treatment will be more and the time needed for recovery will be long (Tuberculosis et al., 2023)

The reason for taking the research location at Prof. Aloie Sabue Hospital is that there is no research with the same variable that examines the Effect of Treatment Compliance Education Techniques on Accelerating the Healing Process of Tuberculosis Patients at Dr.H. Aloei Sabue Hospital"

Therefore, the researcher is interested in conducting a research on "The Effect of Treatment Compliance Education Techniques on Accelerating the Healing Process of Tuberculosis Patients at Dr.H. Aloei Sabue Hospital"

## **RESEARCH METHODS**

### **Place and time of the research**

This research is planned in the Isolation Room of Aloie Sabue Hospital, Gorontalo City. This research will be carried out in August-November 2024.

### **Research Design**

The design of this study uses a quasi-experiment method with a one group pretest-posttest design, which involves only one group of tuberculosis patients without a comparison group. Measurements are carried out twice, namely before and after treatment in the form of treatment adherence education is provided through video media. The purpose of this design is to see changes in the level of compliance as well as the acceleration of the patient's healing process after receiving education through video.

### **Population and sample**

The definition of population is a generalized area consisting of objects/subjects that have certain quantities and characteristics that are determined by the researcher to be studied and then drawn conclusions (Fauzia, 2020). The population in this study is tuberculosis patients in the Isolation Room of Prof. Dr. Aloei Saboe Hospital in Gorontalo city, in July-August, which is 168 populations.

A sample is a part of the number and characteristics that the population has. in a certain way so that it can be representative of the population (Assessment et al., 2024). The sample was taken based on data on pulmonary tuberculosis patients at Prof. Dr. Aloei Hospital, The research sample was determined using the Slovin formula, so that a sample number of 17 respondents was obtained.

### **Data Analysis Techniques**

#### **Univariate Analysis**

Univariate analysis is an analysis carried out to analyze each variable from the results of research/survey. Univariate analysis can also be interpreted as the process of analysis per variable or data processing per variable in a statistically descriptive manner.

#### **Bivariate Analysis**

In bivariate analysis, analysis is used to determine the relationship between dependent variables and independent variables. To find out how strong the relationship is, bivariate analysis was conducted to test the influence between treatment adherence education techniques (independent variables) on the acceleration of the healing process of tuberculosis patients (dependent variables).

**RESULTS****Respondent characteristics**

Table 1. Respondent Characteristics

Characteristics	Frequency	Presented%
<b>Age</b>	N	
18-24	1	5,9
25-59	10	58,8
60-75	6	35,3
<b>Total</b>	17	100%
<b>Gender</b>		
Male	9	52,9%
Women	8	47,1%
<b>Total</b>	17	100%
<b>Education</b>		
SD	8	47,1
Junior High School	2	11,8
High School	6	35,3
S1	1	5,9
<b>Total</b>	17	100%
<b>Jobs</b>		
Labor	1	5,9
Teacher	1	5,9
IRT	6	35,3
Fisherman	3	17,6
Miners	1	5,9
Farmer	3	17,6
Sales	1	5,9
Driver	1	5,9
<b>Total</b>	17	100%

Data source (2024)

Based on the frequency distribution table based on age, the most respondents were 25-59 years old (58.8%), as many as 10 respondents and the least 18-24 years old (5.9%). Based on the gender frequency distribution table of 17 respondents, the most gender was obtained with 9 respondents male (52.9%) and the smallest female 8 respondents (47.1%), Based on the distribution table of educational frequency Most of the respondents were educated at the elementary level (47.1%), and the least respondents were S1 educated with 1 respondent (5.9%). Based on the job distribution table, the majority are housewives with 6 respondents (35.3) and the least are laborers, teachers, miners, drivers and sales with 1 respondent (5.9%)

**Univariate Analysis**

Table 2 Levels of Medication Compliance Before Providing Educational Techniques at the Hospital. Prof. Dr. H. Aloe Saboe

Compliance level	N	Present(%)
Obedient	1	5,9%

Non-compliant	16	94,1%
Total	17	100%

Source: Primary Data 2025

Based on Table 2, it can be seen that the adherence to taking medication in the isolation room in 17 respondents before being given the intervention shows the majority of respondents, namely 16 people (94.1%) who are not compliant in taking medication, while only 1 respondent (5.9%) shows adherence to treatment.

Table 3 Levels of Medication Compliance After Providing Educational Techniques in the Isolation Room of Prof. Dr. H. Aloei Saboe Hospital, Gorontalo City

Compliance level	N	Present(%)
Obedient	14	82,4%
Non-compliant	3	17,6%
Total	17	100%

Source: Primary Data 2025

Based on Table 3, it can be seen that the adherence to taking medication in the isolation room in 17 respondents after being given the intervention shows the majority of respondents, namely 14 people (82.4%) are compliant in taking medication, while only 3 respondents (17.6%) show that they are still not compliant in treatment.

### Bivariate Analysis

Table 4 Wilcoxon Signed Rank Test Results.

Pre-Post Test	N	Mean Rank	Sum Of Rank
Negative Ranks	0	00	00
Positive Rank	15	8,00	120,00
Ties	2		
Total	17		

Source : Primary data (2025)

Based on Table 4, the calculation method using the Wilcoxon Signed Rank Test produces mean rank values and sum of rank for the negative ranks, positive ranks, and ties groups. Negative ranks indicate that the sample with a post-test score is lower than the pre-test, but no decrease in value is recorded. Positive ranks showed an increase in scores, with 15 respondents experiencing an average increase of 8.00 and a total positive rank score of 120.00. Ties showed respondents whose post-test scores were the same as pre-tests, with a total of 2 respondents who did not experience a change in scores.

Table 5 Results The effect of treatment education techniques on medication adherence to tuberculosis patients in the Isolation Room.

Yes	Medication Compliance	Red	N	Asymp.Sig. (2-Tailed)
1	Pre-test	14,06	17	
2	Post-test	17,94	17	0,000

Source: Primary data (2025)

Based on table 5 above, it can be explained that the average adherence to taking medication before being given treatment (pre-test) is 14.6 and after treatment (post-test) is 17.94 with a difference of 3.88. This shows a significant decrease in the average drug adherence score from pre-test (14.06) to post-test (17.94) with a decrease of 3.88. From the results of the Wilcoxon Signed Rank Test, an asymp score was obtained. Sig (2-tailed) is 0.001 which is smaller than 0.05. This means that H<sub>0</sub> is rejected and H<sub>a</sub> is accepted, which means that there is a significant influence on treatment education techniques on medication adherence in tuberculosis patients before and after being treated at Prof. Dr. H. Aloei Saboe Hospital.

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**WASHING****Univariate Analysis**

Based on research on medication adherence before being given treatment education techniques in isolation rooms, questionnaire data on 17 respondents showed that most respondents did not comply with treatment, with a total of 16 respondents (94.1%). However, after the treatment education techniques were applied, the results of the post-test questionnaire in 17 respondents showed a significant increase in adherence. A total of 14 respondents (82.4%) showed adherence to treatment, while 3 respondents (17.6%) still did not comply with treatment.

The results showed that out of 17 respondents, only 1 person regularly took medication, while the other 16 did not comply. Compliant respondents generally have a good understanding of the importance of regular medication to speed recovery and prevent drug resistance, and are supported by family reminders and support. In contrast, non-compliant respondents often forget to take medication or feel the need to continue treatment when conditions begin to improve. Other obstacles that affect are the lack of family support, minimal understanding of the dangers of stopping treatment, and the side effects of medication felt by patients.

After the application of educational techniques, there was an increase in medication adherence, where 14 out of 17 respondents showed a change in more disciplined behavior in carrying out treatment. They understand the importance of following medication consistently to prevent complications and drug resistance. However, three respondents still showed non-compliance due to the reason that they often forgot to take their medication. Some of them admitted to stopping medication when they felt their condition was improving, suggesting that the challenges of ensuring full compliance still persisted despite the education being provided.

The results of this study are in line with what was carried out (Purnamasari et al., 2023) it is very important for health workers to provide proper education to patients about TB and its treatment. Education should include explanations of the disease, treatment, and the importance of drinking adherence medicine. Health workers must also pay attention to the patient's attitude and provide the necessary support to improve medication adherence. Medication adherence increases significantly when people have a good understanding and support of TB prevention and treatment. Poor medication adherence has a direct impact on the quality of life of health-related TB patients, which can lead to complications in the form of multidrug resistance. One of the education that can be done is in the form of educational videos to increase public knowledge related to tuberculosis.

The results of the study (Khayati et al., 2019) also showed that the average attitude of respondents before being given education using video media was 14.09 and afterwards with an average of 15.28. These results show that there is an improvement in attitudes after being given health education. Based on research conducted by researchers, due to the attitude of pulmonary TB patients who feel side effects after taking OAT and the regularity of taking medication by reporting to the officer for side effects (nausea, vomiting, dizziness, itching). The officer was able to overcome the patient's complaints and felt comfortable so that the patient's attitude remained obedient to taking medication until the end/Tuesday of the treatment.

Based on the results of observations, it was found that before being given an intervention in the form of medication adherence education, many patients with low education levels did not understand the importance of undergoing treatment regularly and according to a predetermined schedule. This can be seen from the high rate of errors in filling out the initial questionnaire, especially in the part that requires an understanding of the treatment schedule and the risk of stopping treatment. Low levels of education also contribute to a lack of patient awareness of serious consequences, such as drug resistance and further transmission.

In line with the theory presented by Lawrence Green, the factors that affect patient compliance behavior in taking drugs are predisposing factors in the form of knowledge, attitudes, beliefs, values, and perceptions that encourage individuals or groups to take an action. Enabling factors that have an influence on TB treatment are the availability of health facilities or facilities, ease of access to health facilities and transportation, and service time

Based on the results of research that has been carried out (Rumaolat, 2022), advances in digital communication technology are very promising to change the health education engineering system, one of which is using video media that involves the transmission of digital images and sounds so that it is easy to understand the use of video media in learning activities not only as an aid, but as a carrier of information or messages that want to be conveyed, the use of video is not only listening to the material that is being conveyed conveyed, but also see directly and clearly the steps demonstrated through the video so that it can be easy to understand and change compliance behavior.

The results of the study (maulaya et al., n.d.) show that most of the respondents have the majority of compliance levels before and after being educated, namely high compliance. The majority of respondents did not comply before being given treatment due to lack of information related to medication adherence to pulmonary TB and economic factors compared to after being given treatment. This research was supported by the Indonesian Ministry of Health (2020), namely pulmonary tuberculosis patients taking anti-tuberculosis drugs after being given education. Compliance, which is a person's behavior in consuming drugs correctly about the dosage, time, frequency and compliance in the rules for drug use, also helps to prevent the occurrence of resistance.

The researchers assume that the level of treatment adherence of pulmonary tuberculosis patients can be improved through effective educational techniques. Before education, non-compliance was high due to a lack of understanding of patients. After education, there was a significant increase in adherence, suggesting that education

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plays an important role in supporting treatment success and preventing complications.

### **Bivariate analysis**

Based on the results of the study using the analysis of the wilcoxon signed rank test, in the measurement of treatment adherence before and after treatment, an asymptomatic value was obtained. Sig (2-tailed) is (0.001). This shows that there is a significant influence of treatment education techniques on medication adherence to tuberculosis patients at dr.h aloei saboe hospital.

The results showed that before being given treatment education techniques, the drug adherence rate in 17 respondents was recorded at 19.24%. After the application of treatment education techniques, this compliance rate decreased to 13.88%, which shows that the educational technique has a significant effect on increasing treatment adherence in tuberculosis patients.

The use of digital media in health education has been proven to be effective in various contexts. A study conducted by Sari et al. (2021) showed that the use of video in health counseling can increase people's knowledge and attitudes towards certain health issues. Animated videos are able to convey information in an interesting and easy-to-understand manner, especially for community groups that have a low level of literacy. On the other hand, this media also makes it easier for health workers to deliver educational materials in a uniform and efficient way. (Mardiah et al., 2024)

These results are also in line with the research conducted (Mardila et al., 2023) there is a difference between the pretest and posttest results (after receiving audiovisual health education), with an average pretest result of 52.92 and a standard deviation of 2.758 and an average posttest finding of 88.33 and a standard deviation of 3.849 respectively. According to the findings of the wilcoxon test, significant values (0.001) and (0.05) were found. Therefore, it can be concluded that  $H_0$  is rejected or  $H_a$  is accepted and there is a difference between the pre-test and post-test results. Therefore, it can be said that audiovisual health education has an impact on families at the Koba Health Center who have pulmonary TB disease in terms of transmission prevention behaviors

The results of the study also prove the value of knowledge of pulmonary TB patients before and after being given an educational video. This shows that after being given an educational video, it is compared with what was before it was given. The results of the wilcoxon test obtained a p value of  $0.000 < 0.05$  which means that  $H_1$  is acceptable, namely: there is an effect of educational videos on the level of knowledge of outpatient pulmonary tuberculosis patients at Purni Teguh Ciledug Hospital, Tangerang City. (Nuryadin & Banjarnahor, 2023)

In line with research by Heri Suhedi (2022), said that after being given health education with the audiovisual method, the majority of respondents in the compliance category were (96%). The audiovisual method is more attractive and effective for respondents because it involves the senses of sight and hearing so that they can receive information quickly.25 Strengthened by research conducted by Jannah & Arini Murni (2019) said that the increase in compliance comes from health education that uses audio-visual media and continued discussions. Choosing the media to use to educate health is very important. The five senses that communicate most with the brain are the eyes (approximately 75%-87%), 13%-25% of human knowledge is obtained from the other five senses.26 Health education through the media can be effective in changing a person's knowledge through the five senses of a person who learns information. So, the information provided will be more accepted because it uses 2 senses at once. The procedure for implementing audiovisual media-based education is able to arouse a person's desire to learn more and make it easier for someone to receive information. Because with audiovisual media one can learn on their own, can repeat parts that are not understood, display something in detail, videos can be accelerated or slowed down according to their liking.

The researcher assumes that given educational techniques using video media, there is an increase in patient compliance levels. Factors that led to previous low levels of compliance included a lack of understanding of the importance of treatment, a lack of motivation, and a lack of support from the surrounding environment.

### **CONCLUSION**

There is a significant influence of Anatra Treatment Education Techniques on Medication Compliance in Tuberculosis Patients at Prof.Dr.H Aloei Saboe Hospital

The analysis of the Wilcoxon test confirmed a significant difference in medication adherence before and after the intervention, with a  $p < 0.05$ , confirming the effectiveness of educational techniques in supporting treatment success.

### **SUGGESTIONS**

It can be used as a reference in improving understanding of the relationship between educational techniques and medication adherence in tuberculosis patients, as well as its impact on treatment outcomes.

It can be used as a reference in developing a systematic education program for tuberculosis patients, as well as increasing the evaluation of medication compliance according to the treatment phase undergone.

It can be used as a reference to provide moral and practical support to patients, as well as to monitor the treatment schedule more closely so that it can help improve patient compliance.

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It can be used as a reference in improving the quality of nursing education, especially in providing training on effective educational techniques to improve patient compliance in tuberculosis treatment.

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