



# The Effect of Audio-Visual Daily Reminder on Medicine Treatment Compliance in Tuberculosis Patients in Puskesmas Garuda, Bandung City

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## ABSTRACT

Tuberculosis is an infectious disease caused by TB germs. Adherence to treatment requires the patient's active participation in self-care management and collaboration between the patient and the health care provider. One way that can be done to improve compliance is with a daily reminder using audio-visual media. To find out how the daily reminder audio-visual effect on medication adherence in patients with tuberculosis. This research is a Quasi Experimental two Group Pre-Posttest Design with control group in May 2021 with 60 respondents in the working area of the Garuda Puskesmas Bandung City. Medication adherence was measured using the MMAS (Morisky Medication Adherence Scale) questionnaire with 8 question items. The description of the level of adherence to taking medication in the intervention group before being given an audio-visual daily reminder showed a low level of adherence (score <6) as many as 28 respondents (93.3%) and after being given the daily audio-visual reminder it increased to moderate adherence as many as 12 respondents (40.0%) and high compliance 12 respondents (40.0%). The level of adherence to taking medication in the control group before being given the intervention showed low adherence by 15 respondents (50.0%) and after being given the leaflet the level of adherence remained in the low category as many as 13 respondents (43.3%). The results of this study indicate that there is a significant effect of the results of the daily reminder audio-visual intervention on medication adherence in tuberculosis patients

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## INTRODUCTION

Tuberculosis is one of the infectious diseases for humans, one of the organs that can be disturbed is the lungs. TB cases in Indonesia are 10.4 million (Infodatin, 2018). In 2019, there was an increase in TB cases in West Java, which recorded 109,463 cases. The city of Bandung ranks in the top three highest tuberculosis cases, the latest data on the incidence of tuberculosis in the Bandung City area based on the work area of the Health Center for the 2018 period in five health centers with the first highest incidence of tuberculosis, namely at UPT Puskesmas Garuda as many as 150 cases (West Java Health Office, 2019). Treatment of tuberculosis is carried out in two stages, namely the initial stage and the advanced stage. The tuberculosis treatment process is carried out completely uninterrupted and regularly for 6 to 9 months. A person can be said to be a patient who is obedient to treatment if the patient can complete his treatment regularly and completely according to the instructions for treatment without interruption (Pasek, 2013). The treatment process is an important phase, this requires cooperation from various aspects including self-care management carried out by the patient and the involvement of health workers in the patient's living environment (Subekti. et al, 2016). Factors causing low compliance are the lack of two-way communication between patients and health workers and the lack of interprofessional collaboration between one health worker and another (Safitri, F. M. et al, 2014). One way that can be done to improve compliance is with a daily reminder, which with this daily reminder will help patients to comply with their treatment. Nisa K, 2018).

According to Aisyan's research (2018) conducted at the Palangkaraya Health Center, the results showed that there were a statistically significant relationship between sending SMS reminders with pulmonary TB treatment adherence with p-value 0.025 with OR 31.26 (95% CI 1.54-634.64) In Wahyu Dwi Septinengti's research (2019), the results showed that there was an influence between health education with healthy calendar media and whatsapp on the level of knowledge and adherence to taking medication in Tuberculosis patients with p value = 0.001, and the level of adherence to taking medication in the treatment group showed results with a value of significance of 0.002. The purpose of the study was to determine the effect of audio visual daily reminders on medication adherence in tuberculosis patients.

## METHODS

The type of research used in this research is Quasi Experimental with Two Group Pre-Posttest Design with control group design. This method is used to analyze the effect of audio-visual daily reminder on medication adherence in tuberculosis patients. This study was conducted by comparing the data from the control group and the intervention group before and after being given treatment. The intervention was carried out in the form of an audio visual reminder every day for 2 weeks. Measuring medication adherence was carried out twice, namely before the intervention (pre-test) and after the intervention (post-test).

This research was conducted at the Garuda Health Center in Bandung City in May-June 2021. The population in this study were 60 tuberculosis patients at the Garuda Health Center. Sample was calculated using t-test correlation: biserial model points assuming effect size 0.4, err prob 0.05, power 0.8, numerator 1, number of groups 2, number of covariates, sample 52 respondents with attrition rate 10% so a total of 60 respondents who meet the inclusion criteria. Sampling was taken using the purposive sampling technique. Then the researcher divided 30 for the intervention group and 30 for the control group, which was chosen by the way researchers chat to each respondent and respondents who cooperatively reply to the chat will be included in the intervention group. Inclusion Criteria: Patients aged 18-60 years, willing to be respondents, able to communicate well, have a cellphone as well as a WhatsApp application. The results of the validity and reliability tests on this questionnaire used test results from previous researchers, namely Amalia, D (2020). The corrected item total correlation value between the questions on the questionnaire is higher than the  $r$  table value, which means this value has met the rule of thumb of item validity, thus all MMAS-8 scale items are valid. The value of Cronbach's alpha reliability test of the MMAS-8 questionnaire is 0.783 which indicates that the questionnaire is reliable because it exceeds the required 0.60 value. The results of the validity and reliability test of the MMAS-8 questionnaire can be used as an instrument of compliance. The results of the validity test on this questionnaire are seen based on the  $r$ -count value, the larger  $r$  table then the validity test of the questionnaire is declared valid. The reliability test on this questionnaire obtained Cronbach Alpha results of 0.837, which means it is very reliable, which means it can be used as a questionnaire for adherence to medication for tuberculosis patients.

Univariate analysis in this study was conducted to determine medication adherence in tuberculosis patients before and after being given the audio-visual daily reminder intervention in the control and intervention groups. The analysis is based on the Mean, Standard. Bivariate analysis in this study used Wilcoxon to determine the difference before and after the intervention was given to each control and intervention group. Furthermore, using Mann-Whitney U to see the difference after being given the intervention in the control and intervention groups. The intervention was carried out by sending daily audio-visual reminders via text, images, and WhatsApp voice notes about the importance of medication adherence. The intervention was carried out for 2 weeks. Audio-visual daily reminder once a day and sent in the morning.

## RESULTS AND DISCUSSIONS

The results of the univariate analysis of the level of compliance can be seen in the following table

<b>Table 1.</b> Description of the level of drug adherence in the intervention group and control group		
<b>Variabel</b>	<b>Intervention Group (n=30) (%)</b>	<b>Control Group (n=30) (%)</b>
Compliance level pre		
Low (Skor <6)	28 (93.3)	15 (50.0)
Medium (Skor 6-<8)	1 (3.3)	11 (36.7)
High (8)	1 (3.3)	4 (13.3)
Compliance level post		
Low (Skor <6)	6 (20.0)	13 (43.3)
Medium (Skor 6-<8)	12 (40.0)	10 (33.3)
High (8)	12 (40.0)	7 (23.3)

The results of the frequency distribution analysis based on the score of the level of compliance in the intervention group before being given the daily audio-visual reminder were in the low category as many as 28 respondents (93.3%), being 1 respondent (3.3%) and high as much as 1 respondent (3.3%). In the control group, namely in the low category 15 respondents (50.0%), being 11 respondents (36.7%) and high as many as 4 respondents (13.3%). Based on the data, the level of compliance after being given the daily audio-visual reminder

in the intervention group was 6 respondents (20.0%) in the low category, 12 respondents (40.0%) in the medium category and 12 (10.0%) high respondents. Meanwhile, in the group whose intervention was only given leaflets, 13 (43.3%), were low as many as 10 respondents (33.3%) and high as many as 7 respondents (23.3%).

The results of this bivariate analysis are to show whether or not there is an effect of the daily reminder audio-visual on medication adherence in tuberculosis patients using the Wilcoxon test and the Mann-Whitney test.

**Table 2.** Differences in the level of adherence to taking medication before and after being given the intervention in the intervention group and the control group

Variabel	Pretest	Min-Max	Post-tets	Min-Max	z	sig
	compliance (Mean±SD)		(Mean ± SD)			
Intervention Group	4.07 ± 1.413	1-8	6.83 ± 1.341	3-8	-4.340 <sup>b</sup>	0.000
Control group	5.17 ± 2.001	1-8	5.17 ± 2.451	1-8	-.15 <sup>c</sup>	0.988

Based on table 2 above, the results show that the value of adherence to taking medication before and after being given an intervention using Wilcoxon increased from 4.07 (SD=1.413) to 6.83 (SD=1.341) with a p-value of 0.000. Meanwhile, the control group did not increase from 5.17 (SD = 2.001) to 5.17 (SD = 2.451) with p-value = 0.988 This shows that the results of testing the first hypothesis, namely Ho is rejected and Ha is accepted, meaning that there is a difference after being given daily intervention. audio-visual reminder on medication adherence in the intervention group. These results indicate that the first hypothesis proposed in this study can be accepted in the intervention group and can be proven true.

**Table 3.** Differences in the level of adherence to taking medication after being given an intervention in the intervention group and the control group

Variabel	Mean Ranks	z	Sig
Post	Intervention	36.50	-2.726
	Control	24.50	

Based on table 3 above, the results show that the value of the level of adherence to taking medication after being given an intervention in the control group and the intervention group using Mann-Whitney is known that the sig value of 0.006 is smaller than 0.05. So it can be concluded that ha is accepted, meaning that there is a significant difference in the level of adherence to medication between those receiving the intervention and the group not receiving the intervention. The researcher used the normality test of the data by using the Kolmogorof-Smirnov. The results of the test of normality showed that the level of adherence to taking medication before the intervention was given was  $p = 0.000$  and the level of adherence to taking medicine after the intervention was given was  $p = 0.000$  which means that the  $p\text{-value} < \alpha (0.05)$  means that the data in this study is not normally distributed. Therefore, the researchers used the Wilcoxon test which showed a difference after being given an Audio-visual Daily Reminder on Drug Compliance in Tuberculosis Patients and the Mann-Whitney test to see if there was a difference in the level of adherence to taking medication after being given an audio-visual daily reminder intervention between the intervention group and the intervention group. the control group as evidenced by the  $p\text{-value} = 0.006 < (0.05)$ .

The results showed that the mean age of tuberculosis patients was >30 years old. This study is in line with the research of Kurniasih N (2015) that most of the intervention group and control group were >30 years old. And this study is also in accordance with the research of Hendra, et al (2020) which states that patients with tuberculosis by age are patients aged 30-70 years. This is in line with Hayati (2018) who argues that the 15-50 year age group is an age group that has very high mobility so that the possibility of being exposed to Mycobacterium Tuberculosis bacteria is greater. In this study, there were more tuberculosis patients in the male sex both in the intervention group and in the control group, this study is in line with the research of Hendra, et al (2020) which states that the male sex is susceptible to pulmonary tuberculosis due to predisposing factors such as smoking and drinking alcohol.. According to Riskesdas (2018) which explains that the male gender is

susceptible to pulmonary tuberculosis due to predisposing factors such as smoking and drinking alcohol which can lower the body's defense system.

In this study, it was shown that the work status of more people was working, this result is in line with previous research according to Endah.A (2018) which states that workers who are in direct contact with many people in closed rooms and poor ventilation are susceptible to tuberculosis. The education level of all respondents in the intervention group and the control group showed higher results with high school/high school/vocational vocational education. According to Arditya (2018), it is stated that the level of education can affect the understanding of very important information about compliance behavior in undergoing tuberculosis treatment and all the negative impacts it will cause, because low education will result in difficulty in receiving new information and having a narrow mindset. In this study, the length of treatment from all respondents in the intervention and control groups showed more results at <3 months, this is similar to the study of Hendra, et al (2020) which stated

that the length of treatment can have an effect on the effect of daily audio-visual reminders on medication adherence. in tuberculosis patients The results of this study indicate that there is a significant effect of the results of the daily reminder audio-visual intervention on medication adherence in tuberculosis patients. The provision of audio-visual daily reminder intervention in the intervention group and the control group showed a difference before and after the intervention was given. Using the Wilcoxon test, the results showed an increase in the intervention group, from 4.07 (SD=1.431) to 6.83 (SD=1.341) with p-value = 0.000. and the control group did not change from 5.17 (SD=2.001) to 5.17 (SD=2.451) with p-value = 0.988. This shows that the first hypothesis, namely H<sub>0</sub> is rejected and H<sub>a</sub> is accepted, which means that there is a difference after being given an audio-visual daily reminder on medication adherence in tuberculosis patients at the Garuda Health Center in Bandung City. The value of the level of adherence after being given the daily reminder audio-visual intervention in the control group and the intervention group using Mann-Whitney obtained a sig of 0.006 which means that there is a significant difference in the level of adherence to taking medication between those receiving the intervention and the group not receiving the intervention.

The results of this study are supported by similar research conducted by Aisyan, S (2018). The results of the bivariate test of sending sms reminders on medication adherence obtained p-value 0.024 with OR 8.5 (95% CI 0.97-94.03) that is statistically there is a relationship between sending sms reminders to medication adherence. The multivariate results of sending sms reminders to medication adherence obtained p-value 0.025 with OR 31.26 (95% CI 1.54-634.64) so that it can be concluded that there is a statistically significant relationship between sending sms reminders to medication adherence. This daily reminder is part of the nursing intervention in providing health services related to coping strategies and social support, so that patients can accept their disease state and there are changes that support their recovery such as control schedules and obedient taking medication regularly (Nisa K, 2018). Text messages via cell phones have become a powerful tool with the potential to change a person's behavior, health promotion activities and support for health services are widely available, cheaply and quickly. Sending reminder messages via cell phones is more effective than no message reminders to remind the patient's presence at health service facilities (Aisyan S, 2018).

## CONCLUSIONS

The level of adherence after being given the daily reminder audio-visual intervention in the control group and the intervention group using Mann-Whitney obtained a sig of 0.006, which means that there is a significant difference in the level of adherence to taking medication between those receiving the intervention and the group not receiving the intervention.

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