



Received: 01-11-2024  
Accepted: 10-12-2024

## International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

### The Effectiveness of Audiovisual-based Education on the Knowledge and Motivation of Tuberculosis Patients in North Aceh Regional Public Hospital

<sup>1</sup>Emil Nurhakim, <sup>2</sup>Marlina Marlina, <sup>3</sup>Hajjul Kamil

<sup>1</sup> Master of Nursing Program, Faculty of Nursing, Syiah Kuala University, Banda Aceh, Indonesia

<sup>2</sup> Department of Medical Surgical Nursing, Faculty of Nursing, Syiah Kuala University, Banda Aceh, Indonesia

<sup>3</sup> Department of Management Nursing, Faculty of Nursing, Syiah Kuala University, Banda Aceh, Indonesia

DOI: <https://doi.org/10.62225/2583049X.2024.4.6.3569>

Corresponding Author: **Marlina Marlina**

#### Abstract

Knowledge and motivation play an important role in the management of pulmonary TB disease. Various strategies have been implemented to increase knowledge and motivation in patients with pulmonary TB, including through audiovisual based education. Audiovisual media is a media used to encourage people to gain certain insights, skills or behaviors. The purpose of this study was to determine the effectiveness of audiovisual-based education on the knowledge and motivation of pulmonary TB patients at the North Aceh Regional General Hospital. This study was a quantitative study on 68 respondents in each intervention group and control group who were outpatients at the Directly Observed Treatment Short-course Polyclinic of the North Aceh Regional General Hospital using a pre-

post control group design with a sampling technique using a cohen table. Data were analyzed descriptively and the Mann Whitney U Test. The results obtained in this study for the intervention and control groups were that there were differences in the level of knowledge before the intervention  $p = 0.000$ , after the intervention  $p = 0.000$ , differences in the level of knowledge before and after the intervention, differences in motivation before the intervention  $p = 0.027$ , after the intervention  $p = 0.000$ , and differences in motivation before and after the intervention. The conclusion of this study is that audiovisual-based education is very effective in self-management of pulmonary TB patients. Further research is needed with different methods and larger sample sizes.

**Keywords:** Audiovisual, Knowledge, Motivation, Patient Tuberculosis Lungs

#### Introduction

World Health Organization (WHO) in 2022 stated that tuberculosis (TB) is the second most common cause of death in the world due to a single infectious agent and causes almost twice as many deaths as other diseases. More than 10 million people continue to be infected with TB each year. Furthermore, WHO stated that of the thirty countries with a high TB burden, Indonesia is ranked second in its contribution to the total number of TB cases in the world in 2022, contributing 10%. This shows that Indonesia has an important role in the global burden of TB disease, after India which contributes 27% of the total number of TB cases in the world <sup>[1]</sup>.

In Aceh Province, it is known that in 2021 there were 7,170 cases of Pulmonary TB recorded in Aceh, an increase from 2020 which was 6,878 cases. A total of 4,578 cases in men, and 2,592 cases in women. Deaths in Aceh due to pulmonary TB reached 276 cases in 2021, or 5:100,000 population. This figure has increased drastically from the previous report of only 1:100,000. The Ministry of Health in 2018 stated that the most cases of pulmonary TB were found in the adult age group, namely the 25-34 year age group at 18.65%, in second place the 45-54 year age group at 17.33%, and in third place in the 35-44 year age group at 17.18%. In North Aceh there were 824 cases of pulmonary TB, but the success rate of treatment only reached 76.5% (North Aceh Health Profile, 2020). Riskesdas data states that the cause of the failure of the pulmonary TB treatment program is because 16.54% of patients feel that pulmonary TB treatment takes a long time, 37.51% of patients feel that they are healthy even though treatment has not been completed and 28.42 patients do not have regular check-ups.

Knowledge about health is also a supporting factor for someone to avoid the risk of disease. In the process of increasing knowledge, there are several methods that can be done. One of them is through education <sup>[2]</sup>. Education is an interactive

process with the aim of providing learning, and is a way to add new knowledge, attitudes, and skills through strengthening certain practices and experiences by individuals or groups and communities. The means to deliver health education require media that can later increase knowledge and change behavior in a positive direction [3]. There are several media that can be used in health promotion, including audiovisual media [4].

Audiovisual media is media that can be heard and seen. One of the audiovisual media that can be used in health education is video [5]. Audiovisual media is one of the media used as an intermediary for presenting material to the public, the absorption of which is through the audio that is heard and the visuals that are seen, with the aim of encouraging the public to gain certain insights, skills or behavior [6]. Audiovisual media is able to optimize the stimulation of knowledge from the five senses to the brain through the eyes by around 75%–85% while 13%–25% of human knowledge is obtained and transferred through the other five senses [7].

Research conducted Yanti *et al.* (2022) [8], there is an increase in knowledge, attitudes and preventive behavior of pulmonary TB disease in the Islamic boarding school environment through audiovisual media and direct lecture techniques in the health counseling program. The research conducted Agustina *et al.* (2024) [9] stated that at Depok Regional Hospital there was an influence of providing audiovisual media-based education on medication compliance in tuberculosis patients before and after treatment.

In the North Aceh Regional General Hospital, there are significant challenges related to the effectiveness of audiovisual-based education on self-management of pulmonary TB patients. Although efforts have been made to provide patients with an understanding of the importance of self-management in dealing with pulmonary TB disease, several problems have emerged [10]. First, low awareness among patients about medication adherence, proper nutrition, and hygiene practices may lead to lack of motivation to manage their disease effectively. Second, limited access to necessary education may be a barrier, either due to lack of resources in the hospital or lack of appropriate educational programs. Third, patients' ability to understand the material may be hampered, especially if the information is presented in a format that is not appropriate to their level of understanding. Fourth, even if the concept of self-management is understood, implementing the practice in daily life may be difficult due to factors such as financial constraints or lack of social support. Finally, lack of post-education monitoring and support from the hospital may also hinder the effectiveness of the program [11].

### Research methods

This study used a quasi-experimental design with a pre-post with control group design to evaluate the effectiveness of audiovisual-based education on the level of self-management in tuberculosis patients at the Cut Meutia Regional General Hospital, North Aceh in 2023. In this

study, the experimental group will receive an intervention in the form of audiovisual-based education in the form of a video about Pulmonary TB Disease and self-management, while the control group will not receive the intervention. Data will be collected at two different times, namely before and after the intervention, to see changes in the level of self-management between the two groups. By using a control group, this study allows for controlling other factors that may affect the results of the study and more accurately evaluating the effects of audiovisual-based education on self-management of tuberculosis patients. The population in this study was 187 people. The sample for this study was based on the Cohen table, namely 123 respondents, added 10% to 136 respondents, namely 68 people for the intervention group and 68 people for the control group. The inclusion criteria for the study were patients who had been diagnosed with pulmonary tuberculosis; aged 18 years and over; undergoing pulmonary TB therapy for more than one week; able to communicate and have good hearing and understand Indonesian; Willing to participate in research and follow audiovisual-based education; no complications. While the exclusion criteria are patients with a history of significant mental health disorders that can hinder their ability to understand and follow education; are pregnant or breastfeeding; are undergoing pulmonary TB therapy for less than one week and have comorbidities that can affect the ability to participate in research or respond to education.

### Results

This study aims to evaluate the effectiveness of audiovisual-based education on self-management of Pulmonary TB patients at the North Aceh Regional General Hospital. The results of the study are presented in the following tables and graphs.

#### Frequency Distribution of Demographic Data of Respondents in the Intervention Group and Control Group

Table 1 shows that in the intervention group, most respondents were in the early elderly category (46-55 years old), namely 30 respondents (44.1%), gender was mostly male, 46 respondents (67.6%), education was mostly secondary education, 55 respondents (80.9%), occupation was mostly laborers, 29 respondents (42.6%), respondents did not have a history of pulmonary TB disease, 68 respondents (100%), health education about pulmonary TB was mostly never received, 67 respondents (98.5%). While for the control group, most respondents were in the early elderly category (46-55 years old), namely 26 respondents (38.2%), gender was mostly male, 58 respondents (85.3%), education was mostly elementary education, 60 respondents (88.2%), occupation was mostly laborers, 27 respondents (39.7%), respondents did not have a history of pulmonary TB disease, 68 respondents (100%), health education about pulmonary TB was mostly never received, 67 respondents (98.5%).

**Table 1:** Frequency Distribution of Respondent Characteristics (n=136)

| Demographic Data                           | Group Intervention |      | Group Control |      |
|--------------------------------------------|--------------------|------|---------------|------|
|                                            | f                  | %    | f             | %    |
| <b>Age</b>                                 |                    |      |               |      |
| Early Adulthood (26-35 years)              | 9                  | 13.2 | 3             | 4.4  |
| Late Adulthood (36-45 years)               | 15                 | 22.2 | 21            | 30.9 |
| Early Elderly (46-55 years)                | 30                 | 44.1 | 26            | 38.2 |
| Late Elderly (56-65 years)                 | 12                 | 17.6 | 17            | 25.2 |
| Seniors (>65 years)                        | 2                  | 2.9  | 1             | 1.3  |
| <b>Gender</b>                              |                    |      |               |      |
| Man                                        | 46                 | 67.6 | 58            | 85.3 |
| Woman                                      | 22                 | 32.4 | 10            | 14.7 |
| <b>Education</b>                           |                    |      |               |      |
| College                                    | 6                  | 8.8  | 5             | 7.4  |
| Secondary Education                        | 55                 | 80.9 | 3             | 4.4  |
| basic education                            | 7                  | 10.3 | 60            | 88.2 |
| <b>Work</b>                                |                    |      |               |      |
| Laborer                                    | 29                 | 42.6 | 27            | 39.7 |
| Doesn't work                               | 17                 | 25   | 22            | 32.4 |
| Self-employed                              | 22                 | 32.4 | 19            | 27.9 |
| <b>History of pulmonary TB</b>             |                    |      |               |      |
| There is                                   | 0                  | 0    | 0             | 0    |
| There isn't any                            | 68                 | 100  | 68            | 100  |
| <b>Health education about pulmonary TB</b> |                    |      |               |      |
| Once                                       | 1                  | 1.5  | 1             | 1.5  |
| Never                                      | 67                 | 98.5 | 67            | 98.5 |
| <b>Total</b>                               | 68                 | 100  | 68            | 100  |

**Table 2:** Frequency Distribution of Knowledge and Motivation in the Intervention Group and Control Group Before and After Intervention

| Variables         | Group        | Mean  | Standard Deviation | Min | Max | Normality Test (P-Value) |
|-------------------|--------------|-------|--------------------|-----|-----|--------------------------|
| <b>Knowledge</b>  |              |       |                    |     |     |                          |
| Pre-test          | Intervention | 17.07 | 1,238              | 15  | 20  | 0,000                    |
|                   | Control      | 13.84 | 2,276              | 5   | 18  | 0,000                    |
| Post-test         | Intervention | 18.63 | 1,158              | 17  | 20  | 0,000                    |
|                   | Control      | 15.91 | 2,121              | 11  | 20  | 0.017                    |
| <b>Motivation</b> |              |       |                    |     |     |                          |
| Pre-test          | Intervention | 58.01 | 5,481              | 51  | 75  | 0,000                    |
|                   | Control      | 56.40 | 8,919              | 42  | 80  | 0.004                    |
| Post-test         | Intervention | 75.87 | 3,071              | 71  | 83  | 0.004                    |
|                   | Control      | 63.85 | 7,905              | 46  | 80  | 0.200                    |

Table 2 shows the analysis to compare the average of two different independent groups. Overall, this table shows an increase in knowledge and motivation of pulmonary TB patients after intervention in both groups, although the data distribution is not normal. Furthermore, to determine the difference in scores of each variable based on the group, a difference analysis was carried out using the Mann Whitney test. (The Mann Whitney test is a non-parametric difference test (data is not normally distributed) between 2 independent sample groups.

Knowledge of Pulmonary TB Patients in the Intervention Group had an average rank value of 96.67 with a total rank of 6573.50 while in the control group had an average rank value (Mean Rank) of 40.33 with a total rank (Sum Of Ranks) of 2742.50. The P value (0.000) <0.05 means that there is a significant difference in the Pre-test score of Pulmonary TB Patient Knowledge in the control and Intervention groups. Based on the Mean Rank, the Pre-test score of Pulmonary TB Patient Knowledge in the Intervention group was greater than the control group.

**Table 3:** Mann Whitney test

| Variables         | Intervention Group (n= 68) |              | Control Group (n= 68) |              | P-Value |
|-------------------|----------------------------|--------------|-----------------------|--------------|---------|
|                   | Mean Rank                  | Sum of Ranks | Mean Rank             | Sum of Ranks |         |
| <b>Knowledge</b>  |                            |              |                       |              |         |
| Pre Test          | 96.67                      | 6573.50      | 40.33                 | 2742.50      | 0,000   |
| Post Test         | 93.27                      | 6342.50      | 43.73                 | 2973.50      | 0,000   |
| <b>Motivation</b> |                            |              |                       |              |         |
| Pre Test          | 75.97                      | 5166.00      | 61.03                 | 4150.00      | 0.027   |
| Post Test         | 96.49                      | 6561.50      | 40.51                 | 2754.50      | 0,000   |

Based on Table 3, the analysis of the difference test using the Mann Whitney U Test with the pre-test results of the

## Discussion

The results of the analysis showed that there was a difference in the level of knowledge of Pulmonary TB patients before and after the intervention at the North Aceh General Hospital with the post-test results obtained a p-value of 0.008. Audiovisual-based education carried out on Pulmonary TB patients can increase the knowledge of these patients. This is very helpful for TB patients in completing their treatment so that TB patients can recover from their disease.

This study shows that the knowledge of tuberculosis sufferers is in the good category, namely 71 (57.7%), the motivation of tuberculosis sufferers is in the high category, namely 86 (69.9%), and the compliance of tuberculosis

sufferers in taking medication is in the compliant category, namely 69 (56.1%), using the Chi-square statistical test where the degree of confidence used is 95% and  $\hat{I}\pm = 0.5$ , the ap value for knowledge is 0.000 and the ap value for motivation is 0.009<sup>[12]</sup>.

In this study and from several studies with audiovisual-based education methods, it was found that audiovisual-based education is more effective than other methods in increasing patient knowledge. Thus, it can be concluded that  $H_0$  is rejected, namely there is a difference in the level of knowledge in Pulmonary TB patients before and after audiovisual-based education was carried out in the intervention group and control group.

In the motivation variable, there are differences in the motivation of Pulmonary TB patients before and after the intervention at the North Aceh General Hospital with the post-test results obtained a p-value of 0.001. Audiovisual-based education carried out on Pulmonary TB patients can increase patient motivation in completing TB treatment and to prevent TB disease for other family members.

This study reveals the impact and pathway of TB knowledge, health education, health worker support, and family support on TB patients' self-management behavior through path analysis. Assessing patients' needs for TB patient self-management along with promoting effective TB health education and providing explicit support from health workers and family members are potential strategies to promote TB patients' self-management behavior<sup>[13]</sup>.

It is important to develop a new approach related to TB patients' beliefs about healthy behavior (health beliefs) in order to improve treatment compliance and treatment success by integrating HBM and MI-based health education models in a sustainable manner<sup>[14]</sup>. This education is based on the view that individual behavior is influenced by psychological impulses, while MI is more focused on efforts to strengthen self-efficacy which gives patients the confidence and enthusiasm to undergo long-term treatment<sup>[15]</sup>.

From the results of the research and analysis of the researcher, there is a significant difference in the motivation of TB patients before and after audiovisual-based education was carried out in the intervention group and the control group. This study also answers the Social Cognitive Theory where the theory emphasizes increasing motivation<sup>[16]</sup>. If the motivation of TB patients increases towards the disease they suffer from, then compliance in taking medication will be better, so that patients can also recover from TB<sup>[17]</sup>.

## Conclusion

There is an influence of the level of knowledge and motivation before and after audiovisual-based education. Self-management in patients with pulmonary TB involves using the knowledge, skills, and support gained through education to manage their daily health conditions. This includes adherence to treatment, infection prevention practices, and efforts to improve quality of life despite the challenges of chronic diseases such as pulmonary TB.

## Recommendation

This study recommends that hospitals provide media for health promotion and health education in an effort to improve the knowledge and motivation of pulmonary tuberculosis patients related to the disease they suffer from. Nurses in the Pulmonary room should continue to improve

their knowledge, attitude and skills to improve the knowledge and motivation of pulmonary tuberculosis patients through reading materials, seminars, training and other media. Respondents in this study were pulmonary tuberculosis patients in various age groups, with different genders, education levels, occupations and pulmonary tuberculosis histories so that it is difficult to achieve sample homogeneity. Therefore, it is expected that further researchers can consider this.

## References

1. WHO. Global Tuberculosis Report 2023, 2023.
2. Musiimenta A, Tumuhimbise W, Atukunda EC, Mugaba AT, Muzoora C, Armstrong-Hough M, *et al*. Mobile Health Technologies May Be Acceptable Tools for Providing Social Support to Tuberculosis Patients in Rural Uganda: A Parallel Mixed-Method Study. *Tuberc Res Treat*. 2020; 2020(1):7401045.
3. Chen X, Du L, Wu R, Xu J, Ji H, Zhang Y, *et al*. The effects of family, society and national policy support on treatment adherence among newly diagnosed tuberculosis patients: A cross-sectional study. *BMC Infect Dis*. 2020; 20:1-11.
4. Lubis SMS, Irawan A, Musta'in. The effect of audio visual education of self-care behavior on increasing knowledge of hypertension sufferers in adulthood. *Journal of Nursing Practice and Education*. 2023; 4(1):39-44.
5. Jatmika S. Development of Health Promotion Media. Yogyakarta: K-media, 2019.
6. Hidayat W. Development of Audio Visual Information Service Media for Understanding the Dangers of Drugs in High Schools. (Doctoral Dissertation, UIN Raden Intan Lampung, 2019.
7. Fernalia Busjra, Jumaiyah W. Effectiveness of Audiovisual Education Method on Self Management in Hypertension Patients. *Silampari Nursing Journal*. 2019; 3(1):221-233.
8. Yanti B, Heriansyah T, Riyan M. Counseling with Audio Visual Media and Lecture Methods Can Improve Tuberculosis Prevention. *Ikesma*. 2022; 18(3):171.
9. Agustina AH, Purnama A, Koto Y. The Effect of Audiovisual Media-Based Education on Medication Compliance in Tuberculosis Patients. 2024; (50):376-384.
10. Wang ZY, Zhang LJ, Liu YH, Jiang WX, Jia JY, Tang SL, *et al*. The effectiveness of E-learning in continuing medical education for tuberculosis health workers: A quasi-experiment from China. *Infect Dis Poverty*. 2021; 10(1):72.
11. Vigenschow A, Edoa JR, Adegbite BR, Agbo PA, Adegnika AA, Alabi A, *et al*. Knowledge, attitudes and practices regarding tuberculosis among workers in Moyen-Ogooué Province, Gabon. *BMC Infect Dis*. 2021; 21(1):486.
12. Arisara G, Azzahra DNN. Relationship Between Level of Knowledge and Motivation with Anti-Tuberculosis Drugs Adherence in Tuberculosis Patients. *PHSAJ-Public Health Eleven April Journal*. 2022; 1(2):35-39.
13. Du L, Chen X, Zhu X, Zhang Y, Wu R, Xu J, *et al*. Determinants of medication adherence for pulmonary tuberculosis patients during continuation phase in Dalian, Northeast China. *Patient Prefer Adherence*, 2020, 1119-1128.

14. Parwati NM, Bakta IM, Januraga PP, Wirawan IMA. A health belief model-based motivational interviewing for medication adherence and treatment success in pulmonary tuberculosis patients. *Int J Environ Res Public Health*. 2021; 18(24):13238.
15. Barik AL, Indarwati R. The role of social support on treatment adherence in TB patients: A systematic review. *Nurse and health: Journal of Nursing*. 2020; 9(2):201-210.
16. Zaidi I, Sarma PS, Khayyam KU, Toufique Ahmad Q, Ramankutty V, Singh G. Factors associated with treatment adherence among pulmonary tuberculosis patients in New Delhi. *Indian Journal of Tuberculosis*. 2024; 71:S52-8.
17. Mulaku MN, Nyagol B, Owino EJ, Ochodo E, Young T, Steingart KR. Factors contributing to pre-treatment loss to follow-up in adults with pulmonary tuberculosis: A qualitative evidence synthesis of patient and healthcare worker perspectives. *Global Health Action*. 2023; 16(1):2148355.