



The Effect of Health Education with Leaflet Media on Improving Knowledge and Attitude of Tb Patients at Rotinsulu Pulmonary Hospital, Bandung

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Abstract:

Background: Mycobacterium tuberculosis is the bacterium that causes tuberculosis, an infectious disease that targets the lungs, particularly the lung parenchyma.

Aims: This study aims to increase the understanding and mindset of the patient's family about tuberculosis prevention therapy and other aspects of TB prevention and treatment through health education, especially by utilizing media such as leaflets.

Methods: Pre-experiment design using the One Group Pre-test-Post-test research method is the type of study being conducted. There were 412 participants in this study. Using a purposive sampling technique, 30 persons made up the study's sample. A questionnaire was the tool utilized. The KEPK STIK Immanuel Bandung has recommended this study (No.132/KEPK/STIKI/XII/2021).

Result: According to the study's findings, the majority of respondents had adequate understanding (80.0%) prior to receiving leaflets, and a good level of knowledge (83.3%) following leaflet distribution. The majority of respondents had a good attitude before receiving the leaflets (70.0%), and this attitude remained positive after receiving the leaflets (96.7%). Health Education Through Leaflet Media Has an Impact on TB Knowledge patients both prior to and following the operation. Health education using leaflet media has an impact on TB patients' attitudes both before and after the intervention.

Conclusion: The findings indicate that health education via leaflet media has an impact on the attitudes and knowledge of patients with pulmonary tuberculosis. It is suggested that Rotinsulu Regional Hospital establish a regular health education program.

Keywords: Attitude, Health education, Influence, Leaflet, Tuberculosis

1. INTRODUCTION

TB is an infectious disease that affects the lungs, particularly the lung parenchyma, and is brought on by an infection with the Mycobacterium tuberculosis bacteria (Ministry of Health of the Republic of Indonesia, 2022). In addition to the lungs, the heart, kidneys, brain, bones, and lymph nodes can also be attacked by TB bacteria (World Health Organization [WHO], 2022). When

persons with active tuberculosis cough, sneeze, talk, or spit, the germs active tuberculosis cough, sneeze, talk, or spit, the germs contaminate the air and disseminate as droplets that other people can inhale (Yulianti et al., 2022). Additionally, tuberculosis does not often exhibit obvious signs from the onset of infection. The immune system of a person infected with Mycobacterium tuberculosis bacteria can control the bacteria so that it does not cause clinical symptoms of tuberculosis, but it cannot totally eradicate the bacteria, which is known as latent tuberculosis or latent TB infection (Ministry of Health of the Republic of Indonesia, 2020). It can progress to active tuberculosis and result in severe clinical symptoms if treatment is not received (Centers for Disease Control and Prevention, 2024).

With millions of new cases reported annually, tuberculosis continues to pose a major health risk in Indonesia. According to WHO estimates, there were 10 million TB infections globally in 2020, with Southeast Asia, including Indonesia, accounting for 44% of those cases. More than 724,000 new TB cases were reported in Indonesia in 2022; by 2023, that number is expected to rise to 809,000.

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According to the Global TB Report 2022, 11 million people die in Indonesia per hour. With about 144,000 fatalities from TB in 2021 or 52 deaths per 100,000 people Indonesia has a high TB death rate. Increased efforts in early detection, prevention, and efficient treatment are necessary to lessen the burden of tuberculosis.

Despite substantial attempts to prevent TB, there are still significant obstacles in addressing the rise in TB cases. The primary issues are high rates of disease transmission in susceptible communities, inadequate awareness of TB prevention and control, and limited access to high-quality treatment facilities. Additionally, the national TB elimination strategy outlined in Presidential Regulation Number 67 of 2021 concerning TB Control, as well as other prevention measures, are crucial (Ministry of Health of the Republic of Indonesia, 2021).

Health education for the patient's family is a crucial part of the fight against tuberculosis. The goal of this education is to enhance the family's understanding and mindset about tuberculosis preventative therapy and other aspects of TB prevention and treatment (Puspitasari et al., 2023). Media that promotes health education is also crucial in raising family awareness and knowledge of a range of health issues. Leaflets and other educational materials help communicate health facts in an engaging and straightforward manner so that it can promote positive attitudes toward supporting preventative efforts and help raise family awareness of the significance of this therapy (WHO, 2022). Promoting healthy behavior changes is the primary goal of health education. For instance, educating people on the value of immunizations, hand washing, and leading a healthy lifestyle can alter behavior and lower the likelihood of infectious disease transmission (Oktaviana et al., 2023).

Leaflets are a cost-effective and efficient instructional medium. Small pamphlets with clear and succinct health information are called leaflets (Kiswari & Pratiwi, 2021). Because leaflets may reach a large number of people at a relatively low cost, their use is tremendously advantageous. Additionally, leaflets are convenient to carry and store, allowing the public to access the information at any time. Leaflets can effectively educate readers about the value of preserving health and preventing sickness by using an eye-catching design and straightforward wording (Zakiah et al., 2023).

2. MATERIAL AND METHODS

This study employs quantitative research techniques using the One Group Pre-Test-Post-Test research method and the Pre-Experiment Design research type. 412 newly diagnosed pulmonary tuberculosis patients from January to September 2021 at the Rotinsulu Lung Hospital comprised the study's population. Using the purposive

sampling technique, 30 persons made up the sample for this study. A questionnaire with supplementary materials in the form of leaflet media was the tool utilized. Data analysis was carried out to answer research problems through statistical analysis using computer tools via SPSS (Statistical Packages for Service Solution) software.

3. RESULTS AND DISCUSSION

3.1 Result

3.1.1 Univariate Analysis

Table 1. Frequency Distribution of Respondents' Level of Knowledge Before Being Given Health Education Through Leaflet Media

Knowledge	Frequency	(%)
Enough	25	83,3
Not	5	16.7
Enough		
Total	30	100 %

Based on Table 1, it can be seen that the majority of respondents had a sufficient level of knowledge, namely 25 people (83.3%). The knowledge score before being given the leaflet was a minimum of 5, a maximum of 9 with an average of 7.03.

Table 2. Frequency Distribution of Respondents' Level of Knowledge After Being Given Health Education Through Leaflet Media

Knowledge	Frequency	(%)
Enough	6	20.0
Not	24	80.0
Enough		
Total	30	100.0

Table 2 shows that the majority of respondents—24 individuals, or 80.0%—have an adequate level of expertise. After receiving the booklet, the knowledge score ranged from a minimum of 6 to a maximum of 10, with an average of 8.03.

Table 3. Frequency Distribution of Respondents' Attitudes Before Being Given Health Education Through Leaflet Media

Attitude	Frequency	(%)
Positive	21	70 %
Negative	9	30 %
Total	30	100 %

Table 3 shows that 21 individuals (70.0%), or the majority of respondents, have a positive attitude.

Table 4. Frequency Distribution of Respondents' Attitudes After Being Given Health Education Through Leaflet Media

Attitude	Frequency	(%)
Positive	29	96.7 %
Negative	1	3.3 %

Attitude	Frequency	(%)
Total	30	100 %

Table 4 shows that the majority of respondents—29 individuals, or 96.7%—have a positive outlook.

3.1.2 Bivariate Analysis

Table 5. The effect of health education through leaflet media on the knowledge of pulmonary TB patient's leaflet

	Knowledge		Asymptotic Significance (2-sided)
	Pretest	Posttest	
Good	-	6(20%)	0,000
Enough	25(83,3%)	24(80%)	
Not enough	5(16,7%)	-	
Total	30(100%)	30(100%)	

Based on the Table 5, it can be explained that the Wilcoxon test results' 2-sided Asymptotic Significance value is $0.000 < 0.05$, indicating that there is an effect of

health education through leaflet media on TB patient knowledge both before and after the intervention.

Table 6. The influence of health education through leaflet media on the attitudes of pulmonary TB patient's leaflet

	Stance		Asymptotic Significance (2-sided)
	Pretest	Posttest	
Positive	21 (70%)	29 (96,7%)	0,000
Negative	9 (30%)	1 (3,3%)	
Total	30 (100%)	30 (100%)	

The aforementioned table explains why the Wilcoxon test results' 2-sided Asymptotic Significance value is $0.000 < 0.05$, indicating that health education through leaflet media had an impact on TB patients' attitudes both before and after the intervention.

3.1 Discussion

3.1.1 Frequency of Respondents' Knowledge Level Before and After Being Given Health Education Through Leaflet Media

Table 1. shows that the majority of respondents—25 individuals, or 83.3%—had a satisfactory level of expertise. Prior to receiving the booklet, the knowledge score ranged from a minimum of five to a maximum of nine, with an average of seven.03. Table 2 shows that the majority of respondents—24 individuals, or 80.0%—have an adequate level of expertise. After receiving the booklet, the knowledge score ranged from a minimum of 6 to a maximum of 10, with an average of 8.03.

A person who is knowledgeable about tuberculosis and transmission prevention plays a crucial role in efforts to stop the spread of pulmonary tuberculosis disease.

Nasution et al. (2022) state that a lack of knowledge can result in poor health behaviors and promote the spread of the disease. All nations are urged by the World Health Organization (WHO) to work toward raising public awareness of pulmonary tuberculosis (TB) disease, transmission, prevention, and treatment. Numerous studies demonstrate that raising public awareness can greatly enhance TB control. Giving advice on how to use leaflets and posters is an informational.

recommendation that could positively influence the public's ability to learn about tuberculosis. In order to help people accept and comprehend TB, the media presents engaging content. At the moment, information is easily accessible due to the abundance of information sources; yet, prevention requires assistance (Widiharti et al., 2022).

A study on 35 TB-affected households was carried out at the UPTD Payo Selincah Health Center in Jambi City (Putri et al., 2022). With a p-value of 0.000, this study demonstrated a significant difference between respondents' knowledge before and after receiving health education. Additionally, there was a significant difference

(p-value of 0.000) between the prevention of TB transmission by families before and after the intervention.

3.1.2 Frequency Distribution of Respondents' Attitudes Before Being Given Health Education Through Leaflet Media.

Table 3 shows that 21 individuals (70.0%), or the majority of respondents, have a positive attitude. Table 4 shows that the majority of respondents—29 individuals, or 96.7%—have a positive outlook.

According to Prasetya (2020), knowledge is the primary determinant of an individual's attitude; the more knowledge acquired, the more favorable the outcome will be. A person's attitude improves with increasing information; on the other hand, a person with poor knowledge will have a negative attitude. Based on experience, also affect how someone feels about a certain item. Even when they possess good information, some people may not necessarily have a positive attitude since some people simply know things without being able to develop a positive attitude. To readily establish a positive and long-lasting attitude, awareness, environmental conditions, and solid family support are required.

Fikri, et al. (2024) state that one of the elements influencing an individual's health-related behavior is their age. It is reasonable to anticipate that an individual who leads a normal life will have more experience, a broader knowledge base, a deeper level of competence, and a more optimistic outlook as they age. Similar to this, education is a process that involves balancing a person's skills, dispositions, and other social behaviors. One strategy for altering human behavior is education.

In their research, Andriani and Sukardin (2020) found that a person's age and level of education can have an impact on how their attitudes and behavior patterns develop. A person's outlook is more positive, their emotional control is steadier, and they are usually more mature as they age. In the same way, a person's attitude improves with increasing educational attainment.

3.1.3 The influence of health education through leaflet media on the knowledge of pulmonary TB patients.

Public knowledge and attitudes are positively impacted by health education delivered through leaflets. According to this study, knowledge and attitudes regarding tuberculosis prevention are significantly impacted by health education provided through leaflets. Health through action and information, education is a tool that empowers communities. Brochures are helpful tools for presenting science in a way that is simple to comprehend and accept. Khaerani's research indicates that media use in health education can enhance attitudes and knowledge regarding health issues (Khaerani et al., 2020).

Wahyuni et al. (2022) asserts that leaflets have the following benefits: they are long-lasting, reach a large audience, don't cost a lot of money or require electricity, and are portable, all of which are in line with theory. They

can also convey a sense of beauty, make things easier, enhance comprehension, and boost motivation for learning. Among the media that can help researchers educate respondents about health, make learning more engaging and creative, and—above all—improve educational results are leaflets. According to Wahyuni et al. (2022), leaflets are a source of information presented in a page style with visuals to enhance reader appeal and using easily comprehensible language.

(Kamilah et al., 2024) Research Increased knowledge and attitudes regarding tuberculosis prevention are positively impacted by health education delivered through leaflets. Through information and action, health education is a tool that empowers communities. According to the study's findings (Susanto et al., 2023), there is compelling evidence that health education has a favorable impact on raising awareness of tuberculosis. Mardila et al. (2023) found that knowledge of preventing the spread of tuberculosis differed significantly between before and after receiving health education through audio-visual medium.

3.1.4 The influence of health education through leaflet media on the attitudes of pulmonary tuberculosis patients.

The aforementioned table explains why the Wilcoxon test results' 2-sided Asymptotic Significance value is $0.000 < 0.05$, indicating that health education through leaflet media had an impact on TB patients' attitudes both before and after the intervention.

The proportion of respondents that switched to positive suggests that health education was well received by those in the treatment group, indicating that people were aware of the importance of adopting a positive outlook in order to prevent pulmonary tuberculosis. Respondents who were indifferent to preventing pulmonary tuberculosis were the reason for the shift in attitude from a positive attitude to a lot of negative ones, in contrast to the control group's attitude (Wahyuni et al., 2022).

According to research by Susanto (2023), TB patients' attitudes toward preventing the disease are influenced by health education on the disease. The study's findings also demonstrated how health education improved respondents' views toward stopping the spread of tuberculosis. demonstrating that respondents' views significantly improved in the experimental group.

3.1.5 Implications

The present study demonstrates that leaflet-based health education can produce meaningful gains in both knowledge and attitudes related to tuberculosis prevention, implying that concise printed materials remain a viable component of public health education strategies in primary care and community settings. Given their low cost, portability, and ease of distribution, leaflets can complement face-to-face counseling and serve as a persistent reference for patients after counseling sessions (Pratiwi, 2022). Moreover, recent evaluations indicate that combining printed materials with brief interpersonal explanation enhances comprehension and retention among

diverse populations (Puspitasari, 2024; Sutiawati, 2024). Therefore, health programs should consider integrating well-designed, culturally adapted leaflets into routine health promotion packages, while monitoring their reach and acceptability among target groups (Baity, 2023). Implementation should be accompanied by periodic content review and user feedback to ensure clarity and relevance (Fera, 2024).

3.1.6 Research contribution

This research adds empirical support to the notion that low-technology communication tools continue to play an important role in health promotion by improving both cognitive (knowledge) and affective (attitude) domains. The significant pre-post improvements observed here align with reports from several recent field studies that document similar effects of leaflet and combined leaflet-video interventions in clinical and community contexts (Dameria et al., 2022; Kusumawati, 2024). By providing field-based evidence from a real-world primary care setting, the study contributes practical insights for policymakers and program managers who must allocate limited resources: relatively small investments in printed educational materials can yield measurable changes in proximal outcomes that may support broader disease-control objectives (Mitra, 2023). In addition, the findings offer a contextualized dataset that future comparative studies (e.g., leaflet vs. audiovisual interventions) can use as a baseline for evaluating relative effectiveness.

3.1.7 Limitations

Several limitations constrain interpretation and generalizability. First, the study design assessed outcomes shortly after the intervention, so the persistence of knowledge and attitude changes over longer intervals remains unknown; longitudinal assessment would be necessary to determine durability (Pratiwi, 2022). Second, most comparable studies note that single-site or small-sample designs limit external validity, and the current research shares that constraint (Sutiawati, 2024). Third, while self-reported knowledge and attitude measures are useful for detecting short-term changes, they are vulnerable to social-desirability bias and do not necessarily translate directly into sustained behavior change or clinical outcomes; future work should incorporate objective behavioral indicators or adherence metrics (Puspitasari, 2024; Baity, 2023). Finally, without randomized comparisons to alternative media (e.g., video, mobile messaging), it is not possible to claim superiority of leaflets (Kusumawati, 2024).

3.1.8 Suggestion

For Dr. Rotinsulu Bandung Lung Hospital.

- a. A schedule for providing regular health education is created because it has quite an impact on the knowledge and attitudes of patients and visitors in efforts to prevent the transmission of tuberculosis.
- b. Increase information both through print and electronic media about the dangers, prevention,

transmission and treatment of tuberculosis and its risks.

For the Immanuel Bandung STIKes Educational Institution it can be used as a reference in further research to continue the results of this research, so that health education through leaflet media can increase knowledge and attitudes about pulmonary TB disease.

4. CONCLUSIONS

Prior to receiving health education through leaflets, 83.3 percent of TB patients knew enough about them. After receiving health education through leaflets, TB patients' knowledge falls into the good group (80.0%), and their attitudes prior to receiving health education about tuberculosis fall into the favorable category (70.0%). After receiving health education on tuberculosis, 96.7% of TB patients had a positive attitude. Health education via leaflet media has an impact on pulmonary tuberculosis patients' attitudes and knowledge.

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AUTHOR CONTRIBUTION STATEMENT

All authors played an active and meaningful role in carrying out this study. They worked collaboratively, dividing and completing tasks together throughout the research process. Each author shared responsibility and remained ready to support one another whenever required, allowing the work to progress smoothly and effectively. As a result, all authors jointly take full responsibility for the content of this manuscript.

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