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The Effect of Health Promotion on Health Cadres' Knowledge of Tuberculosis Preventive Therapy in Sukorame, Kediri

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ABSTRACT

Pulmonary tuberculosis (TB) remains a major global health challenge and is the second leading cause of death from infectious diseases after COVID-19. In Indonesia, the incidence of TB is among the highest worldwide, with East Java ranked second nationally. Knowledge and adherence to Tuberculosis Preventive Therapy (TPT) are still limited, particularly among communities at risk, making health education crucial. This study aimed to analyze the effect of health promotion on the knowledge of health cadres regarding tuberculosis preventive therapy in Sukorame, Kediri. A pre-experimental analytic study with a one-group pretest-posttest design was conducted among 41 active health cadres. Data were collected through a questionnaire covering knowledge, attitude, and practice related to TPT. Health education was delivered via presentations and leaflets, and knowledge was assessed before and after the intervention. The results showed a significant improvement in cadres' knowledge, with pretest scores indicating poor knowledge in all respondents (100%), while posttest scores showed 52% with good knowledge, 44% with moderate knowledge, and only 4% with poor knowledge. Statistical analysis using the Wilcoxon test confirmed a significant difference (p = 0.000). It can be concluded that health promotion effectively increased health cadres' knowledge of TB preventive therapy. Continuous monitoring and follow-up are recommended to sustain behavioral changes and strengthen TB prevention efforts.

Introduction

Pulmonary tuberculosis (TB) remains a significant global public health issue, ranking as the second leading infectious killer after COVID-19, with mortality rates reaching 13 deaths per hour. In 2020, 30 countries accounted for 85% of new TB cases, with Indonesia ranked second among countries with the highest TB burden[1]. Currently, Indonesia ranks third globally in TB incidence, with 845,000 cases and 98,000 deaths. East Java is the province with the second-highest number of TB cases in Indonesia, with 81,753 cases reported[2].

In 2018, the World Health Organization (WHO) hosted its first high-level meeting on TB, where world leaders reaffirmed their commitment to the 2030 SDG target of reducing TB deaths by 90% and TB incidence by 80%. One of the four global targets includes providing Tuberculosis Preventive Therapy (TPT) to at least 30 million people within five years, previously known as Isoniazid Preventive Therapy (IPT)[2]. Indonesia has committed to providing TPT to 1.5 million individuals by 2022. Modeling studies by Dye et al, have shown that achieving the 2035 End TB Strategy target requires a combination of effective active TB treatment and TB prevention efforts through TPT for latent TB infection[3].

Indonesia has implemented IPT for two high-risk populations: people living with HIV

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and children under five who live with active TB patients but do not show signs of TB disease. However, the implementation remains far below the 2018 target of 40%[2]. Another major challenge is the low adherence and completion rates of TPT, partly due to the prolonged treatment duration. Additionally, the general public's knowledge of TPT remains limited, contributing to the high risk of TB transmission in Indonesia. Providing education and awareness about TB preventive therapy is crucial. If the public understands its importance, it may indirectly reduce TB incidence[4].

Sukorame Subdistrict, located in Kediri, East Java is an appropriate area for conducting TPT education programs. The region has a high proportion of productive-age individuals, who also represent the majority of TB cases in the area[5]. Health cadres—community-based volunteers in public health—are influential within this age group and can serve as role models, fostering social responsibility and health awareness[6]. In Sukorame, health cadres are notably active in supporting various health programs of the local health center named Puskesmas Sukorame[7].

Health information can be delivered in various ways, including education sessions. A study by Ernawati et al. Found that education improved respondents' knowledge on TB transmission prevention by 85.7% and improved knowledge and practice related to mask usage by 100%[8]. Similarly, training programs for Directly Observed Treatment (DOT) supervisors have shown improvements in participants' understanding of TB and their role in treatment adherence[9]. However, such interventions, including TB education and DOT training, have not yet been conducted in Sukorame. Therefore, this study aims to conduct a community service initiative in the form of TB preventive therapy education for local health cadres, given their role as community health influencers. The goal is to enhance their knowledge, attitudes, practices regarding pulmonary TB, and to assess the impact of the intervention on improving their knowledge of TB preventive therapy.

Methodology

This study employed a pre-experimental analytical design with a one-group pretest-posttest approach to evaluate the effectiveness of a community-based health education intervention on tuberculosis preventive therapy knowledge among health cadres in Sukorame Subdistrict, Kediri, East Java. The study population consisted of tuberculosis health cadres residing in Sukorame. Inclusion criteria required participants to be active health cadres in the village who willingly participated in the study. Those who declined or were unable to attend the health education session were excluded. A total of 41 participants were included in the study.

The intervention was conducted directly during routine health cadre meetings and knowledge updates at Puskesmas Sukorame with the assistance of healthcare staff. The activities began with an opening session followed by a pre-test. Health education was delivered through a presentation and distribution of leaflets covering tuberculosis preventive therapy. The session ended with a post-test, a question-and-answer session, and closing remarks, followed by regular health cadre activities. The instrument used was a questionnaire designed to assess knowledge, attitude, and practice (KAP) related to tuberculosis preventive therapy. The questionnaire contained 10 items, including respondent identity, knowledge, attitude, and behavior aspects, adapted from the Technical Guidelines for Latent Tuberculosis Infection Management, Ministry of Health Indonesia, 2020.

The study evaluated the short-term impact and effectiveness of the intervention by comparing the participants' knowledge before and after the health education. Both the pre-test and post-test contained identical 10 questions related to the intervention material. Each correct answer scored 10 points, with a maximum total score of 100. The target was for at least 80% of

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respondents to achieve a post-test score of 70 or higher. Descriptive statistics were first conducted to summarize the data. The Wilcoxon signed-rank test was used to analyze the differences in knowledge scores before and after the intervention. A difference was considered statistically significant if $p < 0.05$. Data analysis was performed using SPSS version 26.

Results and Discussion

Data were obtained from the pretest and posttest scores of 41 health cadres during a counseling session on tuberculosis preventive therapy. The knowledge levels of participants were categorized into three groups: poor knowledge if the score was <70, moderate knowledge if the score ranged from 70 to 80, and good knowledge if the score was >80, with a maximum score of 100. Before the intervention, all 41 respondents (100%) had poor knowledge. After the intervention, 2 respondents (4%) still had poor knowledge, 18 respondents (44%) had moderate knowledge, and 21 respondents (52%) had good knowledge (Figure 1).

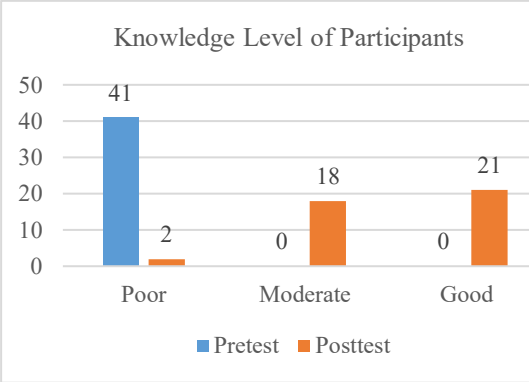

Figure 1. Respondents' Knowledge Before and After the Intervention

Table 1 presents the Wilcoxon test results with a p-value 0.000. This indicates a statistically significant difference between pretest and posttest knowledge scores. Therefore, the educational intervention on tuberculosis preventive therapy had a significant effect on improving participants' knowledge.

This result shows that the counseling provided was effective in increasing the health cadres' knowledge. As a result, they became more aware of the importance of tuberculosis transmission prevention and were more capable of implementing necessary preventive actions in daily practice. In addition to improving knowledge, the intervention may also influence the behavior of health cadres in preventing tuberculosis transmission. After attending the session, health cadres are expected to apply better preventive measures, such as conducting active screenings, promoting medication adherence, and providing education to the community.

This also impacts the cadres' experience in delivering information related to TB. The more information someone receives, the better their knowledge becomes, and the longer the experience, the more it contributes to one's understanding [10]. Health education has been proven to improve knowledge [11]. Education level is also a factor affecting tuberculosis incidence, where a higher level of education correlates with lower tuberculosis rates [12].

Table 1. Knowledge Level of Health Cadres Before and After Tuberculosis Preventive Therapy Education Intervention

Knowledge Level	**Pretest**		**Posttest**		**p-value**
Poor	1	00			**.000***
Moderate			8	4	
Good			1	2	
Total	1	00	1	00	

*Wilcoxon test

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This aligns with a study by Ernawati et al., which reported that health education increased respondents' knowledge on TB transmission prevention by 85.7%, and improved knowledge and practice of proper mask usage by 100% [13]. The positive post-test outcomes indicating knowledge improvement and behavioral change suggest the success of the intervention. However, it is important to recognize that behavior change is a complex process that requires longer-term evaluation.

Although the post-test results show improvement, they do not guarantee that the behavioral changes will be sustained over time. According to Sitepu et al., human behavior is influenced by several factors: predisposing, enabling, and reinforcing. Predisposing factors include knowledge, attitudes, social norms, beliefs, and personal traditions. Therefore, long-term monitoring and evaluation are necessary to assess the sustainability of the observed knowledge and behavior changes after the educational session. This would provide better insights into the long-term impact of the intervention [14].

A more in-depth evaluation can also be conducted to identify factors that influence changes in knowledge and behavior. Follow-up interviews or questionnaires can be used to understand how the educational session affected the cadres' perceptions, motivations, and skills in TB prevention. Additionally, the social, cultural, and environmental contexts where health cadres operate should be considered, as they may influence knowledge and behavior regarding TB prevention. Thus, interventions and health education must be tailored to the local context to achieve the greatest impact. Aside from evaluating knowledge and behavior, it is also important to measure the effectiveness of the educational program itself. This includes assessing the quality of educational materials, teaching methods used, and participants' satisfaction with the program. Such information will be helpful in designing and improving future TB educational initiatives [15]. The results of this study indicate that the educational intervention had a positive impact on improving health cadres' knowledge and behavior regarding tuberculosis prevention. However, continuous evaluation and sustained efforts are required to ensure the long-term success and continuity of these improvements.

Conclusion

The conclusion of this study is that health promotion intervention for health cadres has a positive effect on improving their knowledge regarding the tuberculosis preventive therapy. Continuous monitoring and evaluation are needed to ensure the sustainability of these behavioral changes.

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Conflict of Interest

There was no conflict of interest in this research.

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