

The Effectiveness of Using Health Education Video on Increasing Knowledge of Household Contacts of Pulmonary Tuberculosis Patients

Literature Review

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Abstract

Despite extensive health education efforts, pulmonary tuberculosis (TB) incidence remains high, particularly among household contacts. Audiovisual media (video) is emerging as a potential alternative to optimize educational outcomes where traditional methods have underperformed. This systematic review evaluates the effectiveness of video-based health education in increasing knowledge and preventive behaviors among household contacts of pulmonary TB patients. A systematic search was conducted (February-March 2025) across five databases: ProQuest, ScienceDirect, Scopus, Sage Journals, and Google Scholar. Using PRISMA guidelines and JBI critical appraisal tools, six high-quality articles were synthesized from an initial 19,481 records (filtered for Open Access, 2016-2025, and relevant study designs). Synthesis of the included studies demonstrates that health education significantly enhances knowledge, attitudes, and participation in early TB detection. Specifically, audiovisual tools were found to improve information retention and understanding of TB prevention more effectively than standard verbal counseling, although its success is often contingent. Audiovisual-based health education is a superior intervention for increasing the knowledge and preventive attitudes of TB household contacts. The integration of video media significantly enhances information uptake compared to traditional methods, suggesting that TB control programs should prioritize digital audiovisual tools to optimize early case detection and community-based prevention.

Keywords: Health Knowledge, Household Contact, Systematic Review, Tuberculosis Prevention, Video-Based Education.

1. Introduction

Tuberculosis (TB) remains a critical global health priority, consistently ranking among the top ten causes of morbidity and mortality worldwide (WHO, 2022). Currently, Indonesia holds the second-highest TB burden globally, significantly contributing to the epidemiological challenges within the Southeast Asian region (WHO, 2022). In 2021, of the estimated 10 million global TB cases, only 60.3% were successfully detected, with the death toll reaching 1.6 million (WHO, 2022). While the Indonesian government targets TB elimination by 2030 aiming for an incidence rate of 65 per 100,000 population progress is severely hindered by environmental factors and inadequate public health awareness (Ministry of Health RI, 2016).

The transmission of *Mycobacterium tuberculosis* is exacerbated by overcrowded living conditions, poor ventilation, and high-risk behaviors such as smoking and improper respiratory etiquette (WHO, 2019). Household contacts of acid-fast bacilli (AFB) positive patients face the highest risk of infection due to unavoidable and prolonged proximity (Ministry of Health RI, 2016). Evidence suggests that substantial knowledge gaps directly



correlate with a lack of preventive actions among these populations (Agustina & Wahjuni, 2017). Further, suboptimal household contact management frequently prevents exposed children from receiving appropriate treatment (Pai et al., 2016), while the catastrophic economic burden of treatment remains a significant barrier for impoverished families (Fuady et al., 2018).

Health education is pivotal in fostering behavioral changes; however, the efficacy of traditional interventions is often limited by low engagement and poor information retention (Lensoni et al., 2024). Unlike static print media, audiovisual tools (video) utilize multisensory stimulation to strengthen educational messages, which is proven to significantly enhance public attention, cognitive understanding, and motivation for TB prevention (Syaripi et al., 2016). Video-based education addresses literacy barriers and provides a standardized yet engaging platform for delivering complex medical information. Despite these advantages, the specific comparative effectiveness of video interventions versus conventional methods for TB household contacts has not been systematically synthesized. However, the comparative effectiveness of video-based education versus standard counseling for improving knowledge and preventive behaviors among household contacts has not been systematically synthesized. This systematic review is therefore essential to bridge this evidence gap and determine whether audiovisual interventions offer a statistically significant advantage in TB control programs.

2. Literature Review

Previous research emphasizes that traditional health education for tuberculosis (TB) often fails to bridge the gap between awareness and behavioral change due to literacy barriers and low patient engagement (Chauhan et al., 2024; Pradipta et al., 2021; Teibo et al., 2024). Audiovisual media, specifically video-based interventions, utilizes the “Dual Coding Theory,” which engages both verbal and visual processing channels to enhance cognitive retention and information uptake (Alhazmi, 2024; Luo, 2022; Mayer, 2024). While individual studies in Indonesia and globally have explored various educational tools, their findings remain fragmented across different clinical and behavioral outcomes (Dodd et al., 2022). Furthermore, the variability in study designs ranging from quasi-experimental to cross-sectional necessitates a systematic synthesis to determine the consistent efficacy of video-based education compared to conventional methods for high-risk household contacts.

3. Methods

This systematic review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. A comprehensive literature search was conducted in February 2025 across five electronic databases: ProQuest, ScienceDirect, Scopus, Sage Journals, and Google Scholar. The search strategy utilized a combination of keywords: “Tuberculosis,” “Health Education,” “Video,” and “Household Contact.”

The initial search identified 19,481 records. After applying search limiters (Open Access and publication years 2016-2025), 793 articles remained. Following a preliminary screening of titles and abstracts, 34 articles were moved to full-text assessment. After a rigorous eligibility review, 10 articles were retrieved for critical appraisal. Based on the Joanna Briggs Institute (JBI) Critical Appraisal results, six high-quality articles were selected for final synthesis: two from ProQuest, two from ScienceDirect, and two from Scopus. To ensure the rigor of the review, the following Inclusion Criteria were established:

- 1) Timeframe: Articles published between 2016 and 2025.
- 2) Study Design: Original research employing Cross-Sectional, Quasi-Experimental (Pretest-Posttest), or Observational designs.
- 3) Population: Studies focusing on household or close contacts of Pulmonary TB patients.
- 4) Intervention: Health education utilizing audiovisual media (videos) or comparative media.
- 5) Language: Articles written in English or Indonesian.

Meanwhile, the exclusion criteria involved studies that did not provide full-text access, literature reviews, or studies where the primary focus was not on TB household contact education.

The six selected articles represent diverse global contexts, including South Africa (n=1), El Salvador (n=1), and Indonesia (n=4). The diversity in study designs and geographical locations provides a broad evidentiary basis for evaluating the effectiveness of audiovisual-based health education in varied socio-economic settings, as illustrated in Figure 1.

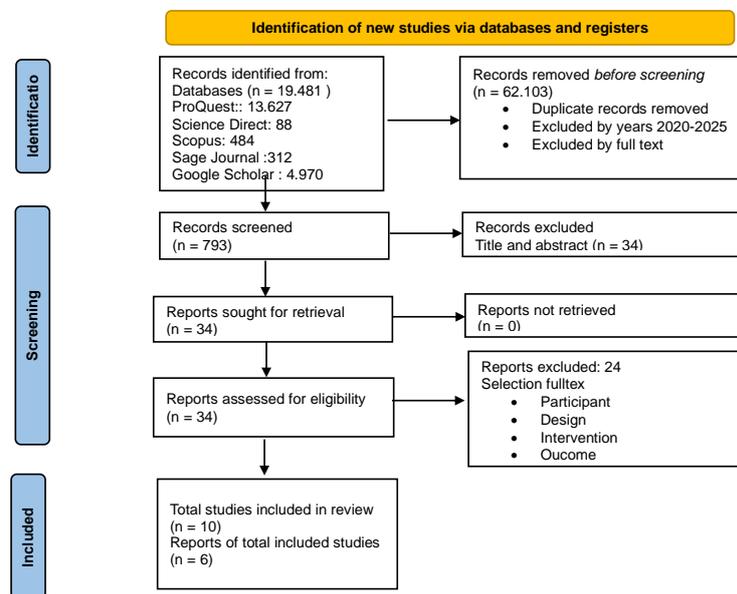


Figure 1. PRISMA Diagram

4. Results and Discussion

4.1. Research Results

The characteristics and key findings of the selected studies are summarized in Table 1.

Table 1. Article Analysis Results

No	Authors	Title	Objective	Study Design	Sample	Key Findings
1	Yermi et al. (2018) Indonesia	Knowledge and attitudes with Family Role in Prevention of Pulmonary Tuberculosis in Maros, Indonesia	To examine the relationship between family knowledge and attitudes and the family role in preventing pulmonary tuberculosis	Cross-sectional survey	95 families selected using purposive sampling, focusing on households with TB-	Chi-square analysis showed significant associations between family knowledge ($\chi^2 = 3.865$) and attitudes ($\chi^2 = 5.251$) with the

No	Authors	Title	Objective	Study Design	Sample	Key Findings
					related criteria	family's role in TB prevention
2	Putra et al. (2023) Indonesia	The Implementation of comprehensive health Education to Improve Household Contact's Participation in Early Detection of Tuberculosis	To improve participation of household contacts in early TB detection through comprehensive health education	Quasi-experimental study	392 household contacts of TB patients, divided into intervention (n = 196) and control (n = 196) groups	The Comprehensive Health Education (CHE) group demonstrated higher participation in early TB detection (28.2%) compared to the Standard Health Education (SHE) group (15.6%)
3	Wilson et al. (2016) El Salvador	Tuberculosis patient and family education through videography in El Salvador.	To assess the feasibility and effectiveness of videography-based TB education in resource-limited settings	Observational study	Pulmonary TB patients and their family members	Educational videos improved patients' and families' understanding of TB transmission, prevention, and treatment
4	Zein et al. (2017) Indonesia	Estimating the effect of lay knowledge and prior contact with pulmonary TB patients, on health-belief model in a high-risk pulmonary TB transmission population	To investigate the influence of lay knowledge and prior contact with TB patients on Health Belief Model constructs	Survey-based study	500 residents from five high TB-transmission districts in Surabaya	Prior contact with pulmonary TB patients significantly influenced beliefs regarding the effectiveness of preventive health behaviors
5	Makgopa & Madiba (2021) South Africa	Tuberculosis Knowledge and delayed Health Care Seeking Among New Diagnosed Tuberculosis Patients in Primary health Facilities in Urban District, South Africa	To examine health care, seeking behavior and delays from symptom onset to diagnosis among TB patients	Cross-sectional study	391 newly diagnosed TB patients recruited using systematic random sampling	More than half of patients (56.3%) delayed seeking health care after symptom onset; high TB knowledge was not significantly associated with timely health care which seeking behavior

No	Authors	Title	Objective	Study Design	Sample	Key Findings
6	Syafar et al. (2024) Indonesia	Effectiveness of educational media for cadres' companion and contact close Pulmonary TB patients in the Regency Pangkep	To evaluate the effectiveness of pocketbook-based educational media on TB knowledge, attitudes, and prevention behavior	Quasi-experimental study	150 participants (70 from Labakkang Health Center and 80 from Minasatene Health Center), including cadres and TB contacts	Significant improvements in knowledge and attitudes were observed after the intervention ($p < 0.05$); but the intervention did not significantly affect preventive behavior ($p = 0.065$)

4.2. Discussion

Public knowledge, especially among family members and close contacts of tuberculosis (TB) patients, plays a crucial role in controlling the disease. This systematic review of six articles demonstrates that educational interventions ranging from conventional media like pocketbooks to modern audiovisual tools such as video exert a positive impact on improving knowledge, attitudes, and preventive behaviors. Research by Yermi et al. (2018) established a significant correlation between knowledge and family attitudes, emphasizing that family empowerment is fundamental to TB prevention. This is further reinforced by Putra et al. (2021), who utilized the Health Belief Model (HBM) to show that comprehensive education can increase early detection participation by improving risk perception and reducing social stigma.

The effectiveness of visual-based approaches is highlighted in the study by Wilson et al. (2016) in El Salvador, which utilized videography to enhance patient-family cooperation during treatment. Similarly, in the Indonesian context, Syafar et al. (2024) demonstrated that the use of pocketbooks significantly increased the knowledge and attitudes of both health cadres and close contacts. However, the transition from knowledge to behavior is not always linear. Zein et al. (2017) found that while previous contact with TB patients improved beliefs in healthy behavior, it was not always sufficient to form a strong perception of personal threat. Furthermore, Makgopa and Madiba (2021) noted that despite high knowledge levels, delays in seeking healthcare persist due to stigma and limited access, indicating that education alone is insufficient without systemic support.

In addressing the PICOT framework, this review evaluates the effectiveness of comprehensive education, including audiovisual media (I), for TB household contacts (P). Evidence from Putra et al. (2023) and Syafar et al. (2024) provides positive support for structured educational approaches, particularly HBM-based community health education and pocketbooks. While studies by Wilson et al. (2016) and Zein et al. (2017) show a trend toward improved understanding and healthy behavioral beliefs, they are not fully experimental in isolating the video component.

In light of the reviewer's feedback, it must be acknowledged that while health education is universally effective, the specific evidence isolating video-based media as superior to other established methods for TB contacts remains limited. Most studies synthesized here utilize video as part of a broader theoretical framework or alongside printed materials. Therefore, while audiovisual tools are promising facilitators for engagement, they should currently be viewed as a high-value supplement rather than a definitive replacement for conventional methods. More rigorous, comparative high-quality research is required to definitively recommend video-based education as a standalone gold standard in TB control programs.

5. Conclusion

This systematic review of six studies confirms that health education is a highly effective intervention for enhancing the knowledge and attitudes of household contacts toward TB prevention and treatment. The evidence suggests that diverse delivery methods including printed materials, direct counseling, and audiovisual media all contribute to improved public health outcomes. Crucially, the involvement of family members and health cadres is a vital determinant in fostering treatment adherence and promoting early case detection. However, high knowledge levels do not consistently translate into behavioral change, as outcomes are moderated by complex social factors, including stigma, service accessibility, and individual risk perceptions. Hence, educational strategies grounded in theoretical frameworks, such as the Health Belief Model (HBM), are more effective in addressing these psychological and social barriers.

Implications for Practice Nursing professionals and community health workers should transition from generic information sharing to theory-based educational interventions that specifically target stigma and perceived susceptibility. Given the promising engagement of audiovisual tools, healthcare providers should integrate video-based education as a supplementary tool to enhance retention, particularly in populations with varied literacy levels. Furthermore, TB control programs must emphasize a family-centered approach to ensure a robust support system for patients. Implications for Research While general health education is effective, there is an urgent need for high-quality, randomized controlled trials (RCTs) that directly compare the efficacy of video-based education against traditional methods. Future research should isolate the independent impact of audiovisual media on clinical outcomes, such as conversion rates and long-term behavioral maintenance. Further, studies should explore how digital health education can be adapted to overcome systemic barriers like healthcare access and social marginalization in diverse geographical contexts.

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