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VIDEO INTERVENTION IN HEALTH EDUCATION USE CASE STUDY TO IMPROVE UNDERSTANDING OF TUBERCULOSIS

Mustopa ✉, Damris, Syamsurizal, Guspianto
Doctoral Study Program, Faculty of Mathematics and Natural Sciences,
University of Jambi, Jambi, Indonesia

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ABSTRACT

Tuberculosis is a deadly infectious disease in the world. Five countries account for 56% of the world total: India (26%), Indonesia (10%), China (6.8%), the Philippines (6.8%) and Pakistan (6.3%). One of the biggest challenges in controlling TB is the lack of public knowledge about how it is transmitted, early symptoms, and the importance of undergoing complete treatment. The shift from traditional health promotion methods to digital media, especially video, offers a more engaging and effective way of conveying health information. This research uses a quantitative approach with a pre-test and post-test design without a control. This study involved 175 respondents who lived around TB patients, selected purposively on 5–30 June 2024 in the Pakuanbaru Health Center and Putriayu Health Center areas, Jambi City. Data analysis was carried out using the *T-Test* to measure changes in knowledge before and after the educational intervention. The results showed that the average pre-test score was 66 with a minimum score of 27 and a maximum of 93. After the intervention, the average post-test score increased significantly to 85, with a minimum score of 60 and a maximum of 100. Statistical analysis showed a significant increase in participant knowledge, with an average difference in scores between the pre-test (mean = 9.97; SD = 2.010) and post-test (mean = 12.79; SD = 2.186). The t-test produced a significance value (p <0.01), indicating that the video intervention had a positive impact on increasing participants' understanding of the educational material presented.

Kata Kunci:

Video intervensi; health promotion; tuberculosis; knowledge

ABSTRAK

Tuberkulosis adalah penyakit menular yang mematikan didunia. Lima negara menyumbang jumlah tersebut 56% dari total dunia: India (26%), Indonesia (10%), Tiongkok (6,8%), Filipina (6,8%) dan Pakistan (6,3%). Salah satu tantangan terbesar dalam pengendalian TBC adalah kurangnya pengetahuan masyarakat mengenai cara penularan, gejala awal, dan pentingnya menjalani pengobatan secara tuntas. Peralihan dari metode promosi kesehatan tradisional ke media digital, khususnya video, menawarkan cara yang lebih menarik dan efektif dalam menyampaikan informasi kesehatan. Tujuan penelitian untuk mengetahui efektifitas media promosi kesehatan vidio untuk meningkatkan pengetahuan tentang penyakit TBC. Penelitian ini menggunakan pendekatan kuantitatif dengan desain pre-test dan post-test tanpa kelompok kontrol. Penelitian ini melibatkan 175 responden yang tinggal di sekitar pasien TB, dipilih secara purposive pada 5–30 Juni 2024 di wilayah Puskesmas Pakuanbaru dan Puskesmas Putriayu, Kota Jambi. Analisis data dilakukan menggunakan uji *T-Test* untuk mengukur perubahan pengetahuan sebelum dan sesudah intervensi edukatif.. Hasil penelitian menunjukan skor rata-rata pre-test adalah 66 dengan skor minimum 27 dan maksimum 93. Setelah intervensi, rata-rata skor post-test meningkat signifikan menjadi 85, dengan skor minimum 60 dan maksimum 100. Analisis statistik menunjukkan adanya peningkatan signifikan dalam pengetahuan peserta, dengan rata-rata perbedaan skor antara pre-test (mean = 9,97; SD = 2,010) dan post-test (mean = 12,79; SD = 2,186). Uji *t-test* menghasilkan nilai signifikansi (p < 0,01), yang menunjukkan bahwa intervensi video memiliki dampak positif terhadap peningkatan pemahaman peserta tentang materi edukasi yang disampaikan.

Corresponding Author:
Rd.Mustopa
Telp. 082180123217
Email : mustopa.rm@gmail.com

INTRODUCTION

Tuberculosis (TB) is one of the world's deadliest infectious diseases. Each year, it occurs in 30 countries with a high TB burden, which will account for 87% of the global total in 2023. Five countries account for 56% of the world's total: India (26%), Indonesia (10%), China (6.8%), the Philippines (6.8%) and Pakistan (6.3%). In 2023, 55% of TB cases will be male, 33% will be female and 12% will be children and adolescents. The global death toll from TB will decline in 2023, strengthening the decline achieved in 2022 after 2 years of increases during the worst years of the COVID-19 pandemic (2020 and 2021). TB is estimated to cause 1.25 million deaths (95% UI: 1.13–1.37 million) in 2023, including 1.09 million among HIV-negative people and 161,000 among people with HIV (World Health Organization, 2024).

One of the biggest challenges in controlling TB is the lack of public knowledge about how it is transmitted, early symptoms, and the importance of undergoing complete reatment. Many people do not understand how TB is transmitted, so this causes the disease to still exist in the community (Ihsan, Ullah., Saeed, Ahmad., Zareen, A., Khan., Mostafa, 2023). Studies show that low knowledge often leads to late diagnosis, continued transmission, and low treatment success rates (Fahdhienie *et al.*, 2024). Inadequate knowledge of TB symptoms delays seeking health care, thereby exacerbating the spread of the disease (Craciun *et al.*, 2023). On the other hand, the stigma against TB patients worsens the situation because it inhibits health service seeking behavior (Khaled, Abdo, 2023)(Maibvise *et al.*, 2022). The average delay in diagnosis in TB patients is approximately 47 days, with a clear relationship between low awareness and prolonged delay (Joshua, Limo., Rosebella, 2024).

Health Promotion through traditional approaches such as lectures, posters, and pamphlets have often been used to educate the public. When carrying out health promotion, it is necessary to pay attention to the media used so that it can attract the attention of the targets who participate in the health promotion (Gerung, 2020). Delivering health messages will be easier when the health promotion methods used are appropriate for the target group (Putra Apriadi Siregar, S.K.M., Reni Agustina Harahap, S.ST. and Zuhrina Aidha, S.Kep., 2020). The shift from traditional health promotion methods to digital media, particularly video, offers a more engaging and effective way to deliver health information. Traditional approaches often lack visual appeal and interactivity, limiting their reach and impact (Machi, Suka., Takashi, Shimazaki., Takashi, Yamauchi., Hiroyuki, 2024). As technology advances, digital media, especially video, becomes a potential tool to deliver health information in a more engaging and effective way. Digital media can enhance communication strategies, making health education more accessible and engaging for a variety of audiences.

Video-based health promotion has great potential in improving healthy behavior. This method offers a more engaging way compared to traditional methods (Xizhu, Rachel, Min and Wenyuan, 2023). The use of video media for health education has grown rapidly, especially since the increasing access of people to digital devices and the internet. Educational videos offer the advantage of visualizing complex information, making it easier to understand than traditional methods. Studies have shown that educational videos significantly increase the effectiveness of learning compared to text-based materials, indicating that visual, audio, text and interactive elements can improve understanding (Vonschallen *et al.*, 2024).

For example, a study in India found that the use of educational videos increased knowledge about TB from 47.9% to 73.9% among medical students (Manoharan., et al 2019). Video intervention among students in Gambia increased their understanding of TB prevention and treatment by 83% (Dwi, Sapta, Aryantiningsih., Nizwardi, Jalinus., Linda, 2024). The EduTB program in Ecuador demonstrated effective learning outcomes in improving knowledge of TB prevention (Viviana,. et al, 2024). In addition, educational videos are also effective in reducing the stigma against TB patients, which is a major obstacle in controlling TB disease today ((Peter *et al.*, 2022), Foster et al., 2022).

The use of video media for health promotion still has obstacles that must be considered. In addition, the effectiveness of videos is highly dependent on the quality and relevance of the content. Content that is not interesting or too complex can reduce the educational impact. There is also a need to further explore how videos can be combined with other educational methods to create a more holistic impact. The aim of the research was to determine the effectiveness of video health promotion media to increase knowledge about TB disease.

METHODS

Types of research

This study uses a Quantitative Method – One Group Pretest-Posttest Design This method is included in the quasi-experimental research design, which aims to measure the effectiveness of an intervention (in this case educational video) by involving one group of subjects measured before (pre-test) and after (post-test) the intervention, without a comparison from the control group. This approach was chosen to provide a direct picture of changes in the level of knowledge of participants before and after the intervention. . This study has undergone an ethical review with approval number: LB.02.06 / 2 / 914.1 / 2024. It was declared ethically feasible in accordance with the seven WHO Standards (2011), namely: (1) Social Value, (2) Scientific Validity, (3) Fair Distribution of Burden and Benefits, (4) Risk, (5) Undue Inducement/Exploitation, (6) Confidentiality and Privacy, and (7) Informed Consent, with reference to the CIOMS Guidelines (2016). This is evidenced by the fulfillment of the indicators for each standard.

Research Location and Time

This study was conducted in two Community Health Centers in Jambi City, namely Putriayu Community Health Center and Pakuan Baru Community Health Center. Data collection was carried out for 26 days from June 5-30, 2024.

Population and Sample

The population of this study was the entire community in the Putriayu Health Center and Pakuan Baru Health Center areas of Jambi City, Jambi Province. Inclusion criteria The sample of this study was aged 18-60 years, could see and hear well and was willing to follow the entire series of studies. The number of samples in the study was 175 people. The sampling method used is purposive sampling, namely a non-probability sampling method, where researchers select subjects based on criteria or characteristics in the form of geographical proximity to TB patients (neighbors), who are considered a high-risk group due to the possibility of close contact

Data Collection

The study was conducted in three main stages: preparation, intervention implementation, and impact evaluation. Preparation The educational video used in this study was 3.05 minutes long and was designed to provide information on the causes, symptoms, transmission, prevention, and treatment of TB. The video content was compiled based on national guidelines for controlling TB. Video material about TB disease containing information about TB disease, causes, transmission, symptoms, examination or diagnosis, treatment of TB disease, coughing etiquette, prevention that must be known. Video Validation Before being used, the video was tested on 10 respondents to ensure the clarity and relevance of the content. This process involved Health practitioners, media experts (IT) and Health promotion experts.

The video-based intervention was delivered by 30 trained Posyandu cadres to community members in their working areas, recruited through purposive sampling. Eligible participants were aged 18–60 years, had adequate vision and hearing, and agreed to complete the study. Participants watched a TB educational video individually or in groups. Knowledge was assessed using a validated questionnaire based on national TB control guidelines, administered before (pre-test) and immediately after the intervention (post-test, 5–10 minutes after viewing). The questionnaire covered five domains: causes, symptoms and diagnosis, transmission, prevention, and treatment of TB. Scores were calculated from the total number of correct responses.

Processing and Analysis Data

The data obtained from the questionnaire were analyzed using the T-test to compare the differences in pre-test and post-test scores, as well as descriptive analysis to describe the distribution of the data. This analysis aims to determine the effectiveness of video as an intervention tool in increasing public understanding of TB.

RESULTS

The respondents of this study were the people of Jambi City, whose characteristics can be seen in the following table :

Table 1. Characteristics of Respondents

Characteristics	Amount	%
Age		
Average	44	
< 30 Years	23	13%
31-40 Year	46	26%
41-50 Year	61	35%
>50 Years	45	26%
Work		
housewife	117	67%
College Student	4	2%
Private	28	16%
Laborer	10	6%
Trade	3	2%
Self-employed	6	3%
Retired	3	2%
Student	2	1%
civil servant	2	1%
	175	100%

This study involved 175 participants with an average age of 44 years. Based on age category, 13% were under 30 years old, 26% were 31–40 years old, 35% were 41–50 years old, and 26% were over 50 years old. Most of the participants were housewives (IRT) with a percentage of 67%, followed by private workers (16%), and others, such as laborers (6%), students (2%), self-employed (3%), and retirees (2%).

The results of implementing a knowledge intervention using video after conducting a pre-test and post-test obtained the following results :

Table 2. Average Respondent Knowledge Based on Pre-Test and Post-Test Results

No	Intervention	Average	Minimum	Maximum
1	Pre Test	66	27	93
2	Post Test	85	60	100

In the evaluation of the intervention on 175 participants, the average pre-test score was 66 with a minimum score of 27 and a maximum of 93. After the intervention, the average post-test score increased significantly to 85, with a minimum score of 60 and a maximum of 100. Statistical analysis showed a significant increase in participants' knowledge, with an average difference in scores between the pre-test (mean = 9.97; SD = 2.010) and post-test (mean = 12.79; SD = 2.186). The t-test produced a significant value ($p < 0.01$), indicating that the video intervention had a positive impact on increasing participants' understanding of the educational material presented.

Table 3. Results of Statistical Test of Intervention Implementation

Intervention	N	Mean	STD	Tsdt Error	Sig (2-tailed)
Pre	175	9.97	2.010	0.152	<0.01
Post	175	12.79	2.186	0.165	

These results indicate that video-based interventions are effective in improving community understanding of tuberculosis, supporting the use of digital media as a potential health education tool.

DISCUSSION

Educational videos can be accessed privately or together via a YouTube link using a mobile phone or previously downloaded videos. The results of your study indicate that video intervention has a significant impact on the understanding of tuberculosis (TB) among 175 participants. With a mean age distribution of 44 years and the majority of participants as housewives (67%), this finding offers an important perspective on the effectiveness of audiovisual media in health education. Based on statistical analysis, this intervention was proven to significantly increase understanding ($p < 0.01$). Video intervention as a health education tool has been shown to have a positive impact in various contexts. The ability of video to visualize a message into motor movements, facial expressions, and certain environmental atmospheres is an advantage of video (Jatmika *et al.*, 2019) In the digital era, traditional health promotion media such as brochures and posters still have an important role and are more effective when used together with other media such as videos, telephone interactions, games and others (Rambi & Sumenge, nd2023). The use of videos can significantly increase patient knowledge about TB disease compared to traditional educational methods, such as lectures or pamphlets (Dameria, 2023).

Low public knowledge and awareness of health and disease, it is often difficult to detect diseases that occur in the community. Sometimes people find it difficult or do not want to be examined and treated for their diseases. This can cause people not to receive proper health services. Therefore, health education is very necessary at this stage (Muhammad Romadhon, S.Kep. *et al.*, 2024). The existence of video media can show efforts to improve health through media. Video media has involved listeners and vision simultaneously in an activity (Suhaid *et al.*, 2022). Promotion is not just communication and information delivery but is able to create an atmosphere so that the target wants to choose a good product/action (Dr. Bambang Sutomo, S.Si.T *et al.*, 2024). Video allows for more interactive and engaging information delivery, and is able to reach audiences with varying levels of literacy. In the context of TB, video has been used to improve adherence to treatment through video-based therapy supervision (Video Observed Therapy or VOT), which has been shown to be preferable to direct therapy (DOT), as it is more flexible and time-saving (Areas Lisboa Netto *et al.*, 2024).

As an educational tool, videos also utilize a combination of visual and auditory to explain complex concepts, such as the TB infection cycle, treatment process, and prevention. Audiovisual health education interventions improve TB patients' medication adherence behavior (Endah Kurniasih, Hidayati and Arif Murtadho, 2020). In this study, the increase in participant understanding can be associated with the ability of video to simplify technical information into a format that can be accessed and understood by the general public, including groups with low levels of education. The video was distributed through social media WhatsApp groups. Health promotion using social media still pays attention to the message to whom it will be delivered and what the purpose of delivering the message is (Dewi IS, et al, 2021).

Similar studies have shown that videos are effective in increasing awareness and health-seeking behavior. For example, research by (Sundaram, Ahmad Zaki, *et al.*, 2024) found that audiovisual media can reduce the stigma of TB, which is often a barrier for patients to seek treatment. In addition, video also increases patient engagement in therapy, as found in a systematic review showing an increase in treatment adherence of up to 85% with the use of VOT compared to DOT (Sekandi *et al.*, 2024).

However, the success of these interventions often depends on the cultural and social context of the audience. For example, research in countries with limited internet access found that digital technologies to improve medication adherence monitoring and support for TB patients (Ximenez *et al.*, 2022).

Despite the positive results, there are some limitations that need to be considered in terms of duration and frequency. The long-term effectiveness of video interventions has not been tested. Previous studies have shown that the effects of video-based education tend to decline without regular repetition or reinforcement of the material (Sundaram, Zaki, *et al.*, 2024). Technical barriers, such as limited access to electronic devices or internet connections, may reduce the effectiveness of interventions in rural areas or groups with low economic status (Areas Lisboa Netto *et al.*, 2024). In addition, the Holistic Evaluation of this study only focused on participant understanding without evaluating the impact on treatment-seeking behavior or therapy adherence, which are important steps in comprehensive TB control.

CONCLUSIONS AND RECOMMENDATIONS

Intervention using educational videos has been shown to significantly increase knowledge about TB disease ($p < 0.01$). Video interventions have been shown to be effective in increasing understanding of TB, as supported by your research and other studies. This medium is a promising tool in health education, especially in the digital age, because of its ability to reach a wide audience in an engaging and effective manner. However, to maximize its benefits, it needs to be integrated with other approaches, such as direct mentoring, community engagement, and provision of adequate access to technology. Future research should include further analysis of long-term impacts and adaptation of content to local needs.

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