

## **THE EFFECT OF HEALTH EDUCATION USING BOOKLET MEDIA ON CAREGIVERS' BEHAVIOR IN PREVENTING TUBERCULOSIS IN CHILDREN**

**Anda Syahputra<sup>1</sup>, Fitriani Agustina<sup>2</sup>, Syahabuddin<sup>3</sup>, Marlina<sup>4</sup>**  
<sup>1,2,3,4</sup>Poltekkes Kemenkes Aceh, Indonesia

\* Corresponding email: [anda.syahputra@poltekkesaceh.ac.id](mailto:anda.syahputra@poltekkesaceh.ac.id)

### **ABSTRACT**

Tuberculosis (TB) control efforts are not solely the responsibility of the health sector but also require the involvement of the patient's family, who live with and accompany them on a daily basis. Families play a crucial role in caring for members affected by TB. Therefore, it is essential to provide health education to families so that their behavior can support TB control and prevention efforts. The purpose of this study is to analyze the effect of health education using booklet media on caregivers' behavior in preventing tuberculosis among family members. The research design employed was a quasi-experimental one-group pretest–posttest design. The study population consisted of families of TB patients at Muara Dua Public Health Center, Lhokseumawe City. The instruments used were a booklet for the intervention and a questionnaire to assess the behavior of the study subjects. Data collection began with a pretest conducted before the intervention, followed by counseling and health education using the booklet, after which a posttest was administered to evaluate caregivers' behavior in preventing tuberculosis. Data were analyzed using the paired t-test. The results showed that the mean knowledge score of families during the pretest was 4.16, which increased to 13.08 after receiving health education, with a mean difference of –8.921. The mean behavior score of families during the pretest was 4.05, which increased to 12.50 after the intervention, with a mean difference of –8.447. The statistical test results indicated that the p-value for both knowledge and behavior was 0.000 (< 0.05). It can thus be concluded that providing health education using a booklet significantly improves family caregivers' knowledge and behavior regarding tuberculosis prevention.

**Keywords:** Booklet media; Behavior; Knowledge; Tuberculosis

## **INTRODUCTION**

Health, in essence, is an effort carried out by all components of the Indonesian nation with the aim of enhancing awareness, willingness, and the ability to live a healthy life for every individual, in order to achieve the highest possible level of public health (Wikurendra, 2019). To achieve optimal health, the Disease Eradication Program focuses on efforts to prevent illness, reduce morbidity and mortality rates, and minimize the adverse impacts of both communicable and non-communicable diseases. In the Strategic Plan of the Ministry of Health for 2015–2019, communicable diseases were identified as one of the main priorities to be addressed in order to realize a Healthy Indonesia. Among communicable diseases, tuberculosis remains a major priority (Isni et al., 2022).

Menurut World Health Organization (*WHO*), in 2022, an estimated 1.3 million people died from tuberculosis (including 167,000 people with HIV). Globally, TB ranks as the second leading infectious killer after COVID-19 (surpassing HIV and AIDS). In the same year, approximately 10.6 million people contracted tuberculosis worldwide, including 5.8 million men, 3.5 million women, and 1.3 million children. TB is present in all countries and affects all age groups (World Health Organization, 2023).

Tuberculosis (TB) is one of the world's leading infectious diseases and a major cause of mortality. Currently, pulmonary tuberculosis accounts for an estimated 95% of TB cases and 98% of TB-related deaths globally. The disease predominantly affects individuals of productive age, with more than 75% of cases occurring in this group, and it causes a 20–30% loss of household income annually. An active TB patient can transmit the disease to 10–15 people in their surroundings, and 50–60% of TB patients may die without effective treatment. To date, no country has been declared free from pulmonary tuberculosis (Saifullah et al., 2018).

At present, tuberculosis (TB) is not only experienced by adults but also shows a significant morbidity rate among children. Therefore, various efforts are needed to prevent TB transmission in children. TB control is not solely the responsibility of the health sector but also requires the involvement of the patient's family, who live with them on a daily basis. Families play a crucial role in caring for members affected by TB. Hence, it is essential to provide health education to families so that their behavior can support TB control efforts (Gusneli et al., 2020).

To achieve effective outcomes, health education requires the use of appropriate educational media. Booklet media is considered more effective than other forms, as it combines text and images, making the content more engaging, easier to understand, less monotonous, and more dynamic for participants (Hartiningsih & Hikmawati, 2018).

Behavior is the result of experience and interaction with the environment, manifested in the form of knowledge, attitudes, and actions,

thereby creating a balance between driving and restraining forces. Behavior is the second largest factor, after environmental factors, that influences the health of individuals, groups, or communities (Pakpahan et al., 2021).

A study conducted by Gusneli et al. found that health education can change family behavior in efforts to control tuberculosis. Health education is an activity aimed at assisting individuals and communities in preventing disease. Through health education, support for pulmonary tuberculosis patients can be enhanced to prevent transmission to other family members (Gusneli et al., 2020).

## **METHODS**

This study employed a quantitative analytic approach. The research design used was a quasi-experimental one-group pretest–posttest design to examine the effect of health education using booklet media on caregivers' behavior in preventing pulmonary tuberculosis among family members at Muara Dua Public Health Center, Lhokseumawe City. The study population consisted of 38 family members of TB patients at the same health center. Data collection began with a pretest administered before the intervention, followed by counseling and health education using the booklet, and concluded with a posttest to assess caregivers' behavior in preventing tuberculosis.

The instruments used in this study were a booklet and a questionnaire. The booklet, developed by the researcher based on existing literature, contained information on the definition of TB, signs and symptoms, modes of transmission, TB examination, caregivers' role, complications, treatment, and prevention, and had undergone expert review by TB specialists. The behavior questionnaire was developed by the researcher through modification of an existing validated behavior questionnaire from previous studies. Data were analyzed using the paired t-test. This study was approved by the Health Research Ethics Committee of Poltekkes Kemenkes Aceh (No. DP.04.03/12.7/066/204, April 24, 2024).

## **RESULTS AND DISCUSSION**

**Table 1.** Frequency Distribution of Respondents' Characteristics by Age, Sex, Education, and Occupation

No.	Characteristics	f	%	
1.	Age	20-30years	9	23.7
		31-40 years	22	57.9
		41-50 years	7	18.4
2.	Sex	Male	10	26.3
		Female	28	73.7
3.	Education	SMA/SMK	30	78.9
		D3/S1	8	21.1
4.	Occupation	Employed	19	50.0
		Unemployed	19	50.0

Based on the respondents' characteristics shown in the table above, the majority of respondents were aged 31–40 years (57.9%). In terms of sex, most respondents were female (73.7%). Regarding education, the majority had completed senior high school/vocational school (78.9%). For occupational status, respondents were evenly distributed, with 50% employed and 50% unemployed.

**Table 2.** Normality Test of Pretest and Posttest Knowledge and Behavior Data

Variable	Group	df	P value	Keterangan
Knowledge	Pretest	38	0,073	Normal
	Posttest	38	0,013	Non Normal
Behavior	Pretest	38	0,075	Normal
	Posttest	38	0,018	Non Normal

Based on the table above, the pretest data for the knowledge variable were normally distributed, whereas the posttest data were not normally distributed. For the behavior variable, the pretest data were normally distributed, while the posttest data were not normally distributed.

**Table 3.** The Effect of Health Education Using Booklets on Family Knowledge.

Group		Mean	Mean	P value
Knowledge	Pretest	4,16	-8,921	0,000
	Posttest	13,08		

Based on the table above, the mean family knowledge score during the pretest was 4.16, which increased to 13.08 after receiving health education, with a mean difference of  $-8.921$ . The test results showed a p-value of 0.000 ( $< 0.05$ ), indicating that providing health education using a booklet significantly improved family knowledge regarding tuberculosis prevention.

**Table 4.** The Effect of Health Education Using Booklets on Family Behavior

Group		Mean	Mean	P value
Behavior	Pretest	4,16	-8,921	0,000
	Posttest	13,08		

Based on the table above, the mean family behavior score during the pretest was 4.05, which increased to 12.50 after receiving health education, with a mean difference of  $-8.447$ . The test results showed a p-value of 0.000 ( $< 0.05$ ), indicating that providing health education using a booklet significantly improved family caregivers' behavior regarding tuberculosis prevention.

## CONCLUSION

### The Effect of Health Education Using Booklets on Family Knowledge

The results showed that the mean knowledge score at the pretest was 4.16, which increased to 13.08 after providing health education on

tuberculosis prevention. Statistical analysis indicated that health education using a booklet had a significant effect in improving family knowledge regarding tuberculosis prevention.

This study is consistent with the theory that health education serves as a process that bridges the gap between health information and health practices. The purpose of health education is to maintain and enhance knowledge, behavior, and attitudes in preserving an individual's health (Nesi, 2013). Tuberculosis is closely related to knowledge, attitudes, and behavior; therefore, through health education, awareness can be increased to support the prevention of tuberculosis transmission.

Health knowledge refers to the conceptual and objective understanding of both general and specific health topics. With adequate health knowledge, individuals are able to practice preventive actions and protective measures for their health. Based on the views of several experts, health knowledge can be defined as all information related to health that is known and can be scientifically verified (Notoatmodjo, 2018; Yanti et al., 2022).

The study conducted by Putri et al. reported a difference in respondents' knowledge before and after receiving health education. Through the provision of health education, families became more aware of tuberculosis prevention measures, such as practicing clean and healthy living behaviors (Putri et al., 2022).

The study by Suhendrik et al. found that the level of family knowledge before receiving health education was in the moderate category, while after receiving health education, 97% were in the good category. This indicates that providing health education has an effect on improving the knowledge of TB patients and their families in efforts to prevent tuberculosis transmission (Suhendrik et al., 2021).

The study by Akbar et al. demonstrated a significant difference in the knowledge of tuberculosis patients before and after receiving health education. It can therefore be concluded that health education has a significant impact on the knowledge of tuberculosis patients in the working area of Mopuya Public Health Center (Akbar et al., 2021).

This study highlights that health education is essential for the community to increase public knowledge in order to prevent the transmission of diseases, particularly tuberculosis. Providing health education through booklet media facilitates health workers in explaining tuberculosis, as health media can attract patients' attention through its appealing and varied presentation.

### **The Effect of Health Education Using Booklets on Family Behavior**

The results showed that the mean family knowledge score at the pretest was 4.05, which increased to 12.50 after receiving health education, with a mean difference of  $-8.447$ . The test results revealed a p-value of 0.000 ( $<$

0.05), indicating that providing health education using a booklet significantly improved family caregivers' behavior in preventing tuberculosis.

Tuberculosis is a contagious lower respiratory tract disease. It can be transmitted through the air, coughing, sneezing, and speaking (Handayani & Sumarni, 2021). Pulmonary TB complications are classified into two types: early complications and advanced complications. The role of health workers is essential in strengthening the family's role in preventing tuberculosis transmission (Supriatun & Insani, 2020).

Behavior is the result of experience and interaction with the environment, manifested in the form of knowledge, attitudes, and actions, thereby creating a balance between driving and restraining forces. Behavior is the second largest factor after environmental factors that influence the health of individuals, groups, or communities (Pakpahan et al., 2021). Health behavior is defined as an individual's response to stimuli or objects related to illness and disease, health care systems, food and drink, and the environment (Uberty, 2022).

The study conducted by Hartiningsih stated that health education using audiovisual media can improve caregivers' behavior in preventing tuberculosis among family members (Hartiningsih, 2018). Similarly, research by Gusneli et al, found that health education can change family behavior in efforts to control tuberculosis. Health education is an activity designed to assist individuals and communities in disease prevention, and by providing health education, support for pulmonary tuberculosis patients can be strengthened to prevent transmission to other family members (Gusneli et al., 2020).

## **ACKNOWLEDGEMENT**

The researcher would like to express gratitude to Poltekkes Kemenkes Aceh, the Head of Muara Dua Public Health Center, Lhokseumawe City, and the respondents who contributed to the implementation of this research.

## **REFERENCES**

- Akbar, H., Fauzan, M. R., Langingi, A. R. C., & Darmin. (2021). Pendidikan Kesehatan Dalam Peningkatan Pengetahuan Penderita Tuberculosis Di Wilayah Kerja Puskesmas Mopuya. *Jurnal Ilmu Dan Teknologi Kesehatan Terpadu*, 1(1), 38–44. <https://doi.org/10.53579/jitkt.v1i1.3>
- Carolus, T. P. T. S. (2017). *Tuberculosis Bisa Disembuhkan*. Kepustakaan Populer Gramedia.
- Gusneli, Machmud, R., & Mahathir. (2020). Pengaruh Pendidikan Kesehatan terhadap Perilaku Keluarga Penderita TB dalam Upaya Penanggulangan TB Dewasa di Kabupaten ABC Sumatera Barat. *Jurnal Ilmiah*

- Universitas Batanghari Jambi*, 20(2), 630–636.  
<https://doi.org/10.33087/jiubj.v20i2.1001>
- Handayani, I., & Sumarni. (2021). *Tuberkulosis*. NEM.
- Hartiningasih, S. N. (2018). Pengaruh pendidikan kesehatan dengan media audiovisual dan media booklet terhadap perilaku caregiver dalam mencegah tuberkulosis pada anggota keluarga. *Health Sciences and Pharmacy Journal*, 2(3), 97. <https://doi.org/10.32504/hspj.v2i3.43>
- Hartiningasih, S. N., & Hikmawati, A. N. (2018). Caregiver Dalam Mencegah Penularan Tuberkulosis Pada Anggota Keluarga. *Jurnal Ilmiah Ilmu Keperawatan Dan Ilmu Kesehatan Masyarakat*, 13(2), 69–76.
- Isni, K., Yudanto, F. A., & Apriliyanti, N. (2022). Upaya Pencegahan Dini Penyakit Tuberkulosis melalui Pendidikan Kesehatan. *Jurnal Pengabdian Kesehatan Masyarakat*, 3(2), 134–148.  
<https://ejournal.ung.ac.id/index.php/jpkm/article/view/16326/5375>
- Nesi, F. . N. (2013). *Promosi Kesehatan dalam Pelayanan Kebidanan*. Salemba Media.
- Notoatmodjo, S. (2018). *Ilmu Perilaku Kesehatan*. Rineka Cipta.
- Pakpahan, M., Siregar, D., Susilawaty, A., Mustar, T., Ramdany, R., Manurung, E. I., Sitanggang, Y. F., & Maisyarah. (2021). *Promosi Kesehatan dan Perilaku Kesehatan* (R. Watrionthos (ed.)). Yayasan Kita Menuls.
- Putri, V. S., Apriyali, A., & Armina, A. (2022). Pengaruh Pendidikan Kesehatan terhadap Pengetahuan dan Tindakan Keluarga dalam Pencegahan Penularan Tuberkulosis. *Jurnal Akademika Baiturrahim Jambi*, 11(2), 226. <https://doi.org/10.36565/jab.v11i2.520>
- Saifullah, Mulyadi, & Asniar. (2018). Faktor-Faktor Yang Tuberkulosis Paru Berhubungan Dengan Perilaku Perawatan Kesehatan Factors Related to Health Care Behavior of Lung Tuberculosis belum ada Negara yang terbebas dari Indonesia yang didiagnosis Tuberkulosis Paru provinsi dengan angka terjadi. *Jurnal Ilmu Keperawatan (2018)*, 6(1), 1–10.
- Suhendrik, T., Hotmalida, L., & Ardayani, T. (2021). Pengaruh pendidikan kesehatan terhadap pengetahuan dan sikap pasien dalam upaya pencegahan penularan penyakit tuberculosis di Rotinsulu Bandung. *Jurnal Ilmiah Permas: Jurnal ...*, 00(00).
- Supriatun, E., & Insani, U. (2020). *Pencegahan Tuberkulosis*. Lembaga Chakra Brahma Lentera.
- Uberty, A. (2022). *Pencegahan Perilaku Kesehatan Reproduksi Yang Berisiko Pada Remaja*. NEM.
- Wikurendra, E. A. (2019). Literatur Review: Faktor Faktor Yang Mempengaruhi Kejadian Tuberkulosis Paru Dan Penanggulangannya. *Ilmu Kesehatan Masyarakat*, 2(1), 1–12.
- World Health Organization. (2023). *Tuberculosis*. World Health Organization.  
<https://www.who.int/news-room/fact-sheets/detail/tuberculosis>

Yanti, B., Heriansyah, T., & Riyan, M. (2022). Penyuluhan Dengan Media Audio Visual Dan Metode Ceramah Dapat Meningkatkan Pencegahan Tuberkulosis. *Ikesma*, 18(3), 171.  
<https://doi.org/10.19184/ikesma.v18i3.27147>