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Tuberculosis Awareness Movement Of Adolescent Girls As Preparation For Healthy Mothers: Interactive Education At Perkampungan Minangkabau Islamic Boarding School

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Article Information

Received: December 25, 2025
Revised: February 23, 2026
Accepted: March 23, 2026
Available online: March 31, 2026

Keywords

adolescent girls, healthy mothers, health education, tuberculosis, Islamic boarding school

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ABSTRACT

Tuberculosis (TB) remained a major public health problem among adolescents living in densely populated environments such as Islamic boarding schools. Limited knowledge regarding TB transmission and prevention increased the risk of disease spread among adolescent girls, who are future mothers and play an important role in determining the health quality of future generations. This community service program aimed to improve the knowledge and awareness of adolescent girls regarding TB prevention through the "Student Tuberculosis Care Movement" program conducted at MAS Al Falah Perkampungan Minangkabau Islamic Boarding School. The program was implemented in October 2025 and involved 50 female students. The methods employed included problem identification, health education, interactive discussions, mentoring, and evaluation using pretest and posttest assessments. Educational materials regarding pulmonary tuberculosis were delivered by a pulmonary specialist through lectures and *PowerPoint*-based visual media. The results demonstrated a significant improvement in participants' knowledge after the educational intervention. The proportion of participants with good knowledge increased from 16.0% before education to 64.0% after education, while the proportion with poor knowledge decreased from 50.0% to 6.0%. Participants also showed active

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engagement during discussions and demonstrated better understanding regarding TB symptoms, transmission, prevention, and early detection. Supporting factors included high participant enthusiasm, institutional support from the Islamic boarding school, and the use of visual educational media. However, limited time allocation and inadequate audiovisual facilities became minor obstacles during implementation. Overall, the program effectively improved adolescent girls' knowledge and awareness regarding TB prevention and promoted healthy behaviors in the Islamic boarding school environment

INTRODUCTION

Indonesia has approximately 5 million male Islamic boarding school students (*santriwati*), making this population vulnerable to various health problems, including tuberculosis (TB), and highlighting the need for early prevention efforts to develop healthy and high-quality human resources (Kemenkes, 2019). Tuberculosis, caused by *Mycobacterium tuberculosis*, remains a major public health problem in Indonesia, which ranks second globally after India with approximately 969,000 cases and 93,000 deaths annually (Kemenkes, 2023b). The high burden of TB is particularly concerning in densely populated settings such as Islamic boarding schools (*pesantren*), which are recognized as target settings for TB case detection under the Indonesian Ministry of Health Regulation No. 67 of 2016 concerning TB Control (Bastiana et al., 2023). Several environmental and behavioral factors, including overcrowded dormitories, poor ventilation, intensive social interaction, and limited knowledge regarding infectious disease prevention, may increase the risk of TB transmission among adolescents in pesantren environments (Effendi et al., 2020; Kumalasari, 2024).

Adolescents are vulnerable to tuberculosis (TB) due to biological, psychological, and social changes that influence their health behaviors. Low health literacy among adolescents often leads to poor awareness of early TB symptoms, resulting in delayed detection and an increased risk of disease transmission (Centers for Disease Control and Prevention, 2023). TB in adolescent girls

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is a serious concern because untreated TB may cause malnutrition, anemia, decreased immunity, reproductive health problems, and pregnancy complications in the future, including low birth weight, preterm birth, fetal growth restriction, and maternal mortality (Chewe, 2024; Sugarman et al., n.d.; Yi & Hui, 2022)

In addition to physical impacts, TB also has psychosocial consequences for adolescents. The stigma surrounding TB often leads to feelings of shame, social withdrawal, and decreased self-confidence. For adolescents living in Islamic boarding schools, this condition can disrupt learning, social interactions, and psychological development. Economic impacts can also arise due to increased medical costs and decreased individual and family productivity (Tanimura et al., 2014).

The high risk of TB among adolescents living in Islamic boarding schools is influenced by various factors, including a lack of knowledge about TB, unhealthy lifestyles, overcrowding, poor ventilation, poor nutritional intake, the habit of not covering the mouth when coughing, and delayed medical check-ups. Low immunity due to fatigue and lack of rest can also increase susceptibility to TB infection (Kemenkes, 2023a; *Riset Kesehatan 2013*, 2013).

Perkampungan Minangkabau Islamic Boarding School is located on the outskirts of Padang City and has limited facilities and infrastructure. Dormitory rooms measuring approximately 5 × 10 m^2 are occupied by around 30 female students, with inadequate ventilation, lighting, and semi-permanent building conditions, while most students also come from lower-middle-income families with limited access to adequate nutrition. These conditions increase the risk of tuberculosis (TB) transmission within the boarding school environment. Initial interviews with five female students showed that four had limited knowledge about TB and one experienced prolonged coughing, while boarding school staff reported that cough-related illnesses are common among students.

Health promotion and preventive efforts through education are therefore essential to improve students' knowledge and awareness regarding TB prevention. Limited access to information due to restrictions on Android devices and television further highlights the importance of direct

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health education in the pesantren setting. The "Student Tuberculosis Care Movement" program is expected to enhance students' understanding of TB symptoms, transmission, prevention, and early detection, while encouraging healthy behaviors to reduce TB transmission in the boarding school environment.

This community service activity is crucial as a form of empowerment for adolescents in Islamic boarding schools to improve health literacy related to TB. Through appropriate education, students are expected to adopt clean and healthy lifestyles, recognize TB symptoms early, and play an active role in efforts to prevent TB transmission within the Islamic boarding school and the community.

METHODS AND IMPLEMENTATION

This community service activity was held in October 2025 at the Madrasah Aliyah Swasta (MAS) Al Falah Islamic Boarding School in the Minangkabau Village. The target group was 50 female students. The methods used in this activity included identifying partner problems, health education, mentoring, health prevention initiatives, and evaluating participant knowledge.

The activity began with problem identification through coordination and interviews with the Islamic boarding school management and female students to gather information regarding adolescent health conditions, knowledge about tuberculosis, and disease prevention behaviors within the Islamic boarding school environment. At this stage, a collaboration agreement was also reached with the partner, evidenced by a letter of cooperation. The next stage was preparation for the activity, which included providing human resources, media, tools, materials, and supporting infrastructure. The educational media used was a PowerPoint presentation, while the tools and materials prepared included stationery, pretest and posttest sheets.

The activity began with a pretest to assess the students' initial knowledge before receiving health education. Next, education on pulmonary tuberculosis was provided by a pulmonary specialist, covering the definition, causes, transmission, signs and symptoms, prevention, and treatment of TB. Following the presentation, the activity continued with a question-and-answer session and health consultations related to pulmonary tuberculosis. The activity was evaluated through a

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post-test to assess the increase in participants' knowledge about tuberculosis and anemia following the health education. Furthermore, evaluation was conducted through observation of participant engagement during the activity. This activity is expected to increase knowledge, awareness, and healthy lifestyle behaviors among adolescent girls in preventing tuberculosis in Islamic boarding schools.

RESULTS AND DISCUSSION

The community service program focusing on tuberculosis education for adolescent girls at MAS Al Falah Perkampungan Minangkabau Islamic Boarding School was conducted through lectures, interactive discussions, and participant knowledge evaluations. The program involved 50 female students who were in the adolescent age group, a critical phase for reproductive health preparation toward becoming healthy future mothers. The evaluation results demonstrated an improvement in participants' knowledge after receiving tuberculosis education. This improvement was reflected in the changes in the distribution of knowledge levels.

Tabel 1. Distribution of Adolescent Girls' Knowledge Levels about Tuberculosis Before and After Education

Knowledge Levels	**Pretest n (%)**	**Posttest n (%)**
Good	8 (16,0)	32 (64,0)
Moderate	17 (34,0)	15 (30,0)
Poor	25 (50,0)	3 (6,0)
Total	50 (100)	50 (100)

Based on Table 1, there was a significant increase in the proportion of participants with good knowledge, rising from 16.0% before education to 64.0% after education. In contrast, the proportion of participants with poor knowledge decreased from 50.0% to 6.0%. These findings indicate that health education delivered through lectures and *PowerPoint*-based media was

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effective in improving adolescent girls' understanding of tuberculosis. Participants were able to explain the definition of TB, identify risk factors and symptoms, and describe preventive measures applicable in daily life.

The success of the program was also reflected in the high level of participant engagement throughout the activity. Participants showed strong attention during the educational sessions and actively participated in discussions and question-and-answer sessions. The topic that attracted the greatest interest was the impact of tuberculosis on reproductive health and future maternal readiness. Most participants reported that the materials were easy to understand, relevant to their conditions, and provided new insights regarding the dangers of tuberculosis and the importance of early disease prevention.

The findings of this program indicate that the educational intervention successfully addressed the community's primary problem, namely the limited knowledge of female students regarding tuberculosis and its prevention. Direct education using interactive lectures, visual media, and discussion sessions effectively improved participants' understanding. These findings are consistent with previous studies showing that health education among adolescents can enhance knowledge, foster positive attitudes, and encourage preventive behaviors toward infectious diseases such as tuberculosis (Elbahloul et al., 2023; I et al., 2020). Health education for adolescent girls is strategically important because adolescents are future mothers who will influence the health quality of the next generation. Understanding infectious diseases, nutritional status, and reproductive health is essential in developing healthy lifestyle behaviors from an early age (Elbahloul et al., 2023).

Several factors supported the success of the program, including high participant attendance and engagement, support from the Islamic boarding school administration, the use of *PowerPoint* media that facilitated participants' understanding, and the involvement of competent health professionals as educators. Visual media proved effective in presenting information in a systematic and engaging manner compared to conventional lecture methods without supporting media (Listiana & Jasa, 2023).

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However, several challenges were encountered during program implementation, including limited time allocation, which prevented all participant questions from being discussed in depth, variations in participants' initial levels of understanding, and limited audiovisual facilities during the educational sessions. Nevertheless, these obstacles did not significantly affect the overall implementation and outcomes of the program (Antaria, 2024; Listiana & Jasa, 2023).

Overall, the tuberculosis education program through the "Student Tuberculosis Care Movement" was effective in improving adolescent girls' knowledge and awareness regarding TB prevention. The increase in knowledge is expected to serve as the foundation for sustainable healthy behavior changes and contribute to preparing adolescent girls to become healthy and high-quality future mothers.

CONCLUSION

The conclusion summarizes the results and discussion relative to the community's problems. It should outline supporting and hindering factors, while recommendations should be based on the project's strengths, weaknesses, and potential for sustainability

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to the Universitas Baiturrahmah Foundation for providing financial support through the Community Service Grant Program (*PkM Grant*), which made this community service activity possible. The authors also extend their appreciation to Perkampungan Minangkabau Islamic Boarding School for facilitating and supporting the implementation of this program. Special thanks are addressed to the school administrators, teachers, and all participants who actively contributed to the success of the community service activities.

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REFERENCES

Antaria, A. (2024). *Tuberculosis Control in Indonesia Theory and Research* (1st ed.). Litnus.

Bastiana, Kurniasari, D. W., Dwi, N., Sari, K., Zahroh, C., Lisnawati, D. A., Hidayatih, N., Belakang, L., Paru, T., & Pesantren, P. (2023). PELATIHAN SKRINING DAN EDUKASI TUBERKULOSIS PADA SANTRI HUSADA DI PP AL-HIKAM BANGKALAN. *Communnity Development Journal*, *4*(5), 11301–11305.

Centers for Disease Control and Prevention. (2023). *Tuberculosis (TB)*. CDC. https://www.cdc.gov/tb/index.html

Chewe, V. M. (2024). Pregnancy outcomes following non- screening of tuberculosis at primary healthcare facilities. *HEALTH SA GESONDHEID*, *29*, 1–22.

Effendi, S. U., Khairani, N., & Izhar. (2020). HUBUNGAN KEPADATAN HUNIAN DAN VENTILASI RUMAH DENGAN KEJADIAN TB PARU PADA PASIEN DEWASA YANG BERKUNJUNG KE PUSKESMAS KARANG JAYA KABUPATEN MUSI RAWAS UTARA. *CHMK HEALTH JOURNAL*, *4*(April), 140–148.

Elbahloul, M., Ali, K., & Alghennai, S. (2023). Effectiveness of Health Education Intervention in Improving Knowledge , Attitude , and Practices Regarding Tuberculosis Among Nurses Working in Tuberculosis Centers in Libya. *AJMAS*, *6*(1), 230–239.

I, N. A., Rosnani, Z., Rosediani, M., Rosmawati, N. H., Azlina, I., & Zahiruddin, W. M. (2020). The Effectiveness of Tuberculosis Education Programme in Kelantan , Malaysia on Knowledge , Attitude , Practice and Stigma Towards Tuberculosis among Adolescents. *Malays J Med Sci*, *27*(6), 102–114.

ABDIMA JOURNAL

Kemenkes. (2019). *Santri Bisa Jadi Aset Negara*. Kemkes.Go.Id. https://www.kemkes.go.id/eng/rilis-kesehatan/santri-jadi-aset-negara

Kemenkes. (2023a). *Indonesia Raih Rekor Capaian Deteksi TBC Tertinggi di Tahun 2022*. Kemkes.Go.Id. https://ayosehat.kemkes.go.id/indonesia-raih-rekor-capaian-deteksi-tbc-tertinggi-di-tahun-2022

Kemenkes. (2023b). Survey Kesehatan Indonesia (SKI). In *Kementerian Kesehatan Indonesia*.

Kumalasari, I. (2024). *Analisis Faktor Risiko Kejadian TB Paru di Pondok Pesantren Analysis of Risk Factors Associated with Pulmonary Tuberculosis Incidence in Islamic Boarding Schools*. *20*(2), 85–95.

Listiana, A., & Jasa, N. E. (2023). THE INFLUENCE OF HEALTH EDUCATION USING VIDEO EDUCATION MEDIA ON INCREASING ADOLESCENT WOMEN ' S KNOWLEDGE ABOUT ANEMIA. *Jurnal Kebidanan Malahayati*, *9*(4), 671–676.

Riset Kesehatan 2013, Kementerian Kesehatan Indonesia 256 (2013). https://doi.org/10.1517/13543784.7.5.803

Sugarman, J., Colvin, C., Moran, A. C., & Oxlade, O. (n.d.). Tuberculosis in pregnancy : an estimate of the global burden of disease. *The Lancet Global Health*, *2*(12), e710–e716. https://doi.org/10.1016/S2214-109X(14)70330-4

Tanimura, T., Jaramillo, E., Weil, D., & Raviglione, M. (2014). Financial burden for tuberculosis patients in low- and middle-income countries: a systematic review. *REVIEW TUBERCULOSIS*, *43*, 1763–1775. https://doi.org/10.1183/09031936.00193413

Yi, S., & Hui, A. (2022). Tuberculosis in pregnancy. *Best Practice & Research Clinical Obstetrics and Gynaecology*, *85*, 34–44. https://doi.org/* Corresponding author. E-mail addrhttps://doi.org/10.1016/j.bpobgyn.2022.07.006