International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

Community-Based Diagnostic Strategies to Reduce New Pulmonary Tuberculosis Cases in Babakan Village, Indonesia

Elisya Shafa Ananda Maurika[1], Silviana Tirtasari[2*], Yulius Charles[3], Agatha Gracecia Nindra Clarissa[4], Wengkie Tanjaya[5]

[1,3,4,5]Clinical Clerkship Program, Faculty of Medicine, Tarumanagara University, Indonesia
[2]Department of Public Health, Faculty of Medicine, Tarumanagara University, Indonesia

ABSTRACT: Tuberculosis of the lungs (TB) is a persistent infectious condition that arises when the organism *Mycobacterium tuberculosis* establishes itself in the body. Although the lungs are typically the first site affected, the infection can migrate to various organs and produce non-pulmonary forms of TB. The illness spreads when tiny particles containing the bacteria are released into the air during activities such as speaking, coughing, or sneezing. According to the World Health Organization (WHO, 2023), an estimated 10.8 million new cases and about 1.25 million deaths were attributed to TB globally. Indonesia continues to face a substantial burden from pulmonary TB, ranking among the top three countries with the greatest number of cases (Ministry of Health, 2023). In the service area of the Legok Health Center, 111 individuals were recorded as having pulmonary TB, with Babakan Village reporting the highest count at 20 cases. Community assessment utilized the Blum Paradigm and incorporated findings from a mini survey. Priority issues were determined through the non-scoring Delphi technique, and underlying causes were explored using a fishbone diagram. To help address the TB burden in the community, a health education session was delivered and evaluated with pre- and post-test questionnaires. All 20 participants scored below 70 before the session, while most attained scores of 70 or higher afterward.

KEYWORDS: community diagnosis, health education, public health intervention, pulmonary tuberculosis, prevention.

INTRODUCTION

Pulmonary tuberculosis (TB) develops when the bacterium Mycobacterium tuberculosis infects the respiratory system. Although the lungs are usually the first organ affected, the organism can spread beyond the thoracic cavity and cause disease in other parts of the body if timely management is not provided. The infection is passed from person to person through microscopic droplets released into the air during actions such as talking, sneezing, or coughing. Globally, TB of the lungs remains a major contributor to illness and death, with the World Health Organization (2023) estimating around 10.8 million new cases each year and approximately 1.25 million fatalities linked to the disease [1].

Indonesia continues to face a heavy burden from tuberculosis of the lungs. Data published by the Ministry of Health in 2023 recorded 820,789 confirmed cases, while the estimated national total reached about 1,060,000 cases. These figures place Indonesia among the countries with the highest TB impact globally, ranking third after India and China [2]. Efforts to eliminate tuberculosis continue to face major challenges, as the national caseload exceeds one million, with approximately 125,00 death occuring each year [2]. The burden of cases is particularly concentrated in densely populated regions, including several provinces in Java, North Sumatra, and South Sulawesi [3]. This situation highlights the need for continueous interventions involving both healthcare facilities and the community.

In Tangerang Regency, pulmonary tuberculosis ranks among the top ten infectious diseases with the highest incidence, accounting for 13,625 cases [4]. Within the working area of Legok Primary Health Center, a total of 111 cases were recorded, with Babakan Village reporting the highest number of cases (20 cases) [5]. These data indicate that TB transmission remains acitvely occuring within the community, necesitating the strengthening of community-based approaches such as health education, contact training, and treatment support for patients with tuberculosis.

Community diagnosis refers to a structured set of activities aimed at assessing the health status of a particular population by gathering information directly from the field. The overall goal is to pinpoint key health issues affecting the community and to select interventions that are suitable for the local social context and environmental conditions [6]. This processes includes situation

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

assessment, identification of contributing factos, prioritization of problems, and formulation of alternative solutions. Thus, community diagnosis serves as an important reference in developing health intervention strategies [7].

METHODS

The community-based diagnostic process was implemented through a series of sequential steps, beginning with the identification of problem areas, priority setting, root-cause investigation, and the development of alternative solutions, followed by program implementation with continuous monitoring and evaluation. Problem prioritization employed the USG scoring method (Urgency, Seriousness, Growth) to assess the immediacy of action required, the magnitude of potential impact on the community, and the likelihood that the issue would expand or worsen if left unaddressed. Based on the identification and prioritization analysis, pulmonary tuberculosis (TB) received the highest score, indicating its status as an urgent public health concern with significant morbidity and mortality implications. Subsequently, the scope of intervention was determined, and surveillance data showed that Babakan Village consistently reported the highest proportion of pulmonary TB cases within the Legok Community Health Center's catchment area.

Initial information was gathered through a mini-survey involving Babakan Village community members. The identified problems were then analyzed using Blum's Epidemiological Paradigm, covering four key determinants: heredity, behavior, environment, and the accessibility and quality of health services. Problem prioritization was further refined using the Delphi method, while root-cause analysis was structured employing a fishbone diagram. The intervention plan was developed using a combination of the logical framework (log-frame), planning of action, and a Gantt chart to clearly outline objectives, timelines, activity locations, and resource requirements. Program evaluation was conducted by comparing pre-test and post-test results, whereas implementation progress and process improvements were monitored using the PDCA (Plan–Do–Check–Act) cycle. All collected data were analyzed descriptively using Microsoft Excel without additional statistical testing.

RESULTS

The Legok Community Health Center oversees five villages: Babakan, Palasari, Serdang Wetan, Rancagong, and Legok. Based on the 2023 report, Legok Village has the highest number of residents (14,607 people), closely followed by Babakan Village with 14,386 residents. Although their populations are comparable, Babakan covers a smaller land area (1.97 km²) than Legok (2.43 km²), resulting in greater population density. This crowded living condition may contribute to increased transmission of pulmonary tuberculosis. Health Center records also identify Babakan as the village with the most TB cases within the Legok working area. In 2024, a total of 91 pulmonary TB cases were documented, and from January to September 2025, an additional 89 cases were reported, suggesting an upward trend in TB incidence in Babakan Village.

The problem identification process was carried out using Blum's Paradigm by collecting information through interviews and a mini-survey involving 30 visitors of the Legok Health Center who reside in Babakan Village. The survey results showed that most respondents had completed senior high school and obtained information about pulmonary TB from healthcare workers. Most respondents lived in environments where houses are located close to one another. In terms of knowledge, although many were familiar with the basics of pulmonary TB, misunderstandings remained regarding the duration of treatment and the rules for discontinuing medication. From the perspective of attitudes and behaviors, some respondents agreed that covering the mouth or wearing a mask when coughing and sneezing could prevent transmission, but the practice of these preventive behaviors was not consistently implemented.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

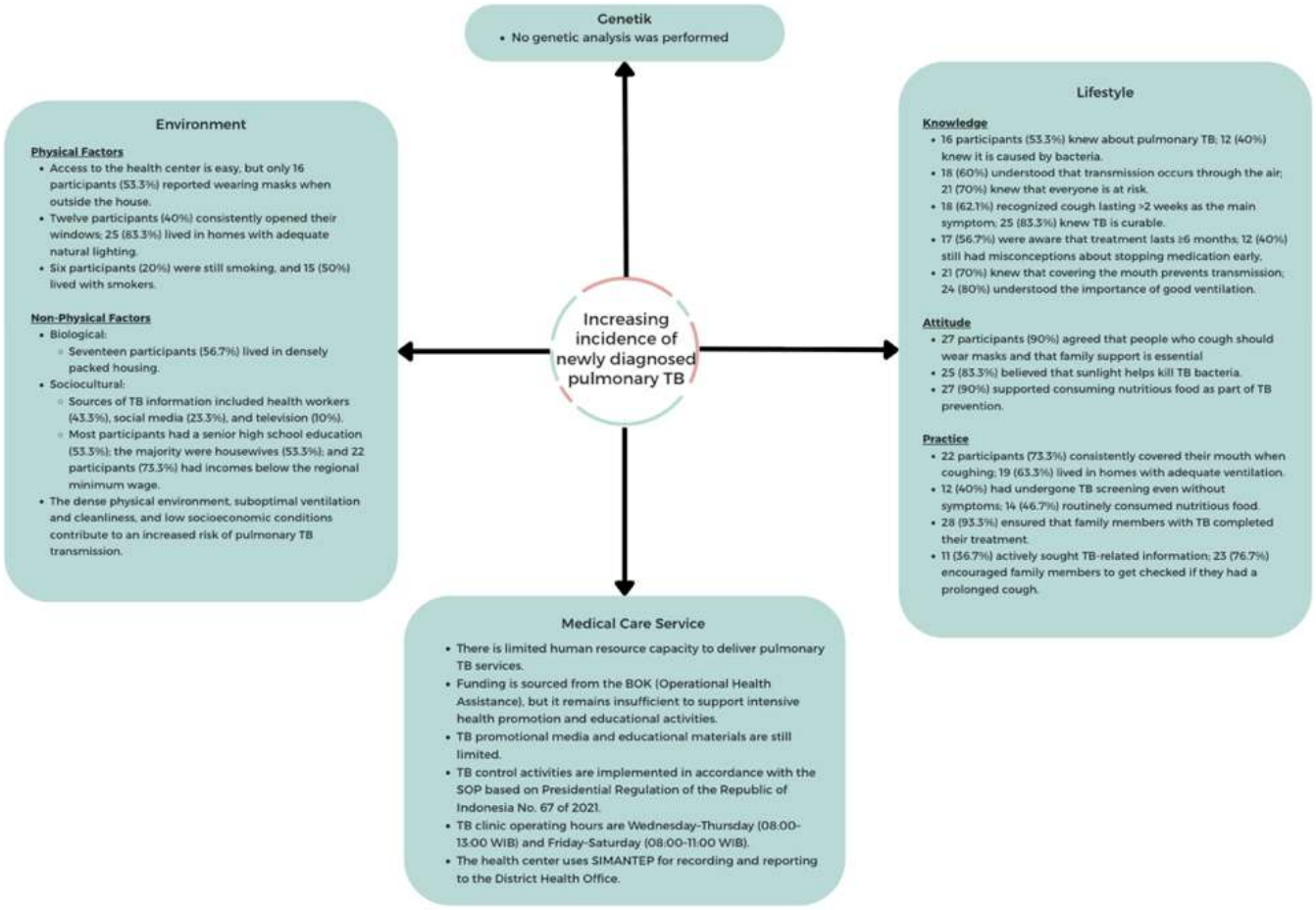

Figure 1. Blum Paradigm.

The prioritization of problem-causing factors was carried out using a non-scoring method, namely the Delphi technique. Through the discussion process, it was concluded that among the four components of Blum's Paradigm, the lifestyle aspect was the primary factor that needed to be prioritized. This was due to the low levels of community knowledge, attitudes, and behaviors related to the prevention and management of pulmonary TB. After the health education session was delivered, an improvement in participants' abilities was observed based on the comparison of pre-test and post-test scores. Before the educational activity, 20 participants scored below 70 and only 10 participants achieved a score of 70 or higher. After the intervention, the number of participants scoring ≥70 increased to 26, while only 4 participants scored <70. This change indicates an improvement in community understanding of pulmonary TB after attending the educational activity. Following the determination of priority problems, the analysis continued by identifying the root causes and determining alternative solutions using a fishbone diagram.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

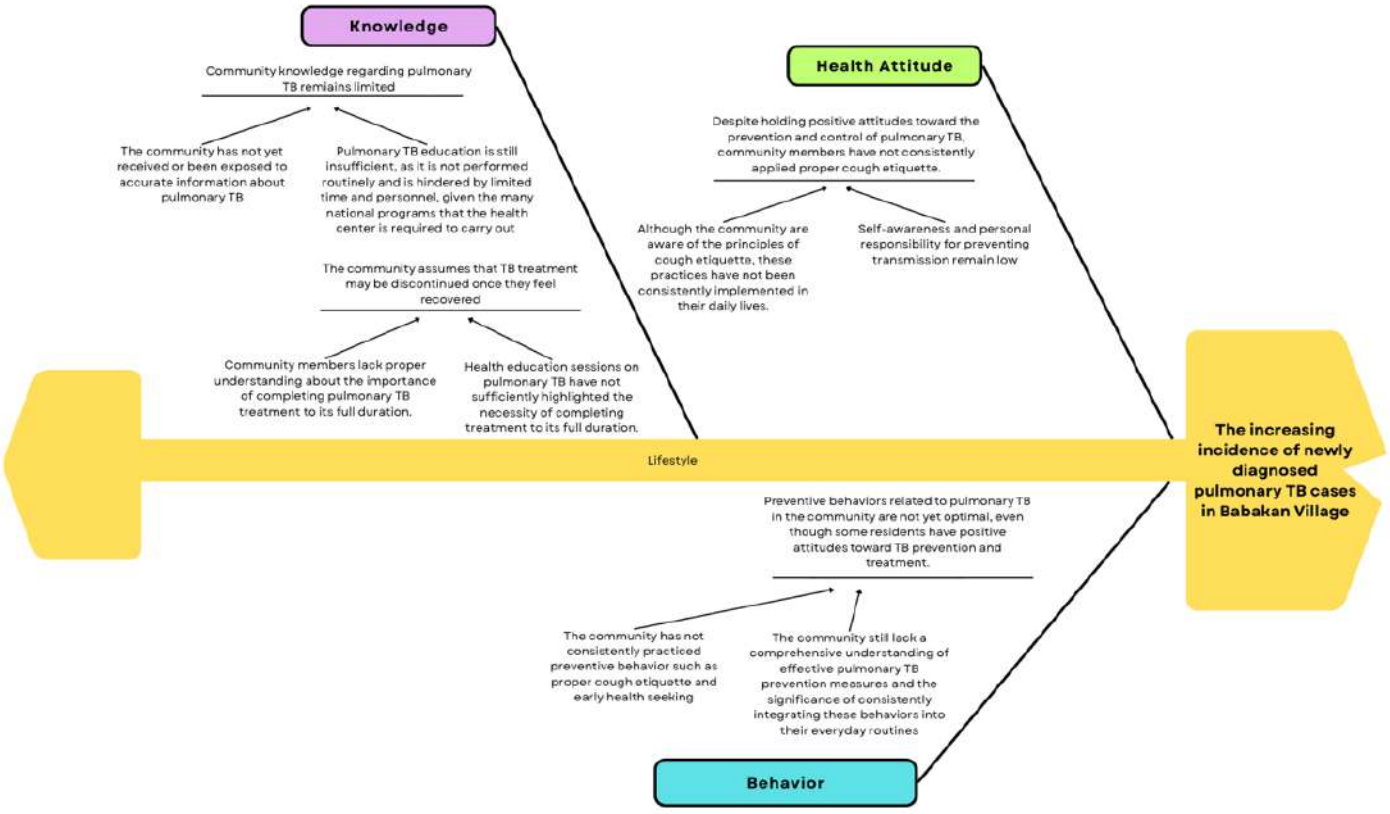

Figure 2. Fishbone Diagram.

From the fishbone analysis, several possible strategies were identified to help reduce pulmonary TB cases in the Legok Health Center area. The proposed actions included offering refresher sessions for Babakan Village health cadres on pulmonary TB—covering basic concepts, causes, symptoms, and complications that may occur if the disease is not managed properly—as well as strengthening knowledge about correct cough etiquette. Additional activities involved providing public education on TB prevention and conducting demonstrations so participants could practice appropriate coughing techniques. The intervention took place on Saturday, October 25, 2025, at the residence of a neighborhood leader (RT) in Babakan Village. The session was facilitated by medical interns from Tarumanagara University in partnership with staff members from the Legok Community Health Center. Participants included local health cadres and housewives residing in Babakan Village.

A. First Intervention

The first intervention focused on providing a refresher session for the health cadres. Five female cadres from Babakan Village participated in this activity. The main goal was to reinforce their understanding of pulmonary TB and proper cough etiquette so they could help disseminate accurate information more effectively as an extension of the health center. The event began with gathering the cadres at the neighborhood leader's (RT) house, followed by an opening and introduction by the medical interns. The cadres then received a pre-test sheet and writing materials to assess their baseline knowledge before the educational session. After the pre-test was collected, the medical interns delivered the educational material on pulmonary TB, including its definition, signs and symptoms, risk factors, consequences of untreated disease, tuberculosis preventive therapy (TPT), and prevention measures through proper cough etiquette. Posters and educational leaflets were used to support the explanation. A discussion session followed, allowing participants to ask questions. The cadres then completed a post-test to evaluate knowledge improvement after the education. The activity concluded with closing remarks from the medical interns and distribution of snacks to the participants. The pre-test and post-test results are presented in Table 1, while the PDCA cycle for the first intervention is illustrated in Figure 3.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

Table 1. Assessment of Pre-test and Post-test Scores Among Health Cadres in Babakan Village.

Variable	Proportion (%)
Pre-test knowledge	
<80	60%
≥80	40%
Post-test knowledge	
<80	0%
≥80	100%

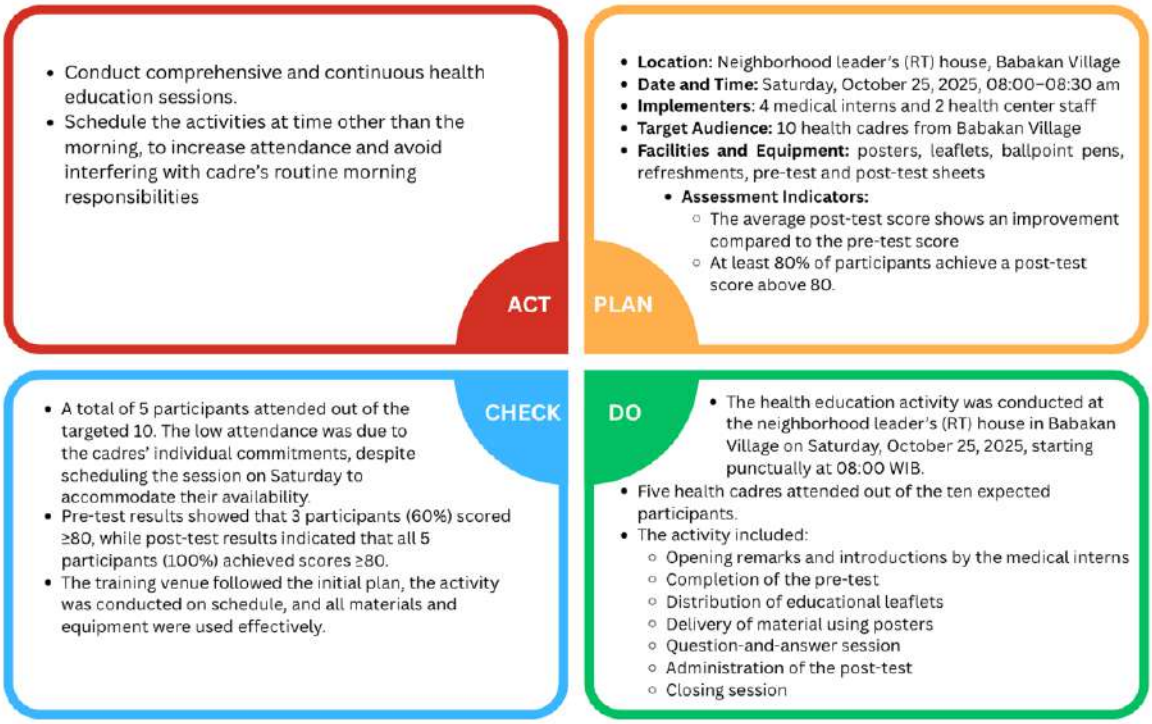

Figure 3. PDCA Framework for the First Intervention.

B. Second intervention

In the second intervention, an educational session on pulmonary TB was delivered to community members of Babakan Village. A total of 30 community members participated in this activity. The participants came from diverse educational backgrounds, with the majority having completed senior high school (53.3%), followed by junior high school (20%), elementary school (16.7%), and undergraduate education (10%). The primary objective of this program was to enhance community understanding of pulmonary TB and its prevention strategies, with the expectation that improved awareness would help reduce the number of new cases. The session began with an opening speech and introductions by the medical interns and health center staff, assisted by local health cadres. Participants were then given a pre-test sheet and writing materials to assess their baseline knowledge of pulmonary TB. After the pre-test papers were collected, the educational session continued with materials covering the definition of pulmonary TB, clinical signs and symptoms, risk factors, consequences of untreated TB, tuberculosis preventive therapy (TPT), and preventive measures through proper cough etiquette. Posters and informational leaflets were used to support the presentation. Following the material delivery, participants were given the opportunity to ask questions regarding any unclear points. After the discussion, they completed a post-test to measure knowledge improvement after the education. The activity concluded with closing remarks from the medical interns. The pre-test and post-test results are presented in Table 2, while the PDCA cycle for the second intervention is illustrated in Figure 4.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

Table 2. Assessment Results of Pre-test and Post-test Among Community Members of Babakan Village

Variable	Proportion (%)
Pre-test knowledge	
<70	66%
≥70	33%
Post-test knowledge	
<70	13%
≥70	86%

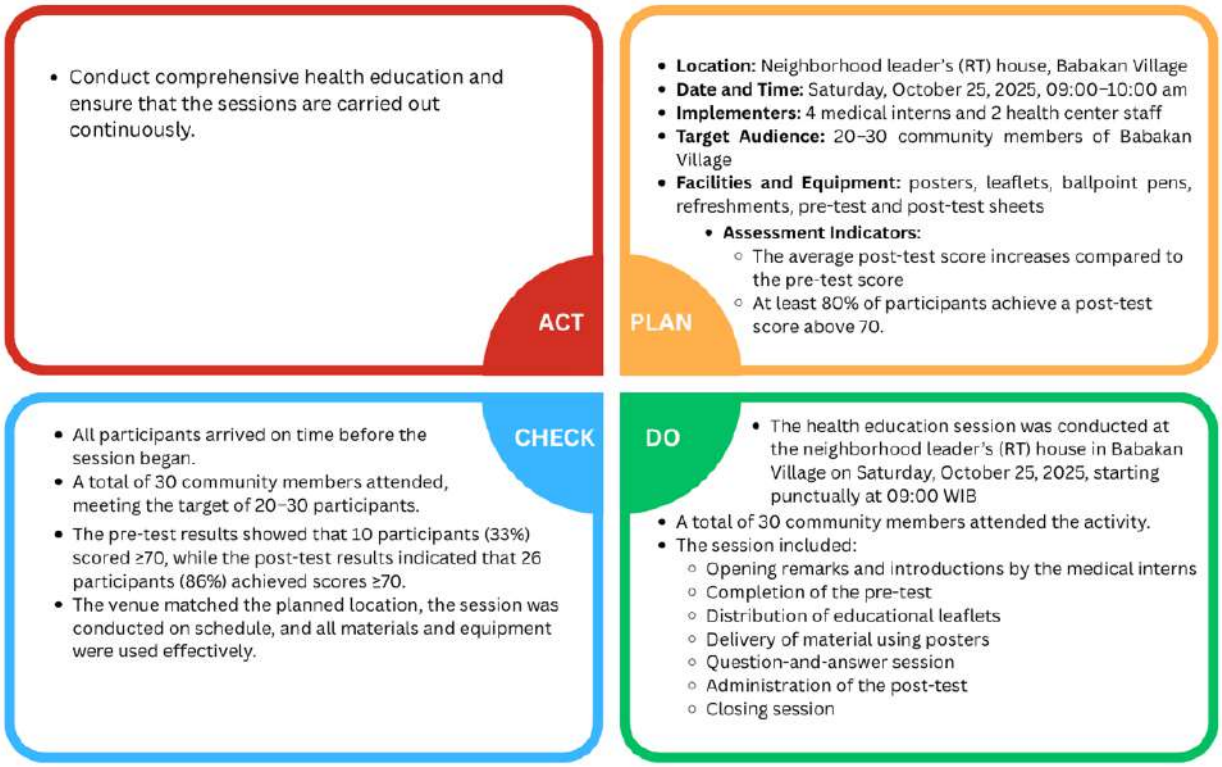

Figure 4. PDCA Framework for the Second Intervention.

C. Third Intervention

The third intervention involved conducting a training session on proper cough etiquette for community members of Babakan Village. The activity began with an opening remark and introductions by the medical interns and health center staff, supported by local health cadres. Following this, the medical interns randomly selected five community members to come forward and participate in a demonstration of correct cough etiquette. The training concluded with expressions of appreciation from the medical interns, followed by a group photo session. The five community members who took part in the demonstration received snacks and small souvenirs as tokens of appreciation. The PDCA cycle for the third intervention is illustrated in Figure 5. The evaluation of this intervention utilized a systems approach. The assessment showed that the number of cadres who participated did not meet the target (5 out of 10), indicating a gap in the implementation of the first intervention.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

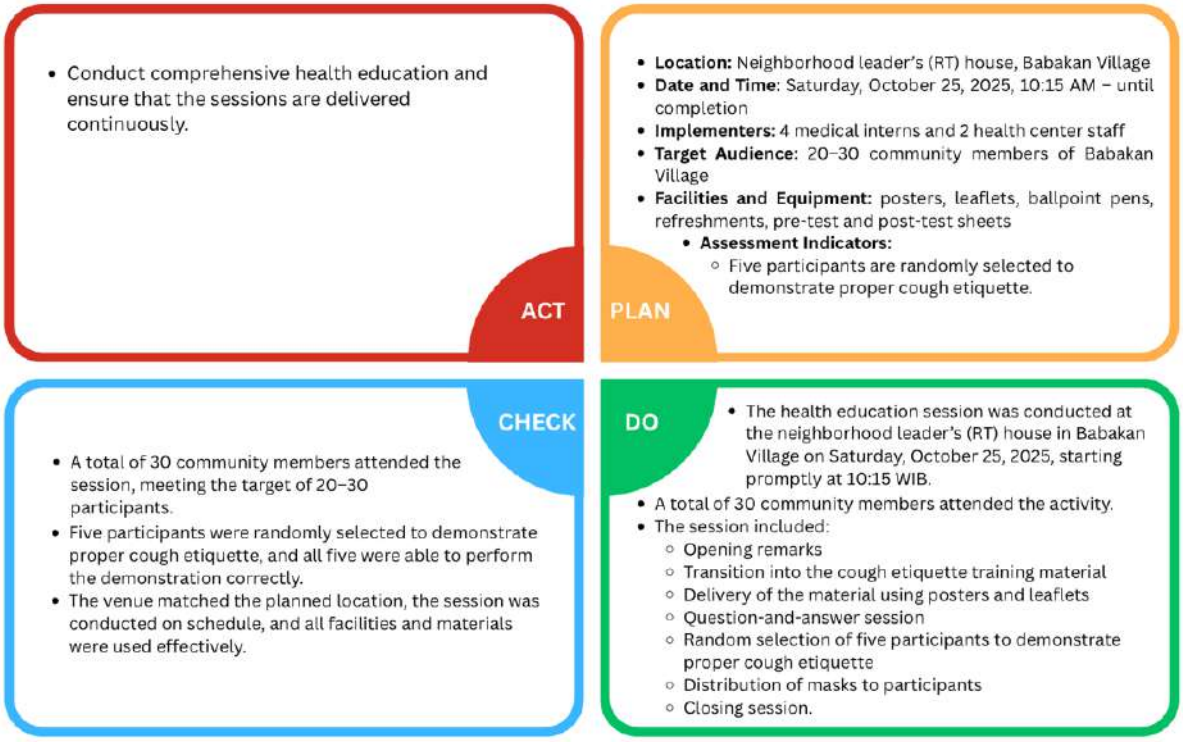

Figure 5. PDCA Framework for the Third Intervention.

DISCUSSION

This community diagnosis activity was carried out to identify the most prominent health problems within the Legok Health Center's working area, particularly in Babakan Village, which has the highest number of pulmonary TB cases. This approach aligns with the WHO's concept of community empowerment, which emphasizes that infectious disease control efforts must begin with an understanding of the local social context and community characteristics [1]. Through the mini-survey and collection of baseline information, the health center was able to identify the existing risk factors, community perceptions, and various barriers that influence TB management in the village.

The mini-survey results showed that most respondents were housewives with a senior high school educational background. Although some had previously received information about TB, their understanding was uneven and largely limited to basic concepts. Low health literacy may affect community members' ability to recognize early TB symptoms, practice preventive measures, and determine the appropriate time to seek medical care. Several international studies have also shown that limited health literacy is associated with delayed diagnosis and reduced effectiveness of infectious disease management, including tuberculosis [8].

During the health education session, visual materials such as posters and leaflets were used. Visual media are often easier for communities to understand because the information is presented in a simple and direct manner. This was reflected in the increase in post-test scores compared to the pre-test, indicating that the educational approach was well-suited to the characteristics of the community members. Numerous studies have also demonstrated that visual aids and concise explanations can enhance memory retention and improve community understanding of disease prevention behaviors [9,10].

This activity also strengthened the relationship between the health center, community health cadres, and local community members. Community-based collaboration is one of the key determinants of success in TB control programs. Active community involvement can enhance treatment outcomes, particularly in supporting medication adherence and conducting contact tracing. (Sejie & Mahomed, 2023). Findings from Indonesia also indicate that empowering health cadres and community volunteers can expand case detection efforts and accelerate the referral process for individuals with TB symptoms [11].

Overall, this community diagnosis activity produced positive impacts, particularly in improving community knowledge about pulmonary TB and strengthening cross-sector collaboration within the village. With routine educational activities, continued

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 07 July 2026
DOI: 10.47191/ijcsrr/V9-i7-15, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

monitoring of household contacts, and sustained community involvement, TB prevention and control efforts in Babakan Village are expected to become more effective.

CONCLUSION

The community diagnosis activities in Babakan Village demonstrated that pulmonary TB remains a priority health issue within the Legok Health Center's working area. The health education intervention proved effective in improving community knowledge about pulmonary TB, as reflected by the increase in post-test scores compared to the pre-test. Continuous community-based health education, together with strengthened early detection and treatment support, is essential to reduce transmission and improve treatment success rates.

REFERENCES

1. Global Tuberculosis Report 2023 n.d. https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2023?utm_source=chatgpt.com (accessed November 9, 2025).
2. Kementerian Kesehatan Republik Indonesia n.d. https://www.kemkes.go.id/article/view/19051700002/hipertensi-penyakit-paling-banyak-diidap-masyarakat.html (accessed May 26, 2023).
3. These 3 provinces have the highest TB cases in Indonesia - OBSERVER - the latest information about Indonesian news and social culture n.d. https://observerid.com/these-3-provinces-have-the-highest-tb-cases-in-indonesia/?utm_source=chatgpt.com (accessed November 28, 2025).
4. TBC di Kabupaten Tangerang Capai 13.625 Kasus pada 2024, Bupati Instruksikan Pendataan Ulang n.d. https://www.tangerangnews.com/kabupaten-tangerang/read/56308/TBC-di-Kabupaten-Tangerang-Capai-13625-Kasus-pada-2024-Bupati-Instruksikan-Pendataan-Ulang? (accessed November 28, 2025).
5. Puskesmas Legok. Laporan kasus TB paru wilayah kerja Puskesmas Legok tahun 2025. 2025.
6. Prihartono J, Budiningsih S, Kekalih A. Buku Keterampilan Klinis Ilmu Kedokteran Komunitas. vol. 1. 1st ed. Jakarta: Departemen Ilmu Kedokteran Komunitas FKUI; 2014.
7. Musfira D, Setyani A. Community Diagnosis of Environmental Health Problems in Residents in Way Dadi Village, Bandar Lampung City. Jurnal Panrita Abdi 2022;6.
8. Chauhan A, Parmar M, Dash G, Chauhan S, Sahoo K, Samantaray K, et al. Health literacy and tuberculosis control: systematic review and meta-analysis. Bull World Health Organ 2024;102:421–31. https://doi.org/10.2471/BLT.23.290396.
9. Kim K, Shin S, Kim S, Lee E. The Relation Between eHealth Literacy and Health-Related Behaviors: Systematic Review and Meta-analysis. J Med Internet Res 2023;25:e40778. https://doi.org/10.2196/40778.
10. Wang Y, Li C, Mao Y, Liu Y, Mao Y, Shao J, et al. Development and evaluation of a health literacy scale for parasitic diseases. BMC Infect Dis 2024;24:971. https://doi.org/10.1186/s12879-024-09857-1.
11. Sulistiyanto AD, Jauhar M, Lestari DT, Rahmawati AM, Suwandi EW, Kartikasari F, et al. ANALISIS FAKTOR-FAKTOR YANG MEMPENGARUHI KETERAMPILAN KADER KESEHATAN DALAM DETEKSI DINI SUNTING BERBASIS MASYARAKAT PADA KADER KESEHATAN. Jurnal Ilmu Keperawatan Dan Kebidanan 2023.

Cite this Article: Ananda Maurika, E.S., Tirtasari, S., Charles, Y., Nindra Clarissa, A.G., Tanjaya, W. (2026). Community-Based Diagnostic Strategies to Reduce New Pulmonary Tuberculosis Cases in Babakan Village, Indonesia. International Journal of Current Science Research and Review, 9(7), pp. 3745-3752. DOI: https://doi.org/10.47191/ijcsrr/V9-i7-15