

Original Research

Assessing the Effectiveness of the Tuberculosis Control Program at Kedaton Health Center, Bandar Lampung City

Dian Utama Pratiwi Putri^{1,*}, Hernida², Mella Tri Andani¹, Nabillah Dwi Affrianti¹, Muhammad Ali Satria¹ and Safa Liana¹

¹Public Health Study Program, Faculty of Health, Universitas Mitra Indonesia, Bandar Lampung 35145, Indonesia

²Nursing Study Program, Faculty of Health, Universitas Mitra Indonesia, Bandar Lampung 35145, Indonesia

Article history

Received: 31 December 2024

Revised: 9 March 2025

Accepted: 18 March 2025

Published Online: 31 March 2025

*Correspondence:

Dian Utama Pratiwi Putri

Address: Jl Cempedak no.31/45AD Gedung Meneng Rajabasa, Bandar Lampung 35145, Indonesia.

Email: dian@umitra.ac.id

How to cite this article: Putri DUP, Hernida, Andani MT, Affrianti ND, Satria MA, Liana S. Assessing the Effectiveness of the Tuberculosis Control Program at Kedaton Health Center, Bandar Lampung City. *Health Dynamics*, 2025, 2(3), 105-111. <https://doi.org/10.33846/hd20303>



Copyrights: © 2025 by the authors. This is an open access article under the terms and conditions of the Creative Commons Attribution – NoDerivatives 4.0 International (CC BY-ND 4.0) license (<https://creativecommons.org/licenses/by-nd/4.0/>).

ABSTRACT

Background: Tuberculosis (TB) is one of the infectious diseases that has become a global health challenge, including in Indonesia. This study aims to analyze the TB control program at the Kedaton Health Center, Bandar Lampung City, using the Input-Process-Output approach. **Methods:** The data used consisted of primary data, such as in-depth interviews and observations, as well as secondary data from the TB program achievement report for the last three years (2022–2024). **Results:** The results of the analysis show significant fluctuations in the achievement of the target, with case detection coverage decreasing from 91.76% in 2023 to 40.78% in 2024. The main inhibiting factors include limited human resources, low public awareness, lack of supporting facilities, and suboptimal program management structure. Health workers who concurrently work and the number of tracking cadres is minimal, reducing the effectiveness of case tracking. In addition, social stigma against TB is an obstacle in early detection and treatment. **Conclusion:** To overcome this obstacle, it is recommended to strengthen human resources, optimize facilities such as transportation and diagnostic tools, and improve public education through a community-based approach. The implementation of this strategy is expected to increase the effectiveness of the TB program at the Kedaton Health Center, support the achievement of national targets, and contribute to global efforts to reduce the burden of TB disease.

Keywords: Tuberculosis; national health programs; analysis; input-process-output

1. INTRODUCTION

Tuberculosis (TB) is one of the infectious diseases that has become a global health problem. The disease is caused by *Mycobacterium tuberculosis*, which usually attacks the lungs but can also spread to other parts of the body such as the kidneys, bones, and brain. Early infections often occur without obvious symptoms, but after 2 to 10 weeks, sufferers may show signs of immune system disorders. If not treated properly, the infection can develop into an active disease that causes serious complications.⁽¹⁾

Indonesia is one of the countries with a high TB burden in the world. Based on a report from TB Indonesia (2024), there are more than 1 million people infected with TB in Indonesia, with 134,000 deaths per year due to this disease.⁽²⁾ In addition, 31,000 cases of drug resistance were also reported, indicating a major challenge in the treatment and control

of the disease. The Indonesian government has adopted a global strategy to reduce the burden of tuberculosis, known as the End TB Strategy. This strategy targets a reduction in mortality by up to 90% and a reduction in incidence by up to 80% by 2035 compared to 2015, through innovations in prevention, detection, and treatment.⁽³⁾

At the local level, Tuberculosis is still a significant public health problem in Bandar Lampung City. Based on data from the Central Statistics Agency (2024), Kedaton District is the area with the highest prevalence of TB cases in 2023.⁽⁴⁾ Tuberculosis cases in Kedaton reached 658 in men and 453 in women, followed by Way Halim and Teluk Betung Selatan. The high number of cases in the region reflects the need for more intensive intervention in detection and treatment efforts.

The Kedaton Health Center, as one of the primary health service facilities, has an important responsibility in the implementation of the TB control program. Based on the primary data collected, the achievement of the TB case screening program at the Kedaton Health Center shows a fluctuating trend. In 2022, the coverage of suspected TB screening reached 100%, but decreased drastically to 40.78% in 2024. Similarly, the coverage of TB cases of all types decreased from 70.25% in 2022 to only 40.34% in 2024. This fluctuation shows that there are obstacles that hinder the success of the TB case screening program at the health center.^(5,6)

The decline in the achievement of the TB case screening program is due to several factors, including limited human resources, lack of supporting facilities, and low public awareness of the importance of early detection. In addition, operational obstacles are still found in the implementation of the program such as the use of personal tools by officers and limited cadres to track cases. Based on the results of interviews with health workers, it is known that a number of patients suspected of having TB symptoms are reluctant to go to health facilities, thus reducing the effectiveness of case screening.⁽⁷⁾

As part of the transformation of primary health services, the Kedaton Health Center has made efforts to improve its capabilities through various approaches, such as the involvement of networks and cadres to support the tracking of TB cases. In addition, education to the public is carried out through counseling and communication of health information. However, this effort has not been able to achieve the target set by the

Bandar Lampung City Health Office. This shows the need for improvement and reinforcement in all aspects, from inputs, processes, to program outputs.⁽⁸⁾

In general, TB treatment requires an integrated approach involving various parties, including the government, health facilities, the community, and the private sector.⁽⁹⁾ Program research and evaluation become important to understand the inhibiting factors and identify effective solutions. In this context, Input-Process-Output system analysis becomes a relevant tool for evaluating program success and designing evidence-based improvement recommendations. Considering the importance of the role of the Kedaton Health Center in controlling tuberculosis in Bandar Lampung City, this report aims to analyze the causes of the ineffectiveness of the TB case screening program. The findings of this analysis are expected to make a significant contribution to increasing the effectiveness of the program, thereby supporting the achievement of national and global targets in TB control.

2. METHODS

2.1 Study Design

This study uses a qualitative research approach to analyze the Tuberculosis (TB) control program at the Kedaton Health Center in Bandar Lampung City. The data used consists of both primary and secondary data. Primary data were obtained through reports on the achievement of the TB program at the Kedaton Health Center over the last three years (2022–2024), as well as references from policy documents and official publications.

2.2 Data Analysis

Data analysis was performed using the 5M Analysis method (Man, Money, Material, Method, Machine). The 5M analysis was carried out to evaluate the input factors involved in the management of the TB control program at the Kedaton Health Center.

2.4 Ethical Clearance

This research received ethical approval from the Research Ethics Committee of the Faculty of Health at Mitra Indonesia University (reference no.: S.25/041/FKES10/2025). The study adhered to all fundamental principles of bioethics and ethical guidelines.

3. RESULTS AND DISCUSSION

The target for the detection of TB cases has decreased drastically from 91.76% in 2023 to only 40.78% in 2024. The same thing also happened in the coverage of all types of TB cases, which decreased from 60.87% in 2023 to 40.34% in 2024. This decrease shows that there are significant obstacles in the implementation of the TB case screening program.

3.1 Input Analysis: Supporting and Inhibiting Factors of the TB Program

At the input stage, this study evaluates five main factors that affect the success of the TB program, namely humans, money, materials, methods, and machines.⁽¹⁰⁾

• Man (human resources)

There is a shortage of health workers who focus on the TB program. Many officers concurrently perform duties so that it has an impact on work effectiveness. In addition, there are only two TB case tracking cadres available, which is considered insufficient to reach all work areas.

• Money (funding)

The TB program is supported by Health Operational Assistance funds. This funding includes costs for cadre training, the purchase of medicines, and other operational activities. However, the limited budget allocation is one of the obstacles in the implementation of activities.

• Materials (facilities and infrastructure)

Drug logistics such as Adult and Child OAT, Rifampicin, as well as educational media in the form of leaflets and posters are available. However, some additional needs such as special transportation facilities for case tracking still use officers' private vehicles.

• Methods

The counseling method is carried out through KIE (Communication, Information, and Education) activities, both in the health center and in the community. The use of the SITB (Tuberculosis Information System) application also helps in case reporting, but there are still limitations in training its use.

• Machines (operational)

Support for facilities such as TB poly is available, but not yet supported by adequate transportation technology and diagnostic tools.

3.2 Process Analysis: Planning, Organization, and Implementation of Programs

In the process stage, the TB program is analyzed through three main elements: planning, organizing, and implementing.

• Planning

The planning process at the Kedaton Health Center UPT has included case reporting through SITB. However, not all activity plans are in accordance with the implementation in the field, especially in reaching at-risk populations. This is due to the lack of field personnel and optimal coordination.

• Organizing

The organizational structure of the TB program has not been optimal. Many officers are concurrently on duty, so the focus on the implementation of the TB program is reduced. Case tracking cadres also do not have a well-structured role in the organizational system.

• Implementation

Tuberculosis case screening activities have been carried out through epidemiological surveillance and health counseling. However, the coverage of activities is still low, especially in the suspected population who are reluctant to check themselves at health facilities. This obstacle is exacerbated by the lack of public awareness about the importance of early detection of TB.⁽¹¹⁾

3.3 Output Analysis: Evaluation of Program Achievements and Gaps

The evaluation of the program's achievements shows that the target of screening TB cases has not been optimally achieved. As shown in the previous table, the percentage of people suspected of TB who receive services according to the standard has decreased drastically in the last three years. In addition, the scope of TB case discovery also shows a significant downward trend.

This gap is influenced by low community participation in early detection, limited case tracking cadres, and lack of operational support. Although the logistics of medicines are available, their distribution and utilization have not been fully maximized. The health counseling carried out is also still not effective in increasing public awareness. To address this gap, improvements are needed at every stage of program

implementation. Optimizing human resources, adding case tracking cadres, and increasing the intensity of education to the community are important steps to increase program achievements in the future.⁽¹²⁾

The evaluation of the output of the TB program at the Kedaton Health Center showed that there was a significant gap between the target and the achievement. Based on the achievement table of the TB case screening program, it can be seen that the success rate of the program has decreased drastically, especially in 2024. The detection coverage of suspected TB cases only reached 40.78%, far from the target of 100%. Likewise, the coverage of all types of TB cases, which only reached 40.34% of the target of 70%.

This gap is influenced by several factors, including:

1) Low public awareness

Many individuals with TB symptoms do not check themselves at the health center due to a lack of understanding or stigma related to the disease.

2) Limited resources

The limited number of tracking cadres and health workers who concurrently work reduces the intensity of networking and counseling.

3) Operational constraints

Lack of transportation facilities and technology to support case tracking in the work area.

Although efforts have been made, such as the provision of drug logistics and educational media, this has not been enough to boost significant results. The success of the program requires additional interventions, such as increasing the capacity of cadres, more intensive education, and improving program management at the health center level.

The TB control program at the Kedaton Health Center, Bandar Lampung City, requires strategic improvements to overcome existing obstacles and increase its effectiveness. Based on the results of the analysis, several measures are recommended to strengthen human resources, increase public awareness, optimize infrastructure, and improve program management.

Human resources are a key element in the success of health programs. To ensure the success of the TB program, additional health workers who specialize in handling this program must be recruited. Thus, officers do not need to concurrently do their duties, so their focus in dealing with TB can increase. In addition, more

intensive and targeted training should be provided to case tracking cadres. These cadres have an important role in detecting new cases, providing education to the community, and reporting their findings to the health center. Structured training not only improves the technical capacity of cadres, but also equips them with better communication skills to face the community.^(13,14)

Public awareness about TB is still low, so more massive and innovative educational measures are needed. Community-based counseling, such as home visits conducted by cadres or health workers, can be one solution. Direct counseling like this is more effective in conveying health messages to the community, especially in areas with low levels of education. In addition, social media and digital technology must be used optimally to disseminate information about TB symptoms, how to prevent it, and the importance of undergoing treatment. Digital platforms such as short messaging apps, educational videos, or engaging infographics can reach younger age groups who are more familiar with technology. With this strategy, it is hoped that the stigma against TB can be reduced, so that patients do not hesitate to check themselves at health facilities.⁽¹⁵⁾

The availability of special transportation to support case tracking in the work area is an urgent need. During this time, officers used private vehicles, which were not only less efficient but also limited tracking coverage. The provision of special service vehicles will help increase the mobility of officers, especially in areas with difficult access. In addition, the use of the SITB (Tuberculosis Information System) application should be increased as a real-time case reporting and monitoring tool. Training for officers in operating this application must also be carried out so that the data entered is accurate and can be used for better decision-making. Diagnostic facilities such as the GeneXpert tool that can detect tuberculosis quickly also need to be provided. With this tool, the time required for diagnosis can be shortened, so that patients can get the appropriate treatment immediately. In addition, educational media in the form of leaflets and posters must be improved in quality and availability to support extension activities.^(16,17)

The management of the TB program at the Kedaton Health Center needs to be strengthened through the preparation of a clearer workflow and organizational structure. Each officer must have well-defined responsibilities, so that tasks can be distributed

evenly and no officer feels overwhelmed. Coordination with cross-sectors, such as local governments and community organizations, must also be improved to take advantage of existing collaboration potential. Regular evaluation of the implementation of the program is an important step in ensuring the sustainability of improvements. This evaluation must involve all relevant parties, including health center officers, cadres, the government, and the community. By conducting periodic evaluations, new obstacles can be identified early, and more timely solutions can be designed.⁽¹⁸⁾

In addition to efforts at the health center level, community empowerment is an important key to supporting TB programs in a sustainable manner. Support groups for TB patients can be formed to provide motivation and emotional support during treatment. Local networks such as community leaders or religious organizations can also be involved in health campaigns to reduce stigma and raise awareness. With this strategy, the community is not only the beneficiary of the program, but also part of the solution in TB control. Active participation from local communities can accelerate the detection of new cases and ensure that patients undergo treatment completely.^(19,20)

The results of related research include: Tuberculosis remains a devastating disease throughout the world. Efforts to eradicate it have been thwarted by poverty, lack of health care access, drug resistance, immunosuppressed populations (e.g., HIV-infected persons), and global migration. Effective management requires prompt recognition using a combination of clinical, radiographic, microbiological, and histopathologic hallmarks and initiation of appropriate multidrug therapy. In addition to effective treatment of patients with active TB.⁽²¹⁾

Eight clinical standards were defined: Standard 1, all individuals belonging to at-risk groups for TB should undergo testing for TBI; Standard 2, all individual candidates for TPT (including caregivers of children) should undergo a counselling/health education session; Standard 3, testing for TBI: timing and test of choice should be optimised; Standard 4, TB disease should be excluded prior to initiation of TPT; Standard 5, all candidates for TPT should undergo a set of baseline examinations; Standard 6, all individuals initiating TPT should receive one of the recommended regimens; Standard 7, all individuals who have started TPT should be monitored; Standard 8, a TBI screening and testing

register should be kept to inform the cascade of care. This is the first consensus-based set of Clinical Standards for TBI. This document guides clinicians, programme managers and public health officers in planning and implementing adequate measures to assess and manage TBI.^(22,23)

4. CONCLUSION

The Tuberculosis (TB) control program at the Kedaton Health Center, Bandar Lampung City, faces various challenges that affect the achievement of the target. Based on the results of the analysis, the main inhibiting factors include limited human resources, low public awareness, lack of facilities and funding, and suboptimal program management structure. Health workers who concurrently perform duties and the minimal number of tracking cadres are significant obstacles in the implementation of screening and early detection of TB cases.

Low public awareness of the importance of TB screening and treatment, coupled with social stigma, exacerbates the situation. Many individuals with TB symptoms are reluctant to self-check, slowing down the identification and treatment process. In addition, the limitations of facilities such as transportation for case tracking and modern diagnostic tools reduce the effectiveness of the program. Limited budget allocation also limits the ability of health centers to run programs optimally. However, various efforts have been made to support the program, including the provision of medicine logistics and educational media, as well as case reporting through the SITB application. However, the results achieved are still volatile and far from the set targets. The coverage of case screening has decreased drastically in the last three years, reflecting a large gap in program implementation.

To overcome these obstacles, it is necessary to strengthen human resources, improve public education, optimize facilities, and improve program management. With an integrated strategy, support from all parties, and cross-sector collaboration, it is hoped that the TB program at the Kedaton Health Center can run more effectively. This effort will support the achievement of national and global goals in TB control, as well as improve the quality of life of the community in the work area of the health center.

Ethical Approval

This research received ethical approval from the Research Ethics Committee of the Faculty of Health, Mitra Indonesia University (reference no.: S.25/041/FKES10/2025).

Acknowledgement

Thank you to Universitas Mitra Indonesia and Kedaton Health Center for supporting this research.

Competing Interests

All the authors declare that there are no conflicts of interest.

Funding Information

No funds were received for this study.

Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

REFERENCES

- Central Statistics Agency. The Number of Tuberculosis Cases by District, Health Center, and Gender. Central Statistics Agency of Indonesia, 2024. Available from: <https://bandarlampungkota.bps.go.id/id/statistics-table/2/ODYyIzI=/banyaknya-kasus-tuberkulosis-menurut-kecamatan-puskesmas-dan-jenis-kelamin.html>. (Accessed on 14 Dec 2024)
- Chauhan A, Parmar M, Dash GC, Solanki H, Chauhan S, Sharma J, et al. The prevalence of tuberculosis infection in India: A systematic review and meta-analysis. *Indian Journal of Medical Research*. 2023;157(2 & 3):135–151. http://dx.doi.org/10.4103/ijmr.ijmr_382_23
- Indonesian Ministry of Health. Revised National Strategy of Tuberculosis Care and Prevention in Indonesia 2020-2024 and Interim Plan for 2025-2026. Jakarta: Ministry of Health Republic of Indonesia, 2023. Available from: https://www.tbindonesia.or.id/wp-content/uploads/2024/02/Revised-NSP-TB-2020-2024-and-interim-plan-2025-2026_final_ttd-1.pdf (Accessed on 23 Dec 2024)
- Kemendes RI. Indonesia Health Profile 2020. Indonesian Ministry of Health, 2021. Available from: <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-Indonesia-Tahun-2020.pdf> (Accessed on 14 Dec 2024)
- Kemendes RI. Peraturan Menteri Kesehatan Republik Indonesia No. 67 Tahun 2016 Tentang Penanggulangan Tuberculosis. Jakarta: Indonesian Ministry of Health; 2016.
- Kemendes RI. Keputusan Menteri Kesehatan Republik Indonesianomor HK.01.07/Menkes/755/2019 Tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana Tuberculosis. Jakarta: Indonesian Ministry of Health; 2019.
- Kemendes RI. Pedoman Nasional Pelayanan Kedokteran Tata Laksana Tuberculosis. Jakarta: Indonesian Ministry of Health; 2020
- Klemens MC. Chmk Health Journal : Analisis Faktor-Faktor Yang Berhubungan Dengan kejadian Drop Out Pengobatan Kategori I Pada Penderita Tb Paru di Wilayah Kerja Dinas Kesehatan Kota Kupang. *CHMK Health Journal*. 2018;2(2):1-6. Available from: <https://cyber-chmk.net/ojs/index.php/kesehatan/article/view/134>
- Lestari T. Strengthening health systems to improve tuberculosis (TB) contact investigation and preventive treatment in Mimika, Indonesia [PhD Thesis]. Australia: Charles Darwin University; January 2023.
- Migliori GB, Wu SJ, Matteelli A, Zenner D, Goletti D, Ahmedov S, et al. Clinical standards for the diagnosis, treatment and prevention of TB infection. *The International Journal of Tuberculosis and Lung Disease*. 2022;26(3):190–205. <http://dx.doi.org/10.5588/ijtld.21.0753>
- Notoatmodjo S. Health Promotion & Behavioral Sciences. Jakarta: Rineka Cipta; 2012.
- Onyango PA, Ter Goon D, Rala NMD. Knowledge, Attitudes and Health-seeking behaviour among Patients with Tuberculosis: A Cross-sectional Study. *The Open Public Health Journal*. 2020;13(1):739–747. <http://dx.doi.org/10.2174/1874944502013010739>
- Hendesa A, Tjekyan RMS, Pariyana. Hubungan pengetahuan, sikap, dan dukungan keluarga dengan kepatuhan berobat pada pasien tuberculosis paru di RS paru Kota Palembang tahun 2017. *Majalah Kedokteran Sriwijaya*. 2018;4:175-184.
- Pemerintah Provinsi Lampung. Rencana Pembangunan Jangka Menengah Daerah (RPJMD) Provinsi Lampung 2019 – 2024. Lampung: Pemerintah Provinsi Lampung; 2019. Available from: <https://ppid.lampungprov.go.id/page/RPJMD-Provinsi-Lampung-Tahun-2019-2024> (Accessed on 11 Dec 2024)
- Ministry of State Secretariat of the Republic of Indonesia. Peraturan Presiden Republik Indonesia nomor 67 tahun 2021 Tentang Penanggulangan Tuberculosis. Jakarta: Ministry of State Secretariat of the Republic of Indonesia; 2021. Available from: <https://peraturan.bpk.go.id/Details/174557/perpres-no-67-tahun-2021> (Accessed on 11 Dec 2024)
- Ministry of State Secretariat of the Republic of Indonesia. UU nomor 36 tahun 2014 tenaga kesehatan. Jakarta: Ministry of State Secretariat of the Republic of Indonesia; 2014. Available from: <https://peraturan.bpk.go.id/Details/38770/uu-no-36-tahun-2014> (Accessed on 11 Dec 2024)
- Adhim P. Analisis Pengaruh Efektifitas dan Efisiensi Terhadap Pendapatan Asli Daerah Kabupaten Sanggau Dengan Kontribusi Pajak Bumi dan Bangunan Pedesaan dan Perkotaan Sebagai Variabel Mediasi. *Equator*

- Journal of Management and Entrepreneurship. 2023;11(03):162–174.
<http://dx.doi.org/10.26418/ejme.v11i03.62784>
18. Ariani NW, Rattu AJM, Ratag B. Factors Associated With Take Drug Regularity of Patients Pulmonary TB In the Work Area of Modayag Public Health Center, East Bolaang Mongondow District. *Jurnal Ilmu Kesehatan Masyarakat Unsrat*. 2015;5(1):157-168. Available from: <https://ejournal.unsrat.ac.id/index.php/jikmu/article/view/7184/6822>
 19. Renita B. Determinants of Undernutrition among Children under Five Years of Age in Indonesia: A Literature Review [Masters Thesis]. Amsterdam: Vrije Universiteit Amsterdam; 2022. Available from: <https://bibalex.org/baifa/en/resources/document/476707> (Accessed on 14 Dec 2024)
 20. Sia IG, Wieland ML. Current Concepts in the Management of Tuberculosis. *Mayo Clinic Proceedings*. 2011;86(4):348–361.
<http://dx.doi.org/10.4065/mcp.2010.0820>
 21. Indonesian Ministry of Health. TB Indonesia. Jakarta: Indonesian Ministry of Health, 2024. Available from: <https://www.tbindonesia.or.id/#> (Accessed on 14 Dec 2024)
 22. Wahdi A, Puspitosari DR. Mengenal Tuberculosis. *Angewandte Chemie International Edition*. 2021;6(11):951–952.
 23. World Health Organization. Global Tuberculosis Report 2021. Geneva: World Health Organization; 2021. Available from: <https://www.who.int/publications/i/item/9789240037021> (Accessed on 14 Dec 2024)