



IMPLEMENTATION OF A TUBERCULOSIS DRUG-RESISTANT (TB RO) CASE FINDING PROGRAM

Isnayati^{1,2*}, Kodrat Pramudho¹, Ratih Purnamasari²

¹Master of Public Health Program, Faculty of Health Sciences, Universitas Indonesia Maju, Jl. Harapan No.50, Lenteng Agung, Jagakarsa, Jakarta Selatan, Jakarta 12610, Indonesia

²Dinas Kesehatan Kota Cilegon, Jl. Pangeran Jayakarta No.47, Masigit, Jombang, Cilegon, Banten 42411, Indonesia

*isnahasan.md@gmail.com

ABSTRACT

Gaps in the achievement of drug-resistant tuberculosis case detection in Cilegon City still occur. The target of 85% case detection for RO-TB has been achieved at only 31%, with an enrollment rate of 30%. Evaluation of program implementation is needed to identify obstacles and opportunities for improving outcomes. This study aimed to analyze and evaluate the implementation of the RO-TB case-finding program. This qualitative study, using a phenomenological approach, was conducted in nine community health centers (Puskesmas) in Cilegon City, Banten. Evaluation indicators include acceptability, appropriateness, fidelity, sustainability, and implementation cost. There were 25 informants in this study, including key informants, main informants and supporting informants. Data will be collected through in-depth interviews. A questionnaire will be used to gather qualitative information. The informants in this study included heads of community health centers, health department, community health workers, pulmonary specialists, business representatives, and the media. Data analysis used the Miles and Huberman principles and triangulation. The TB RO case detection program was well-received by all Community Health Centers (Puskesmas), but trained human resources were not evenly distributed, facilities and infrastructure were inadequate, targeting needed to be reviewed, and cross-sectoral collaboration was not well-established. The SWOT analysis identified strong potential support from academics to send expert teams, industry willing to channel CSR funds and develop policies supporting the program, and the mass media to promote the TB RO case detection program. To enhance the effectiveness of the Drug-Resistant Tuberculosis case finding program, providing training for health workers and regional analysis for determining relevant targets needs to be done regularly.

Keywords: case finding; implementation research; tuberculosis

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INTRODUCTION

Drug-resistant tuberculosis (TB) (TB RO) is a global health risk that poses new challenges in resolving TB cases, driving the TB epidemic to continue, increasing TB morbidity and mortality worldwide. RO TB occurs when bacteria (Akkerman OW, 2020) *Mycobacterium tuberculosis* become resistant to first-line drugs such as rifampicin and isoniazid, which are the backbone of TB disease therapy. RO TB not only extends the duration of treatment to 9–24 months but also requires second-line drugs that are more expensive and have more serious side effects. In the short term, recent research shows that RO TB is one of the main factors in the occurrence of Post-TB Pulmonary Disease (PTLD), which is responsible for disability and suffering that often requires heavier rehabilitation. (Damayanti, 2022) (Tiberi, 2022)

Based on the report *World Health Organization* (WHO) in 2019, it is estimated that there were 465,000 cases of TB RO. Of the estimated RO TB patients, only 206,030 were successfully found and 177,099 (86%) were treated, with a global treatment success rate of 57%, also in the same year it is estimated that 3.3% of new TB patients and 17.7% of TB patients who have been treated were RO TB patients. In Indonesia, the estimated TB RO is 2.4% of all new TB patients and 13% of TB

patients who have been treated, with a total estimated incidence of RO TB cases of 24,000 or 8.8/100,000 population. However, the detection rate of TB RO cases in Indonesia has only reached 46% of the target of 70%, the enrollment rate is only 53% of the target of at least 90% and TB RO service facilities are only available in 318 out of 514 districts/cities. There are still many gaps found in the achievement of the national target.(WHO, 2020)(Anisah, 2021)

According to the Ministry of Health of the Republic of Indonesia in 2023, Banten has a total of 52,987 cases of Tuberculosis Cases (6). Cilegon City, as one of the industrial cities in Indonesia, has a high risk of Tuberculosis transmission due to high population mobility, dense environmental conditions, and uneven access to health facilities. Based on data for 2024, the estimated number of RO TB cases in Cilegon City will reach 54 cases. However, the detection rate of TB RO cases is only 17 cases or 31% of the set target of 85%. Case discovery is one of the main keys in the treatment of RO TB patients. Efforts to discover cases of RO TB are a crucial step in controlling this disease. *Active Case Finding Strategy* (ACF), which involves active screening in the community, as well as laboratory-based screenings such as Molecular Rapid Tests (TCMs), has been implemented to detect RO TB early. However, although this strategy has been implemented in various regions in Indonesia, the success rate of detection of RO TB cases is still far from optimal, with various obstacles such as limited access, laboratory infrastructure, and societal stigma against TB patients.(Paskaria, 2024)(Siregar, 2020)

The Banten provincial government has set a target of 70% of the discovery of RO TB cases from the estimated case with at least 90% of RO TB patients starting treatment and the success of RO TB treatment in Banten is at least 80%. However, in reality, the achievement until 2024 for all of the above indicators is 45% of the discovery of RO TB cases from estimated cases, *the enrollment rate* is only around 60% with the success rate of RO TB treatment at 50-55%. In fact, not all districts/cities in Banten have complete services for TB RO. A gap in achievement also occurs in Cilegon City where the target of finding TB RO cases is 85% but only 31% is achieved with *Enrollment Rate* has only reached 30%. Various efforts have been made by the government to achieve these targets such as: expanding access to diagnostics and early detection; optimization of contact screening & active case discovery; capacity building of health workers & referral systems; public campaigns and education about TB RO; and strengthening policies & multi-sectoral support. These various strategies have been set as action plans from 2024 - 2026. However, the achievements to date are still far from expectations.

Various *stakeholders* have made efforts to improve and implement the TB RO discovery program. These various parties include: The head of the health center, the person in charge of the TB program starting from the health office level to the health center, health cadres, pulmonary specialists at Cilegon Hospital, Penabulu Outreach or social institutions of the pulmonary TB observer community. However, program improvement does not only involve stakeholders; understanding other aspects of health program implementation research or *Implementation Research* (IR) needs to be considered, especially in developing countries with limited health resources. Previous research conducted by the titled "(Alonge, 2019)*How is implementation research applied to advance health in low-income and middle-income countries?*" mentioned that the approach in evaluating program implementation should involve "*multistakeholder*" Collaboration and partnerships among various stakeholders (such as academics, implementers, policymakers, and donors) across different domains of influence (research, programs, policies, and funding) are important for every program owner to understand in order for the program to achieve large-scale impact.

Implementation research based on secondary data and achievements is always carried out to monitor results. However, it is still very rare to conduct implementation research that uses qualitative design and involves a variety of *stakeholders*. Previous research titled " (Peters, 2013)*Implementation research: what it is and how to do it*" and enhanced by a study entitled "

(Smith, 2020) *The implementation research logic model: a method for planning, executing, reporting, and synthesizing implementation projects*" report several evaluation study indicators from the implementation of the program, namely *acceptability*, *Adoption*, *appropriateness*, *Feasibility*, *Fidelity*, *implementation cost*, *Coverage*, and *Sustainability* all of these can serve as indicators of successful implementation. In addition, this research can also provide a clearer picture of the strengths, weaknesses, opportunities, and threats, as well as how synergy between sectors can increase the discovery of TB RO cases. With a thorough understanding of program implementation, this study can provide evidence-based recommendations to improve the success of the RO TB detection program in Cilegon City, as well as in other areas facing similar challenges. This study aimed to analyze and evaluate the implementation of the RO-TB case-finding program based on acceptability, appropriateness, fidelity, Sustainability, implementation cost indicators.

METHOD

Research Design

This study uses a qualitative research design with a phenomenological approach to analyze and evaluate the implementation of the drug resistant TB case discovery program based on the *acceptability*, *appropriateness*, *fidelity*, *sustainability* and *implementation cost* indicators in the drug resistant TB case discovery program in Cilegon City in July to August 2025. Data will be collected through an *in-depth interview*. The questionnaire will be used to collect qualitative data related to *acceptability*, *appropriateness*, *fidelity*, *sustainability* and *implementation costs* for the drug-resistant TB case discovery program in Cilegon City. The research population consists of all multistakeholder TB discovery programs including stakeholders (such as academics, implementers, policy makers, and donors) and even targets or communities.

Informant

Informants will be selected according to research needs, where respondents are selected based on their involvement in the implementation of the drug-resistant TB discovery program from the perspective of policy makers and implementers which are divided into 3 types of informants, including: (1) 10 key informants consisting of 9 heads of health centers and 1 person in charge of the TB program in Cilegon City. (2) The main informant as many as 11 people consisted of 9 people in charge of the TB Program of the Puskesmas, 2 TB cadres, and 1 person from the TB community social institution (Penabulu). (3) Pentahelix 3 people consisting of Academics (pulmonary specialists at Cilegon Hospital), Business Actors (representatives of PT. Lotte chemical), Information media (representatives of mass media).

Instruments and data analysts

The research instrument used is an in-depth interview guideline with interview guidelines sourced from articles on implementation research and WHO guidelines on " (Peters, 2013) *Guidelines for surveillance of drug resistance in tuberculosis*" (WHO, 2015). The process of data analysis in a qualitative research goes through several stages according to Miles and Huberman in (Asipi et al, 2022(Ahyar, 2020)). Data analysis will use the help of the N VIVO program with stages including data reduction, data display, and conclusion or verification.

RESULT

Acceptability

The TB RO case discovery program was well received by the majority of officers and the public, especially after the understanding of TB RO increased. However, some health workers have not been able to carry out the program properly due to limited resources. The TB RO case discovery program was welcomed by the private and internal parties. Based on interviews with informants, the following findings are related to program acceptance indicators.

Receive the program and run it properly because the resources are ready

Most of the key informants and key informants stated that they felt comfortable because they had the readiness of human resources, facilities and infrastructure in carrying out the TB RO discovery program. Health centers that are close to resources or hospitals are better prepared and run this program well.

"...I can immediately implement the TB RO discovery program when the government determines because we already have a system that is ready to support the program." (K2 Informant).

"....because there are already human resources, because they are trained..." (K3 Informant)

"....I can immediately implement the TB RO discovery program when the government determines because it already has a system that is ready to support TB RO case discovery activities....."(K10 informant)

"... has been accepted, because it has been done actively or passively." (P1 informant, academic)

Forced to accept the program but the resources are still not ready

Some key informants, especially the head of the health center, feel obliged and must carry out the program even though human resources have not been trained, facilities and infrastructure are inadequate, and cross-sectoral cooperation has not been well established.

"... feeling uncomfortable..." "Because it is mandatory and mandatory" (Informant K5)

".. Yes, it's convenient, because you have to follow the directions from the Provincial Health Office and the Ministry of Health, it still needs a process to make it... by way of socialization first" "everything needs preparation by participating in socialization or training in the use of TCM tools and submission of TCM tools." (Informant K6)

".. It is convenient because it can manage TB RO, it still needs coordination with the health office and consular sp. Lung"(Informant K7)

Accept and help to succeed as an external party

External parties and pentahelix theory including the mass media and surrounding industries show a positive attitude by helping to disseminate information, participate and make policies in accordance with efforts to handle TB RO such as routine health checks and guarantees not to be dismissed when known to have tuberculosis.

"... Tuberculosis transmission is very vulnerable, company doctors will screen employees who are suspected of TB, socialize TB in the work environment, If there are TB patients who are not allowed to be dismissed but treated. The company accepts the existence of the TBC and TBC RO programs" (Informant P2, Industry).

"... Actually, from the media page, all forms of health information receive the essence from any journalistic lens, any form of information is very "welcome" to all health programs, including the TB RO program..."(Informant P3, _Media).

Appropriateness

The majority of informants felt that the TB RO case discovery program was relevant and in accordance with the needs of the community. However, almost all informants, both implementers, cadres, and health professionals, feel that they are in dire need of training and refreshment related to TB. The person in charge of the program and health cadres as field implementers said that they were still reporting targets that were too high and were not cooperative with the program. Pentahelix respondents felt that the program was in accordance with the conditions of the community.

The program is appropriate and can be run optimally

The majority of respondents from health and industry professionals felt that the TB RO case discovery program was relevant and in accordance with the needs of the community. This program is considered to be able to benefit the community in terms of screening and monitoring of TB RO if it collaborates with industry because Cilegon is an industrial city.

"...The TB RO program with the environment of industrial workers is very relevant, several times it has collaborated with local health centers...." (Informant P2, Industry).

"The TB RO discovery program implemented provides great benefits in facilitating early detection and timely treatment., The program also helps to achieve the target by expanding the reach of screening, especially in high-risk communities, such as industrial workers, so that more cases are detected and treated...." (K2 Informant)

"... it is appropriate". (K3 Informant)

"... Easy is not too difficult to understand..."(Forum Group Discussion 2)

"... training is carried out by professional health workers, for training does not need to be routine..."(K8 Informant)

The program provides benefits but is not appropriate, the target setting is too high and the population still refuses so much that it needs training

Although it has long been socialized and carried out by health workers, almost all informants, both implementers, cadres, and health professionals, feel that they really need training and refreshing related to TB. The person in charge of the program and health cadres as field implementers said that they were still reporting targets that were too high and were not cooperative with the program.

".. It is enough to provide benefits, but the discovery of TB RO cases is still far from the target."(K9 Informant)

"... Training for staff is needed to ensure they understand the latest procedures in the diagnosis and treatment of RO TB, as well as the use of diagnostic tools, but the target population of RO TB is too high from the centre." (Informant K10)

"It is appropriate, but the target was not achieved due to the non-compliance of TB SO patients in treatment, so it is difficult to find cases, because there are some TB RO patients who refuse."(Informant U6)

"... A little less appropriate" "it is necessary to refresh knowledge about what is needed in handling TB because science is developing" (Informant K1).

"....Training for staff is needed to ensure they understand the latest procedures in the diagnosis and treatment of RO TB, as well as the effective use of diagnostic tools such as TCM.(Informant K2)

Fidelity

The results of the interview on the loyalty aspect provide several conclusions, namely: 1. The implementation of the TB RO case discovery program has been running in the health sector according to protocols and standard operating procedures without any changes. 2. There is a need for improvement and improvement in the referral system, socialization to the community and intensive for health workers. 3. Strengthening external parties (pentahelix) has not been carried out and will only start in 2025 even though this case discovery program has been implemented by the health sector since 2023.

"... The current SOP is appropriate, so there is no need for any changes" "because the existing problems are more related to external factors, such as lack of public awareness, limited access to health facilities, and limited resources that cannot be overcome by changing procedures alone. We continue to focus on improving education, collaboration with various parties, and continuous monitoring...." (K2 Informant).

"....It just so happens that TB RO in Cilegon City has only been implemented for 2 years from 2023" "Necessary. Namely cases that need to be referred by PMT for patients with Incentive Drugs for health workers". (Informant K5).

Sustainability

The results of the study show that the sustainability of the program depends on cross-sectoral commitment and integration into regional planning. Currently, sustainability is driven by the support of the Global Fund and BPJS, but it has not been accompanied by strong APBD allocation

or industry CSR support. All informants want the sustainability of the program because it is felt to be beneficial. Some of the programs that are felt to have a real impact include: TB diagnostics with TCM techniques, training of health workers, community-based counseling, the implementation of contact investigations on confirmed patients and the availability of the SIBB application, screening efforts for at least 8 families of TB patients, MESO recording, and the provision of TPT (tuberculosis prevention therapy). However, there are still several aspects that need to be improved and improved which are summarized in the results as follows: Procurement of laboratory equipment, increased community participation through efforts to pick up the ball in TB pocket areas, increase the accessibility of services and examinations, and improve the referral and coordination system.

"... that needs to be maintained include :p the use of TCM diagnostic tools for rapid examinations, routine training for health workers to maintain the quality of services, and coordination with hospitals and the Health Office for case referrals. In addition, community-based counseling is also effective in increasing public awareness about the importance of early detection of TB RO..." (K2 Informant).

".. What must be changed is that health facilities are only waiting for patients who come for examination or screening, but now officers can also go out to find targets or pick up balls to TB pockets, especially to people who have TB patients in their area...." (Informant K6)

"... In principle, the things that government regulation we will welcome, both from the Directorate of Agriculture and from the Health Office, the company is ready to support." (Informant P2).

Implementation cost

The results of the study show that the complexity of activities in the TB RO discovery program makes several key informants convey funding difficulties, especially in promotional activities and home visits of TB RO patients. Various efforts were made Most of the informants to continue running the program, including: Maximizing BOK funds and funds provided by the government, Using BPJS claim funds, Apply for and obtain *global fund* (GF) funds, Getting funds from the surrounding industry / *corporate social responsibility* (CSR).

The use of these funds is mainly for the operation of patient visits, socialization activities in the community, efforts to provide drugs and purchase laboratory goods, office stationery (ATK), and consumables (BHP). Researchers found that in some areas these activities are only sourced from government funds and programs without CSR or external party assistance, so that the ability to maximize the program is still not carried out properly.

"Most of the funds for the TB RO discovery program come from the government budget through the Health Office. However, we also sometimes need additional funds from outside the program, such as CSR funds from local companies or donations from health institutions to support the implementation of the program."(Informant k2).

"Most of the funds for the TB RO discovery program come from the government budget through the Health Office. However, there is a Global Fund" (K12 Informant).

DISCUSSION

The research found that the Cilegon City government and the health center must first review the readiness to receive the program and involve appropriate external parties if necessary to meet the resources needed. The mandatory program makes many health centers accept without being able to appeal or review related to readiness and resources. These results are in line with research reported by Ayuningtyas et al, (2022) where it is explained that health facilities must be ensured to be available and health workers must be competent when it comes to TB cases. Synergy between stakeholders and external parties (*Pentahelix*) must be able to ensure collaborative, productive, and harmonious relationships so as to produce valuable and quality work (Chotimah., 2018). Effective governance involves value systems, policies, and institutions to manage economic, political, and social issues through the government, private, and civic sectors ((Ayuningtyas, 2022)São Paulo et

al, 2023). Acceptability can be measured from the perspective of various stakeholders, such as administrators, payers, service providers, and consumers. We assume that acceptance rates are dynamic, changing with experience (Satrianegara, 2025). Therefore, the level of acceptance can differ when taken, for example, before implementation and subsequently at different stages of implementation.(Proctor, 2011)

Previous research has reported that optimizing the quality of health care means providing the right care at the right time, the fit between needs, targets, and the ability to achieve outcomes (Zachariah et al, 2024). The suitability in calculating and designing a program will greatly determine the measure of its success. Based on this explanation, it will be very possible if the achievement is small or not according to the target because the standards used or set are too high. Accurate epidemiological analysis and measurement are needed.(Kini, 2020)(Topor, 2018). Previous research has also mentioned that there are several factors that hinder the sustainability of a community-based program. Such factors include lack of funding, leadership challenges, a less conducive organizational climate, inadequate technical assistance, and fidelity or compliance monitoring. The challenge of integrating leadership and adjusting technical assistance to provide infrastructure for program implementers and targets is key to program sustainability. The sustainability of the program depends on cross-sectoral commitments. Currently, the program still relies on external funding ((Probandari, 2019)(Hailemariam, 2019)*Global Fund*), has not been firmly integrated in the APBD and there are no local regulations that encourage the participation of the business world (industry) considering that Cilegon City is an industrial city. This reinforcement is more needed than creating new programs or deleting programs.

CONCLUSION

The researcher suggested that some GAP or gaps such as inadequate achievements, lack of TB RO cadres, inadequate facilities and infrastructure, and insufficient funding for home visits. These problems can be overcome in several ways, including: (1) cooperation with academics to conduct regional needs analysis and target calculations that are in accordance with the population and prevalence of diseases. (2) the involvement of students or professionals from external parties such as NGOs to help carry out health promotion and counseling. (3) collaborating with industry for involvement in providing CSR funds and policies that require employees and their families to participate in the program, so that the achievement of the program can be maximized, because many citizens of productive age cannot participate in the program due to work schedules at the factory.

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