



Public-Private Mix Strategy for Tuberculosis Control in Medan: A Qualitative Descriptive Study

Yuyun Firdaus¹, Siti Khadijah², Juanita³

¹Master Student at the Faculty of Public Health, Universitas Sumatera Utara, Medan, Sumatera Utara, Indonesia

^{2,3}Faculty of Public Health, Universitas Sumatera Utara, Medan, Sumatera Utara, Indonesia

Email: yuyun3011firdaus@gmail.com

Article details:

Published: 30th June 2025



Abstract

The high burden of tuberculosis (TB) in Indonesia, including in Medan, emphasizes the importance of TB service network involvement in all government and private health facilities through a collaborative public-private mix (PPM) approach. The objective of this study is to describe the public-private mix strategy for TB control in Medan. This study uses a qualitative descriptive design. The informants consist of five individuals selected through

purposive sampling. Data collection was conducted through in-depth interviews, and the data obtained were analyzed through data condensation, data presentation, and conclusion drawing. Study results indicate that the implementation of the public-private mix strategy for TB control in Medan has been progressing relatively well; however, the achievement of the specific objectives expected from the implementation of the public-private mix is still hindered by several factors, such as the limited coverage of TB preventive therapy administration through the TB service network due to low awareness and motivation regarding TB prevention, as well as the often unresponsive application of the TB information system within the TB service network and limited human resources for its operation. All TB service networks, including government and private healthcare facilities and community-based organizations, should strengthen their involvement and enhance collaboration in implementing the public-private mix strategy for TB control, aiming to achieve the global and national TB elimination targets by 2030.

Keywords: Public-private mix, Tuberculosis control, Qualitative

To cite this article :

Yuyun Firdaus, Siti Khadijah, J. (2025). Public-Private Mix Strategy for Tuberculosis Control in Medan: A Qualitative Descriptive Study. *International Journal of Health, Education & Social (IJHES)*, 8(6), 106–122.



Introduction

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*, affecting more than ten million people globally each year (PDPI, 2021). The incidence rate of TB was reported to be 134 new cases per 100,000 population in 2023, showing a slight increase (0.2%) compared to 2022 (WHO, 2023). TB has again become the leading cause of death due to a single infection globally in 2023, replacing coronavirus disease (COVID–19) and accounting for nearly twice as many deaths as HIV/AIDS, with 1.25 million TB-related deaths. Indonesia is among the 30 countries with the highest TB burden and ranks second (10%) among the five countries contributing 56% of global TB cases, after India (26%), making it one of the primary health issues with not only medical but also social, economic, and cultural impacts (WHO, 2024).

The high burden of TB is driving a global commitment to eliminate TB by 2030, with targets of a 90% reduction in TB deaths and an 80% reduction in TB incidence compared to 2015. Aligned with this global target, the Indonesian Ministry of Health has developed a roadmap for TB elimination, implemented through the application of six strategies based on Presidential Regulation of the Republic of Indonesia No. 67 of 2021 on Tuberculosis Control. These include improving access to quality, patient-centered TB services through the optimization of TB service networks in government and private health facilities, as well as increasing the participation of communities, stakeholders, and other multisectoral stakeholders in TB control. The involvement of the TB service network, comprising all government and private healthcare facilities and all stakeholders, is systematically and comprehensively implemented through a collaborative approach known as the public-private mix (PPM). It aims to ensure that every individual is provided with services of their choice while still receiving standard care and that all TB patients who are identified and/or treated are reported in the TB information system, thereby increasing case notification and reducing the number of missing cases (Kemenkes RI, 2020).

Data reveals that out of an estimated 1,090,000 TB cases in Indonesia in 2023, only 74% were successfully identified and reported, while 26% remained not notified due to being inaccessible, undetected, or unreported. Only 98% of community health centers, 95% of government hospitals, 90% of private hospitals, 37% of government clinics, and 25% of private doctor/clinic practices participated in the detection and reporting of suspected TB cases. Among healthcare facilities that detected suspected TB cases, not all of them reported the cases. Although there was an increase in TB case detection across all healthcare facilities in 2023, the number of TB cases that received treatment out of the total reported cases detected only reached 88%. Additionally, the treatment success rate for drug-sensitive TB, which reached the national target of 90%, was only achieved in community health centers, while private healthcare facilities have not yet reached the minimum target of 85%. The rate of loss to follow-up also remains high (over



10%), particularly in government hospitals, private hospitals, and independent doctors' practices or private clinics (Kemenkes RI, 2024a). This indicates that healthcare facilities have not yet achieved the target goals in tuberculosis control in Indonesia, necessitating a consistent and ongoing evaluation of the implementation of the PPM strategy to strengthen the involvement and contribution of both public and private healthcare facilities in the tuberculosis control program.

North Sumatra Province is one of the provinces that has not yet achieved the national target for TB case detection coverage and treatment success ($\geq 90\%$). In 2023, TB case detection coverage in North Sumatra was only 56.9%, with a treatment success rate of 89.5% (Kemenkes RI, 2024c). The highest number of TB cases was reported in Medan, amounting to 15,722 cases; however, the TB treatment success rate was found to be the lowest in Medan at 83.43%, with the highest number of TB-related deaths at 274 deaths (Dinkes Provinsi Sumatera Utara, 2023). Data from the Medan Health Department states that 50% of suspected TB cases reported in 2023 were from private clinics/independent doctors' practices, 20% from community health centers, 19.8% from private hospitals, 5% from government hospitals, 2.9% from local prisons, and 1.5% from government clinics. Preliminary survey findings indicate that there are still TB cases being identified but not reported to community health centers or the TB information system, particularly those seeking care at private doctors' practices, private clinics, or other healthcare facilities that have not yet collaborated with the Medan Health Department, as the responsible authority for the PPM program. Additionally, the limited human resources for data entry into the TB information system application also contribute to the underreporting of suspected or confirmed TB cases in Medan. Based on this context, this study was conducted to describe TB control through the PPM approach in Medan and identify shortcomings, barriers, or other factors that may strengthen this strategy in enhancing the involvement of TB service networks across all government and private healthcare facilities.

Methods

This study used a qualitative descriptive design and was conducted in Medan during 2024. Informants in this study were selected using purposive sampling, based on the researcher's judgment regarding the study objectives, specifically those involved in and understanding the implementation of PPM for TB control in Medan. The selected informants consisted of five individuals from various TB service networks in public and private healthcare facilities in Medan, including the Medan Health Department, community health center, government hospital, and clinic (Table 1).



Table 1. Characteristics of Informants

Position	Age (years)	Gender	Education	Code
Head of Communicable Disease Prevention and Control Team, Medan Health Department	56	Male	Master	1
Vice Supervisor of TB, Medan Health Department	47	Female	Master	2
Head of TB Program, Glugur Darat Community Health Center, Medan	42	Female	Master	3
TB Technical Officer, Haji General Hospital, Medan	42	Female	Bachelor	4
Haji Primary Clinic, Medan	29	Male	Diploma	5

Data collection was conducted through in-depth interviews. The collected data was then analyzed using the Miles et al. (2014) model, including data condensation, data presentation, and conclusion drawing stages. The data condensation stage is the process of summarizing raw data, creating categories, identifying key and important data, and then presenting the data in narrative text to organize and arrange it for easier understanding. Finally, conclusions are drawn from the findings or information obtained.

Results and Discussion

Healthcare facilities involved in the implementation of PPM consist of primary healthcare facilities, advanced healthcare facilities, and supporting healthcare facilities. Primary healthcare facilities include community health centers, primary clinics, and independent medical or healthcare practitioner practices, while advanced healthcare facilities include hospitals, main clinics, and health centers. Meanwhile, supporting healthcare facilities include pharmacies and laboratories. Based on ownership, healthcare facilities involved in PPM are categorized into government healthcare facilities, which are owned by the Ministry of Health, other ministries, local governments, state universities, the Indonesian National Armed Forces, and the Indonesian National Police, or private healthcare facilities, which are owned by state-owned enterprises, non-profit organizations, companies, individuals, or other private entities (Kemenkes RI, 2024b). Medan has 75 hospitals, consisting of 12 government hospitals and 63 private hospitals, 41 community health centers, 181 clinics, and 168 independent doctors' practices. Currently, there are 148 health facilities in Medan that have established partnerships with the health department for TB control.

The implementation of PPM in Medan according to the specific objectives in the technical guidelines for district- or city-based TB service networks will be described as follows.



Improving access to quality TB services and standards in collaboration with all government and private health facilities

The implementation of PPM involving all government and private health facilities is very important to ensure that the community and TB patients are able to access services of their choice while still receiving comprehensive, standard-compliant, and high-quality care, starting from preventive and promotive care and diagnosis to curative and rehabilitative care (Kemenkes RI, 2024b). Based on the research findings, improving access to TB services with standards and quality by involving all government and private healthcare facilities is already being implemented. The North Sumatra and Medan Health Department, government and private hospitals, community health centers, and clinics in Medan have established cooperation in TB services, including diagnosis and follow-up treatment. This collaboration also aims to make it easier for patients to access TB services at health facilities closest to their residences, thereby eliminating obstacles, particularly in completing treatment. The health facilities also have doctors, nurses, and other health workers who have registration certificates, which further strengthens their ability to provide standard and quality services. This is evident from the following interview excerpts:

“The services provided by health facilities are definitely up to standard. There is already cooperation between the Provincial Health Department, hospitals, and community health centers in Medan, while in the private sector there is cooperation with private hospitals and clinics.” (Informant 2, Medan Health Department)

“We provide services to every patient visiting the outpatient clinic or emergency room according to regulations. Patients attending the outpatient clinic are generally referred from primary healthcare facilities. Patients arriving at the emergency department with symptoms suggestive of TB undergo a chest examination, which is then reported to a specialist for inpatient care. Following this, patients are typically directed to the outpatient clinic for the administration of anti-TB medication or, if the patient's residence is distant from the hospital, are provided with a referral to a healthcare facility closer to their home. We will coordinate with TB staff at the nearest healthcare facility to the patient to confirm the referral. To improve TB services, we collaborate with the North Sumatra and Medan Health Departments, Glugur Darat and Pulo Brayan Community Health Centers, Haji Clinic, as well as pulmonologists and nurses who have registration certificates, ensuring they meet the required standards. Challenges include miscommunication, but this is rare as all healthcare facilities are already operating according to their respective roles.” (Informant 4, Haji General Hospital, Medan)

“We are currently conducting contact investigations with TB patients and providing treatment for TB patients. We are collaborating with the Medan Health Department, Haji General



Hospital, Imelda Private Hospital, Pirngadi Regional General Hospital, and there are also clinics.” (Informant 3, Glugur Darat Community Health Center, Medan)

“For network cooperation or PPM, TB patients will be provided with treatment at the clinic, but for follow-up, we will refer them to the network community health center.” (Informant 5, Haji Primary Clinic, Medan)

Improving and increasing the detection of TB cases through screening, early detection, and contact investigation

The engagement of TB service networks with a PPM approach was also implemented to accelerate and improve the effectiveness of finding and diagnosing individuals with TB. Reviono et al. (2017), in their study, showed that the PPM strategy, which involves more healthcare facilities and is accompanied by widespread dissemination of information and training for medical and administrative staff on TB case detection procedures, was able to increase the TB case detection rate in Central Java Province compared to before the implementation of this strategy, although the outcomes fluctuated and did not yet meet the national target. Another study by Sunjaya et al. (2022) also found that the case detection rate in Purwakarta District increased from 35% (2018) to 104% (2019) after the district-based PPM strategy was implemented, leading to a significant increase in case detection contributions by private hospitals.

Based on the results of this study, it is known that TB case detection through screening, early detection, and contact investigation has been conducted properly with coordination between government and private health facilities in Medan and in collaboration with communities or cadres. This is evident from the results of interviews with these informants:

“To improve the identification of TB cases, in addition to screening and contact tracing, collaboration is also required with networks including hospitals, clinics, community health centers, or non-healthcare facilities, as well as TB control communities such as YMMA, KNCV, KOPI TB, Penabulu, or health insurance institutions. We must coordinate with all of them, and sometimes we hold meetings to help identify TB patients. We also make sure that healthcare facilities in Medan are following the standards and procedures for TB identification, just like all community health centers, hospitals, or clinics. But if there are changes or additions to the procedures for TB identification, we usually hold meetings and training sessions for TB officers so they can implement the new procedures at their respective healthcare facilities.” (Informant 1, Medan Health Department)

“With a thorough examination, if TB is confirmed, anti-TB medication is administered. For TB identification, we collaborate with both internal and external hospital staff. If a patient is identified with TB, the follow-up will be reported to healthcare workers and the hospital network's



healthcare facilities. Community members or volunteers at the specialized pulmonary clinic provide motivation to TB patients to help them stay motivated, especially for long-term medication adherence. There are no major challenges; everything has been proceeding smoothly according to regulations so far.” (Informant 4, Haji General Hospital, Medan)

“Patients with complaints of coughing for more than two weeks, night sweats, loss of appetite, and weight loss are immediately referred for sputum tests and blood tests, then given anti-TB medication. We ask for their contact details and address in case they do not return, as we can then visit their home and ask why they did not return to the health center or why they did not provide a sputum sample. Community health workers can also visit the patient's home.” (Informant 3, Glugur Darat Community Health Center, Medan)

“...by screening patients and conducting TCM examinations here. It can also be done by strengthening this PPM.” (Informant 5, Haji Primary Clinic, Medan)

Improving TB treatment initiation and coverage

The results of the study indicate that the implementation of PPM in improving TB treatment initiation and coverage in Medan City has been conducted by the TB service network in both public and private health facilities. Based on the results of interviews, as reflected in the statements of informants below, efforts to improve TB treatment initiation and coverage are carried out by hospitals through strengthening the online referral system of healthcare facilities collaborating with the government sector (e.g., community health centers) and the private sector (e.g., clinics) based on the patient's nearest location, while at community health centers, these efforts are carried out through active screening, contact investigation, TCM examinations, education, involving community health workers in case detection, involving medical staff and families in monitoring patients' medication adherence, as well as monitoring and managing medication side effects to prevent treatment discontinuation. Meanwhile, the clinic is striving to improve cooperation with community health centers and hospitals for further examination in confirming TB diagnoses and providing follow-up treatment for TB patients.

“Expanding TB treatment coverage in Medan starts with providing anti-TB drugs to every community health center or clinic that has a Memorandum of Understanding (MoU), supported by education and guidance for healthcare facilities, and collaboration with various parties in TB control. We also conduct training for health cadres to assist patients. Our collaboration with other networks or healthcare facilities has been good so far, as we always coordinate. Each network already has a designated responsible party, so if there are any obstacles, such as medication shortages, TB patients discontinuing treatment, issues with the TB information system, or other challenges, these are always communicated to us.” (Informant 2, Medan Health Department)



“For treatment, there is something called TB initiation, where we collaborate with community health centers that refer patients here. Community health centers carry out initiation or initial treatment, but before that, patients are sent to the hospital for chest examinations, electrocardiograms, and other tests as a baseline for treatment. Then, patients are directed to the health facility closest to their residence so that it is easy for them to get their medication. For medication claims, they are sent to the Global Fund and the Provincial Health Department; therefore, we must also collaborate with them.” (Informant 4, Haji General Hospital, Medan)

“TB treatment coverage is ongoing, with collaboration between health facilities, community health centers and clinics, or community health centers and hospitals using a referral system from community health centers to hospitals or vice versa.” (Informant 3, Glugur Darat Community Health Center, Medan)

“So far, TB treatment coverage has been good. Treatment is initiated at clinics, followed by referral to community health centers or hospitals for monitoring of patient examinations and treatment.” (Informant 5, Haji Primary Clinic, Medan)

Improving TB treatment initiation and coverage is a key step in ensuring that more TB patients are diagnosed, receive standard treatment, and achieve sustained TB recovery. In a previous study in Pekanbaru, the implementation of PPM by the public and private sectors, coordinated by the district or city health department, has been shown to increase TB treatment success rates, although it has not yet met the national target (Nazriati et al., 2021). However, this suggests that the PPM strategy framework is important for continued implementation and evaluation to support TB control.

Increasing the value of successful TB recovery

The success of TB recovery is not only measured by the treatment success rate but also by the quality of life of patients after treatment is completed. Adding value to the success of TB recovery requires support from medical, psychosocial, and environmental aspects. From a medical perspective, rapid and accurate diagnosis to enable immediate treatment is a determining factor in the success of TB recovery, while from a psychosocial perspective, TB patients need to be motivated to improve their quality of life. Meanwhile, environmental support can be provided through education for patients and families on TB prevention and screening for family members or close contacts of patients. Research results show that TB service networks in both public and private health facilities have been involved in increasing the success rate of TB recovery, whether carried out by doctors, TB officers, medical staff, or the community or cadres. This is evident from the following excerpts from interviews:



“Through this PPM network collaboration, everyone is involved in disseminating information and educating the public through health promotion, TB patient screening, contact investigation, improving treatment compliance, and improving the quality of life of TB patients. We also involve cadres or TB officers who have been trained.” (Informant 1, Medan Health Department)

“TB treatment in hospitals is following the proper procedures. Patients admitted from the emergency room or outpatient clinic are always examined by a specialist to confirm the diagnosis. Patients from the emergency room are admitted to an isolation ward, and once treatment is complete, they are referred to the outpatient clinic for further treatment. We may also refer them to a health facility near their residence. Patients from the outpatient clinic are given anti-TB medication. We will also coordinate with the community health center near the patient's residence for monitoring purposes. For treatment support, we have volunteers from YMMA, former TB patients, who are always present at the outpatient clinic to assist with patient education and motivation to ensure they continue their treatment.” (Informant 4, Haji General Hospital, Medan)

“The cadres have all the patients' contact numbers here, so they will contact them by phone or video call to monitor their medication adherence. Patients who are lost to follow-up will also be visited by the cadres at their homes.” (Informant 3, Glugur Darat Community Health Center, Medan)

“Of course, this involves ensuring that TB patients receive treatment, supervision, monitoring, and support.” (Informant 5, Haji Primary Clinic, Medan)

Increasing coverage of tuberculosis prevention therapy

The implementation of PPM is also aimed at increasing the coverage of tuberculosis preventive therapy (TPT) to prevent illness in at-risk individuals. Based on research findings, the TB service network in all public and private health facilities (except in hospitals that do not provide TPT) has made efforts to provide TPT, but coverage remains suboptimal because many at-risk individuals refuse to take the medication due to feeling asymptomatic, as evidenced by the following statements from informants:

“The administration of TPT is still very limited, because the families or people who have contact with TB patients do not feel sick. Education has been provided to families, but they still refuse to take the medicine or accept it but do not consume it. However, efforts must continue, in collaboration with community health centers and clinics that provide medicine to people who have contact with TB patients.” (Informant 2, Medan Health Department)

“Hospitals are only used as a baseline for TB diagnosis. We do not provide TPT, as it is usually provided by community health centers or clinics.” (Informant 4, Haji General Hospital, Medan)



“Until now, it is still ongoing. We are working together with the health department because medicines are provided by them.” (Informant 3, Glugur Darat Community Health Center, Medan)

“Here, TPT is not effective because those in contact with patients refuse to take medication, feeling that they are fine. We collaborate with community health centers and health departments, as supervision of TPT medication remains under the community health centers and anti-TB medication distribution is handled by the health department.” (Informant 5, Haji Primary Clinic, Medan)

According to Alvi et al. (2024) in their research, the suboptimal implementation of TPT is influenced by concerns about the use of TPT, the long duration of treatment, and side effects. In the study, awareness and motivation were significant driving factors for increasing TPT coverage; thus education about TPT and support for undergoing TPT for patients' families or other at-risk individuals are crucial to implement across all TB service networks, including both government and private healthcare facilities.

Enhancing local government commitment through leadership, policy issuance, and budget allocation in TB control programs at the district/city level

The success of TB elimination programs is greatly influenced by the role and responsibilities of local governments, particularly through policy support and funding for TB control programs. Previous research has shown that the implementation of PPM requires leadership as a driving force for policy implementation, as well as sustainable human and financial resources to improve program management for healthcare providers involved in PPM (Rahmadani et al., 2020). In implementing PPM, local governments also have the responsibility—which simultaneously poses a challenge—to involve private and public sector stakeholders in the TB control program (Sunjaya et al., 2022).

Based on the results of this study, it is known that the Medan government strongly supports TB control programs, including the implementation of PPM involving TB service networks in government and private health facilities, because there are national and global targets that must be achieved. The Medan government has provided a budget and strives to ensure that program implementation runs optimally and synergistically in all TB service networks. This is illustrated by the following interview results:

“The head of the health department and the mayor of Medan support the TB control program and all related activities, as it is a national program with targets that must be achieved by 2030. The mayor has also issued a decree on accelerating TB control in the city of Medan. The funding sources include the city and provincial governments, the National Health Insurance, and grants from the Global Fund. To date, collaboration with all parties in TB control, patient reporting, advocacy strengthening, communication and social mobilization, regulation



development, and budget allocation has continued to be enhanced, with all parties working in synergy to implement the program.” (Informant 1, Medan Health Department)

“The leadership, the director, is very supportive. Not only because there are many TB patients in the hospital, but also because TB control is a national program. There is no policy from the director, but there are funds from the state budget, the regional budget, and grants from the Global Fund.” (Informant 4, Haji General Hospital, Medan)

“They provide support and ensure that the program runs smoothly and is evaluated, because this is a global program that is planned to be completed in the next few years. There is a letter from the mayor regarding TB control in Medan City. The budget comes from the state budget, the regional budget, and the Global Fund.” (Informant 3, Glugur Darat Community Health Center, Medan)

“The implementation of TB control remains unchanged, following the guidelines of the Ministry of Health and funded by National Health Insurance and the regional budget.” (Informant 5, Haji Primary Clinic, Medan)

Enhancing the role of district/city health departments as coordinators in the implementation of PPM in their working areas

In the implementation of district- or city-based PPM, the health department acts as the main coordinator, ensuring that policies, regulations, and resource distribution run smoothly across all health facilities in its working area. As the main driver of the TB service network, district/city health departments are responsible for bringing together various stakeholders, including community health centers, public and private hospitals, referral laboratories, and non-governmental organizations, and strengthening network mechanisms by increasing communication frequency, utilizing technology for program monitoring, and prioritizing transparency in resource management, such as facilitating regular coordination forums, such as technical meetings or sectoral meetings aimed at aligning TB control objectives and strategies (Fahrudda & Kusbaryanto, 2023; Aritonang & Sujianto, 2025). Based on the results of this study, it is evident that the Medan Health Department has been quite responsible in implementing PPM for TB control. This is evident from the following statements by informants:

“TB control policies in Medan already exist, and we are working to improve cooperation with private health facilities, such as private hospitals, clinics, and pharmacies, as well as expanding the reach of TB services, training, and advocacy. We facilitate all of this, focusing on program achievement, treatment success, recording and reporting, and program evaluation and monitoring. Currently, government and private healthcare facilities are already collaborating, but there are some that have not yet done so. They have their own policies for TB patients that we cannot enforce, but reports are generally still submitted, as most healthcare facilities that have



not yet collaborated with the department refer TB patients to primary healthcare facilities. Every quarter, meetings are held to discuss TB control at each healthcare facility and with partners to assess the progress of the program, and monitoring and evaluation are always conducted at all healthcare facilities. Healthcare facilities with inadequate TB services will receive guidance and support. Staff are also provided with training, but the challenge arises when there are personnel changes. An application is also available for all healthcare facilities to access the TB information system.” (Informant 2, Medan Health Department)

“The health department usually comes to monitor and evaluate TB implementation. Meetings with all health facilities in Medan are also held, followed by PPM reinforcement, data validation, and reporting through the TB information system.” (Informant 4, Haji General Hospital, Medan)

“The health department is responsible for TB services. We have an MoU with the health department and maintain constant communication because anti-TB drugs are also obtained from them.” (Informant 5, Haji Primary Clinic, Medan)

Enhancing the role and commitment of KOPI TB, professional organizations, health facility associations, other stakeholders, and the private sector/companies/workplaces as drivers of district- or city- based PPM

The Coalition of Professional Organizations in TB Control (KOPI TB) is a collaborative framework or association of several professional organizations that are committed to working together to participate in TB control initiatives. As part of its PPM activities, KOPI TB is responsible for providing TB services according to standards and reporting suspected and confirmed TB cases under its care into the TB information system (Nurzannah et al., 2023). The results of this study indicate that in the implementation of PPM in Medan, the role of KOPI TB is evident in their involvement in providing TB services, as well as serving as facilitators and speakers for training and socialization activities related to TB control. This can be seen from the following interview excerpts:

“They act as facilitators to ensure that TB control programs are implemented. If there are training programs, for example on capacity building for health workers, they serve as speakers and mentors.” (Informant 1, Medan Health Department)

“Professional organizations such as specialist doctors certainly collaborate with hospitals for TB control. Specialist doctors also work together and coordinate with each other. For example, TB patients with DM or HIV will be treated by specialists in pulmonary medicine and internal medicine.” (Informant 4, Haji General Hospital, Medan)



“KOPI TB usually conducts socialization or facilitates activities related to TB services and control.” (Informant 3, Glugur Darat Community Health Center, Medan)

Increasing the participation of community organizations in networks that support TB control programs in districts/cities

The implementation of PPM is not only aimed at involving health facilities in the TB service network but also at establishing collaboration with community organizations that support TB control programs. Based on the research findings, it is known that healthcare facilities in Medan have collaborated with community organizations, such as the Mentari Meraki Asa Foundation (YMMA), which provides support for identifying suspected or confirmed TB patients, acts as patient companions during the treatment process, and serves as motivators to encourage patients to continue their treatment. This is evident from the following statements made by informants:

“Some examples are YMMA, KNCV, Penabulu, and Global Fund. They communicate with each other and are involved in TB control planning. YMMA's activities usually include screening, contact investigation, counseling, and accompanying patients and TB cadres.” (Informant 2, Medan Health Department)

“YMMA already has a partnership with us, and we have signed an MoU. Their cadres are at the clinic every day to accompany and motivate TB patients.” (Informant 4, Haji General Hospital, Medan)

“There is already collaboration with the YMMA community, whose cadres usually assist health centers in monitoring TB patients.” (Informant 3, Glugur Darat Community Health Center, Medan)

Utilizing technology and innovation in the implementation of TB service networks

In implementing district/city-based PPM, technology is used to connect TB service networks with integrated systems that can be accessed at each health facility for TB recording, reporting, and monitoring. The results of the study show that in Medan City, all health facilities use the TB information system (SITB) application developed by the Ministry of Health. In addition, some health facilities also use the WhatsApp application on smartphones to remind and monitor TB patients to take their medication. This is evident from the following statements made by informants:

“All recording and reporting in each health facility network uses SITB. We have also been given training. The obstacles are usually signal problems or slow applications due to heavy use, so sometimes reports to SITB cannot be made in real time.” (Informant 1, Medan Health Department)

“The technology used by hospitals is SITB from the Ministry of Health. It can monitor TB patient data, the number of patients who have completed TB treatment, new cases, and patients



who have discontinued treatment, and it also provides data on patient names, home addresses, mobile phone numbers, and other information. The difficulty lies in the lack of human resources for data entry.” (Informant 4, Haji General Hospital, Medan)

“We have cadres who keep all the mobile phone numbers of TB patients. Usually, for patients who have just started taking anti-TB medication, the cadres remind them via telephone or video call on WhatsApp until they are sure that the patients have taken their medication. For recording and reporting, there is a TB information system, an application from the Ministry of Health, which I think is very efficient because it can be accessed by all health facilities so that the number of TB cases can be known. Training on its use has also been provided.” (Informant 3, Glugur Darat Community Health Center, Medan)

“All reporting is done using the TB information system. New staff members who are not yet familiar with the system will be trained first. The application shows the number of TB cases, but it is sometimes slow to access.” (Informant 5, Haji Primary Clinic, Medan)

The use of technology and innovation in the implementation of TB service networks aims to improve the effectiveness and efficiency of TB control. This may include the development of online referrals, as well as the expansion and development of telemedicine, mobile applications, electronic reminders, and internet-based TB treatment monitoring. The use of the latest technology and innovation can also facilitate contact between TB patients, assist in treatment monitoring, and make it easier for service providers throughout the TB patient treatment process. In Indonesia, the implementation of the TB program, from diagnosing suspected cases to completing treatment, is all recorded and reported through an integrated TB health information system application that is accessible to the TB service network. All public and private health facilities are required to participate in TB recording and reporting using SITB, but research conducted by Harahap et al. (2024) shows that the use of this technology can hinder the implementation of PPM due to the application often being unresponsive and the lack of human resources to operate SITB or input data into the SITB application, resulting in suboptimal involvement of government and private healthcare facilities in TB control, particularly in TB recording and reporting. Therefore, continuous improvement and development of SITB remain essential in TB control.

Conclusion and Recommendation

The results of the study suggest that the implementation of PPM for TB control in Medan has been progressing relatively well on the specific objectives, although in its implementation, collaborative efforts to increase TPT coverage are still hindered by the lack of awareness and motivation among patients' families and close contacts to take TPT due to not feeling ill, as well



The International Journal of Health, Education and Social (IJHES)

as challenges in using SITB across all public and private healthcare facilities, such as unresponsive applications and limited human resources for operation. All TB service networks, including government and private healthcare facilities and communities, are encouraged to enhance collaboration and strengthen their involvement in the implementation of PPM strategy for TB control to achieve the global and national TB elimination targets by 2030.



International Journal of Health, Education and Social (IJHES)



References

- Alvi, Y., Philip, S., Anand, T., Chinnakali, P., Islam, F., Singla, N., ... & Vashishat, B.K. (2024). Situation analysis of early implementation of programmatic management of tuberculosis preventive treatment among household contacts of pulmonary TB patients in Delhi, India. *Trop Med Infect Dis*, 9(1), 24. doi: 10.3390/tropicalmed9010024.
- Aritonang, Y. R. br., & Sujianto. (2025). Network governance dalam layanan tuberculosis di fasilitas kesehatan pemerintah dan swasta berbasis kabupaten/kota di Kota Pekanbaru. *Jurnal Multidisiplin Ilmu Akademik*, 2(3), 360–369. <https://ejurnal.kampusakademik.co.id/index.php/jmia/article/view/4812>
- Dinkes Provinsi Sumatera Utara. (2023). *Profil Kesehatan Provinsi Sumatera Utara Tahun 2023*. <https://dinkes.sumutprov.go.id/unduh/downloadfile?id=2799>
- Fahrudha, A., & Kusbaryanto. (2023). Generic implementation framework approach for public private mix in tuberculosis control at a private hospital in Gresik, East Java, Indonesia. *Public Health and Preventive Medicine Archive*, 11(1), 89–99. <https://doi.org/10.53638/phpma.2023.v11.i1.p09>
- Harahap, D., Nababan, D., Sembiring, R., Dakhi, R. A., & Sinaga, T. R. (2024). Peran klinik swasta dalam program penanggulangan tuberculosis paru di Kota Medan tahun 2024. *PREPOTIF : Jurnal Kesehatan Masyarakat*, 8(1), 1330–1343. <https://journal.universitaspahlawan.ac.id/index.php/prepotif/article/view/27547>
- Kemenkes RI. (2020). *Strategi Nasional Penanggulangan Tuberkulosis di Indonesia 2020-2024*. <https://www.tbindonesia.or.id/pustaka---media-kie/strategi-nasional-penanggulangan-tuberkulosis-di-indonesia-2020-2024/>
- Kemenkes RI. (2024a). *Laporan Program Penanggulangan Tuberkulosis Tahun 2023*. <https://www.tbindonesia.or.id/pustaka---program-la/laporan-program-penanggulangan-tbc-2023/>
- Kemenkes RI. (2024b). *Petunjuk Teknis Jejaring Layanan Tuberkulosis di Fasilitas Pelayanan Kesehatan Pemerintah dan Swasta Berbasis Kabupaten/Kota (District-Based Public-Private Mix)*. https://tbindonesia.or.id/wp-content/uploads/2020/05/PPM_1-Isi-PANDUAN-PENERAPAN-DPPM-TB.pdf
- Kemenkes RI. (2024c). *Profil Kesehatan Indonesia 2023*. <https://kemkes.go.id/id/profil-kesehatan-indonesia-2023>
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook* (3th edition). SAGE Publications, Inc.
- Nazriati, E., Zulharman, Chandra, F., & Putri, U. A. (2021). Public-private mix implementation and achievements of tuberculosis control program at puskesmas in Pekanbaru. *Mutiara Medika: Jurnal*



Kedokteran Dan Kesehatan, 21(2), 86–94. <https://doi.org/10.18196/mmjkk.v21i2.11731>

Nurzannah, A., Purwanti, D., & Nur, T. (2023). Implementasi program pelayanan temukan, obati sampai sembuh penderita tuberkulosis (TOSS-TB) di Puskesmas Selabatu Kota Sukabumi. *Jurnal Kebijakan Pembangunan Daerah*, 7(1), 85–104. <https://doi.org/10.56945/jkpd.v7i1.238>

PDPI. (2021). *Tuberkulosis Pedoman Diagnosis dan Penatalaksanaan di Indonesia* (Edisi Revisi 2). Jakarta: Perhimpunan Dokter Paru Indonesia.

Peraturan Presiden Republik Indonesia Nomor 67 Tahun 2021 Tentang Penanggulangan Tuberkulosis.

Rahmadani, I., Surjoputro, A., & Widjanarko, B. (2020). Analisis public private mix (PPM) pada program pengendalian tuberkulosis. *Jurnal Kesmas (Kesehatan Masyarakat) Khatulistiwa*, 7(3), 89–97. <https://doi.org/10.29406/jkmm.v7i3.2080>

Reviono, Setianingsih, W., Damayanti, K. E., & Ekasari, R. (2017). The dynamic of tuberculosis case finding in the era of the public–private mix strategy for tuberculosis control in Central Java, Indonesia. *Global Health Action*, 10(1), 1353777. <https://doi.org/10.1080/16549716.2017.1353777>

Sunjaya, D. K., Paskaria, C., Herawati, D. M. D., Pramayanti, M., Riani, R., & Parwati, I. (2022). Initiating a district-based public–private mix to overcome tuberculosis missing cases in Indonesia: readiness to engage. *BMC Health Services Research*, 22, 110. <https://doi.org/10.1186/s12913-022-07506-4>

WHO. (2023). *Global Tuberculosis Report 2023*. <https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2023>

WHO. (2024). *Global Tuberculosis Report 2024*. <https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2024>