

Collaborative Governance in Tuberculosis Eradication: A Case Study of Yamali Civil Society Organization in South Sulawesi, Indonesia

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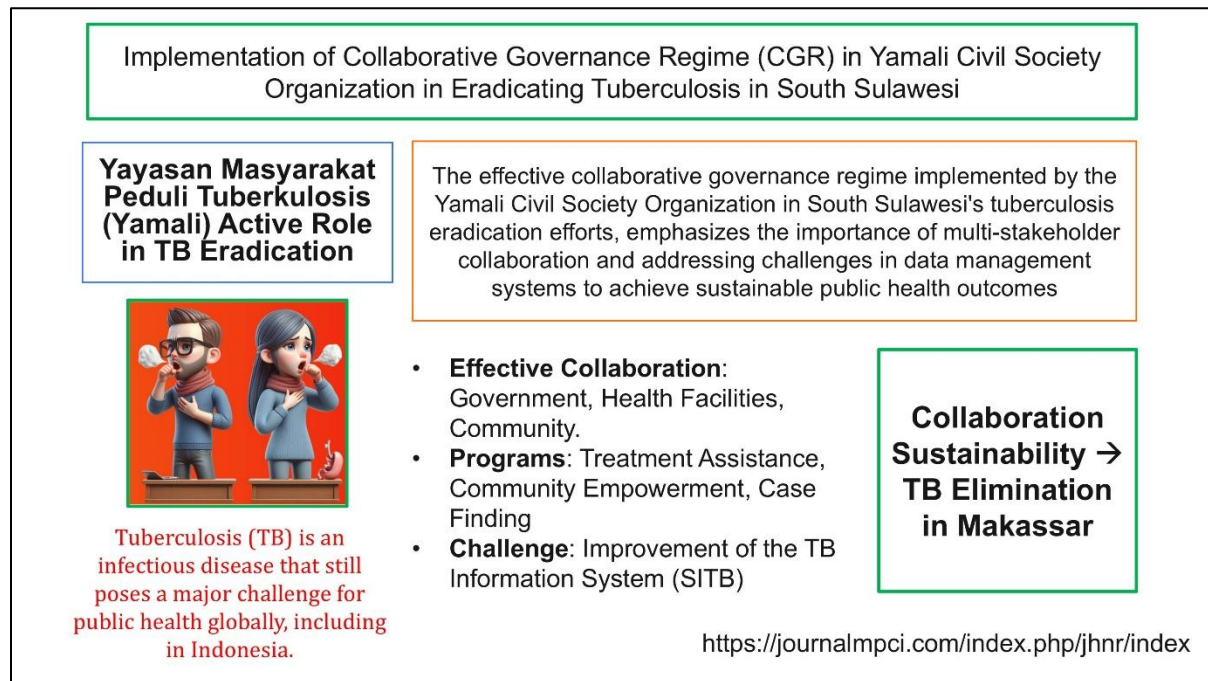
ABSTRACT

Tuberculosis (TB) is an infectious disease that still poses a major challenge for public health globally, including in Indonesia. Based on the Global Tuberculosis Report 2024, the number of TB cases continues to increase every year. One of the initiatives that supports TB eradication in South Sulawesi is the active role of the Tuberculosis Care Community Foundation (Yamali), which collaborates with the government, health facilities, and the community to reduce the prevalence of TB. This study aims to analyze the dynamics of collaboration and collaborative actions by the Yamali NGO in efforts to eradicate TB in South Sulawesi. The method used in this study is a qualitative approach with data collection through in-depth interviews and document reviews. Eight research informants were selected by purposive sampling based on their involvement in the TB eradication program. The results of this study show that the collaboration between the Makassar City Health Office, the Ministry of Health, the Regional Government, and Yamali has been effective. Treatment assistance programs, community empowerment, and new case discovery were found to have been implemented well. However, challenges related to case recording in the TB Information System Software (SITB) must be improved to cover all cases, including those carried out independently by patients. The sustainability of this collaboration is the main key to achieving the TB elimination target in Makassar City. We recommend making a policy for pentahelix collaboration i.e. government, business, civil society, academicians and media.

Key Messages:

- This study highlights the effective collaborative governance regime implemented by the Yamali Civil Society Organization in South Sulawesi's tuberculosis eradication efforts, emphasizing the importance of multi-stakeholder collaboration and addressing challenges in data management systems to achieve sustainable public health outcomes.

GRAPHICAL ABSTRACT



INTRODUCTION

Tuberculosis (TB), a disease caused by the bacteria *Mycobacterium tuberculosis*, remains a significant challenge in global public health, including in Indonesia. Based on the Global Tuberculosis Report 2024 published by the World Health Organization (WHO), the number of TB cases in the last three years has steadily increased. In 2021, there were 10.4 million cases, which then increased slightly to 10.7 million in 2022 and then further to 10.8 million in 2023. TB in 2023 was 134 new cases per 100,000 population (1). The Ministry of Health has tried to improve TB control through various initiatives, including the National Tuberculosis Program, which focuses on early detection, effective treatment, and increasing public awareness. Despite these efforts, the country faces substantial obstacles, such as drug-resistant TB and limited access to health services in rural areas, which overall progress in reducing TB incidence (2).

Until now, Indonesia has still not been able to eradicate TB and is even ranked third as the country with the highest TB cases in the world, after India and China. This ranking is certainly not a source of pride, considering that TB is often accompanied by other comorbidities, which further worsen the health burden in Indonesia. This challenge is increasingly complex because Indonesia is committed to achieving the global target of End TB Strategy 2030. This strategy aims to reduce the death rate from TB by 90%, reduce TB incidents by 80%, and eliminate the number of households experiencing catastrophic costs due to TB when compared to the 2015 baseline. Achieving this target will be a major challenge if no systematic and massive steps are taken (3).

WHO has set a target for eliminating tuberculosis (TB) by reducing the annual incidence rate to less than one case per million population by 2050. To achieve this target, a 1,000-fold reduction in cases is needed over a period of more than 35 years. This effort can only be successful if it is carried out integrated, namely through effective active TB treatment—including early detection and high cure rates to stop transmission and strategies for preventing new infections and treating existing latent infections (4).

Intensive implementation of the WHO Stop TB strategy is the primary key to achieving this goal, with support for the provision and access to optimal health services. In addition, innovation in developing new technologies, such as TB risk biomarkers, diagnostic tools, drugs, and vaccines, is also very much needed. One indicator of success in eliminating TB is when the death rate from TB drops to less than one death per 100,000 population, which marks the start of the elimination phase. It is estimated that many countries can reach this stage in the next one to two decades (5).

In 2024, tuberculosis (TB) remained a significant health problem in South Sulawesi, Indonesia, with the South Sulawesi Provincial Health Office reporting over 27,256 new TB cases in November 2024 (6). Makassar, as a major urban center in Indonesia, faces significant TB challenges. High population density, limited access to health services in certain areas, and persistent stigma associated with TB contribute to underreporting and delays in treatment. Local data often reveal that urban settings such as South Sulawesi require tailored interventions to address social and medical barriers to TB eradication. There were 5,974 TB cases in South Sulawesi in 2021 and 8,255 TB cases in 2022 (6). Tuberculosis (TB) remains a significant public health challenge in Indonesia, particularly in urban areas such as South Sulawesi.

Civil Society Organizations (CSOs) are critical in complementing government initiatives by addressing local needs and mobilizing communities. One notable example is the Tuberculosis Care Community Foundation (Yayasan Masyarakat Peduli Tuberculosis; Yamali), which has emerged as a key player in the TB elimination effort in South Sulawesi. Yamali has contributed to TB control through a community-based approach integrating education, early detection, and access to treatment. Yamali's initiative not only aims to reduce TB prevalence but also focuses on empowering local communities to sustain long-term improvements in health outcomes. By prioritizing vulnerable groups such as low-income households, Yamali demonstrates the critical role grassroots organizations can play in advancing Indonesia's national target of eliminating TB by 2030 (7). To reduce the incidence of tuberculosis in the United States, it has also collaborated with various partners, including private medical practitioners, student health services, expatriate employers, hospital physicians, and health workers from other health programs. This collaboration aims to expand Latent Tuberculosis Infection (LTBI) screening and ensure standardized recording of results (8). While policies might encourage collaboration (e.g., Presidential Regulation No. 67 of 2021 on Tuberculosis Control in Indonesia), there is a need for more research on the practical implementation challenges faced by CSOs at the local level and rigorous evaluations of the impact of these collaborative approaches on TB outcomes in Indonesia (9).

This study aims to analyze the dynamics of collaboration and collaborative actions carried out by the Yamali NGO in efforts to eradicate tuberculosis in South Sulawesi, Indonesia. This analysis includes the forms of cooperation between the Yamali NGO and various stakeholders, including the government, healthcare facilities, communities, and international organizations.

METHODS

This research method uses a qualitative approach to examine the phenomenon in the dynamics of collaboration and collaborative action between the government and Civil Society Organization (CSO) Yamali in efforts to eradicate tuberculosis in South Sulawesi City, Indonesia.

The informants in this study numbered eight key people, who were selected using purposive sampling based on their relevance and involvement in the collaborative program. Interviews were conducted face-to-face and offline, using previously prepared interview guidelines to ensure integration in data collection. The number of eight informants in this qualitative study was based on the principle of data saturation. Data collection was stopped when no new information or themes emerged from further interviews or observations, indicating that a comprehensive understanding of the phenomenon under study had been achieved. We used a data saturation approach to determine the sample size. After interviewing eight informants, the initial analysis indicated that key themes were repeated and no significant new perspectives emerged, indicating that the point of saturation had been reached.

Data collection techniques were carried out through in-depth interviews and document reviews. This process includes collecting and analyzing relevant data, including literature, academic materials, expert theories, and documents or archives supporting this research. Interview guidelines and duration are not described. Data were collected through semi-structured interviews with 8 participants. The interview guide consisted of open-ended questions that explored participants' experiences in collaborative governance regime on tuberculosis eradication. The guide covered areas such as principle engagement, share motivation and capacity for joint action. Interviewers were trained to use the guide flexibly to explore participants' perspectives in depth. Each interview was estimated to last between 60 and 90 minutes, depending on the responses and depth of information provided by the participants.

Qualitative data were analyzed using thematic analysis with the help of NVivo 15 software. The analysis process began by importing verbatim interview transcripts into NVivo 15. Next, open coding was carried out where units of meaning were identified, and initial codes were given. These codes were then grouped and categorized (axial coding) using the 'Node' feature in NVivo 15 to form a hierarchy of codes. The reliability of coding of part of the data was checked using the 'Coding Comparison Query' feature. Respondents were assigned a unique code, and identification data was stored separately from research data. Data confidentiality was ensured through physically storing questionnaires in a secure location and limited access to the research team. Electronic data were encrypted and stored

CODE OF HEALTH ETHICS

All participants provided written informed consent before participating in this study. Information about the study and informed consent procedures were provided verbally and in writing to potential participants. After understanding, participants gave their consent to participate. IRB Institutional Review Board or Ethics Committee Ethics approval was obtained from [ethics committee Public Health Faculty UNHAS with reference number 1289/UN4.14.t/TO.01.02/2024 27 May 2024.

RESULTS

Informant Characteristics

The following section will explain the characteristics of eight key informants. The explanation includes gender, age, occupation, position at work, and their level of education.

Table 1. Informant Characteristics

No.	Initial Informant	Gender	Age	Job	Job Title	Education
1	S	Female	56	Civil Servant	Head of Tuberculosis Control Division of South Sulawesi District Health Office	Master's Degree
2	AJ	Female	52	Civil Servant	Head of Tuberculosis Prevention Division of South Sulawesi Provincial Health Office	Master's Degree
3	N	Female	47	Civil Servant	Staff at South Sulawesi Provincial Health Office of Tuberculosis Control	Master's Degree
4	W	Male	50	Director	Yamali Civil Society Organization	Bachelor Degree
5	Z	Male	50	Director	Mitra Husada Foundation Civil Society Organization	Master's Degree
6	A	Female	56	Civil Servant	Head of Tuberculosis Prevention Division of Minas Upa Health Center	Master's Degree
7	RK	Male	52	Director	Mitra Turatea Foundation Civil Society Organization	Master's Degree
8	AA	Male	55	Professor	Academic	Doctorate Degree

Based on Table 1, it can be concluded that the average respondent is over 50 years old. They also have diverse professional backgrounds: Civil Servants, Director of the NGO Yayasan Mitra Husada, Head of the Health Center, and academics in the health sector, with most of their last education level being Master's and Doctorates.

Qualitative Data Analysis Results

Collaborative Dynamics

Collaborative Dynamics is an essential element in the success of a collaboration, especially in the context of tuberculosis (TB) eradication. This dynamic reflects how various actors work together to achieve common goals through effective and sustainable interactions. Collaborative Dynamics consists of three

main variables: Principal Engagement, Shared Motivation, and Capacity for Collective Action.

Principles of Involvement.

There are four stages of principle involvement: Discovery, Definition, Deliberation, and Determination.

- 1) Discovery. The interview results with informants convey why they need to collaborate: "We need to collaborate because Indonesia is a country with the second highest tuberculosis transmission in the world after India" (AJ, 52 years old, Provincial Health Office, 2024).
- 2) Definition. The results of interviews with informants stated the main problem of Tuberculosis in South Sulawesi: "The main problem of TB is the high morbidity and mortality rates in South Sulawesi" (A, 56 years old, Minasa Upa Health Center, 2024).
- 3) Deliberation. The results of the interview with the informant conveyed the process of deliberation on tuberculosis control in South Sulawesi: "In Makassar City, there is a multi-sector forum that has been formed since May 2021. The forum has been ratified through the Decree of the Mayor of Makassar Number 1572/443.24/Year 2021. Yamali is one of the stakeholders involved in this forum. This forum always holds monthly meetings to overcome the TB problem in Makassar" (W, 50 years old, Yamali, CSO, 2024).
- 4) Determination. The results of the interview with the informant conveyed the process of deliberation on Tuberculosis control in South Sulawesi: "Our activity schedule consists of four, namely 1) Assistance in treatment and psychosocial for TB patients until they recover, 2) Empowering the community in efforts to eliminate TB, through strengthening the TB KMP and involving religious leaders and community leaders. 3) Carrying out the discovery of new TB cases, through contact investigation activities and counseling 4) Policy advocacy to internal stakeholders" (W, 50 Tahun, Yamali, CSO, 2024).

Based on the results of the review of the National Strategic Plan for Tuberculosis Control in Indonesia 2020-2024 disease control program, to eradicate TB by encouraging multi-sector and multi-program collaboration to increase the number of people with drug-resistant tuberculosis who start treatment and encourage multi-sectoral collaboration to increase ARV coverage in people with TB-HIV. Meanwhile, the results of the review of the Yamali activity report document in eradicating TB, Yamali formed a Community Empowerment program to eliminate TB through strengthening the TB KMP and involving religious and community leaders, Policy advocacy to stakeholders in the context of preventing and controlling TB can be seen in the documentation image of Yamali activities in eradicating TB in figure 1.



Figure 1. Yamali's activities in TB eradication

The triangulation matrix on collaborative dynamics in TB eradication in CSO Yamali based on document review, observation, and in-depth interviews can be seen in Table 2.

Table 2. Principle Involvement Triangulation Matrix

Topic	Document	Interview	Triangulation Analysis
Principle involvement	There is evidence of documents from the Ministry of Health's TB control strategic plan for improving the TB eradication program by forming collaboration between multi-sectors.	Indonesia is the country with the second highest tuberculosis transmission in the world after India, so there is a need for collaboration between multi-sectors to eradicate TB.	In realizing a TB-free Indonesia, the Ministry of Health has formed a TB eradication team consisting of multisector
	There is evidence of documents of Yamali's activity reports in eradicating TB by the Yamali CSO, along with documentation images of its activities.	A multi-sector forum that has been established since May 2021. The forum has been ratified through the Decree of the Mayor of Makassar, Number 1572/443.24/2021. Yamali is one of the stakeholders involved in this forum. This forum always holds regular meetings every month to address the TB problem in Makassar	The Makassar City Health Office has formed a multisector forum approved by the mayor of Makassar and CSO Yamali is a stakeholder in the forum..

The results of the triangulation matrix related to the involvement of principles in eradicating TB in Makassar City show that the involvement of principles in eradicating tuberculosis (TB) in Makassar City has been going well. As one of the main stakeholders, the Makassar City Health Office collaborates with various sectors, including the Ministry of Health, the Regional Government, and Yamali. Yamali has carried out its role effectively through treatment assistance programs and psychosocial support for TB patients, community empowerment through strengthening the TB KMP and involving community leaders, finding new TB cases through contact investigations and counseling, and policy advocacy to internal stakeholders. The sustainability of this collaboration is a key factor in achieving the target of TB elimination in Makassar City.

Shared Motivation.

There are four components of shared motivation: Trust, Mutual Understanding, Internal Legitimacy, and Commitment.

- 1) Trust. The results of interviews with informants stated: "The South Sulawesi Provincial Health Office must build high trust in the Yamali CSO because Yamali has built trust and good relationships with the local community, including marginalized and vulnerable groups who are at high risk of TB" (N, 47 years old, Provincial Health Office, 2024)
- 2) Mutual Understanding. The results of the interview with the informant stated: "Good and sustainable cooperation between NGOs and the government can build mutual understanding and strong partnerships. This allows for more effective coordination, transparent information exchange, and better decision-making in TB management." (Z, 50 years old, Mitra Husada, 2024)
- 3) Internal Legitimation. The results of the interview with the informant stated: "Internal legitimacy from the Government facilitates coordination and synergy between Yamali and government programs in handling TB. This prevents duplication of efforts, optimizes the use of resources, and

ensures that Yamali activities are aligned with government strategies and policies." (S, 56 years old, Makassar District Health Office, 2024).

- 4) Commitment. The results of the interview with the informant stated: "The high incidence of TB, drug resistance, and the resulting socio-economic impacts require comprehensive and sustainable handling efforts. TB control efforts will be ineffective without a strong commitment from all parties." (AJ, 52 years old, Provincial Health Office, Government, 2024).

Based on the results of the document review of TB case reports in Makassar City show a figure of more than 27,256 new TB cases in November 2024, so there is a need for joint motivation in eradicating TB in Makassar City with comprehensive and sustainable handling efforts and a strong commitment from all parties. Meanwhile, the results of the document review from Yamali show that there is internal legitimacy from the Makassar City Government, as stated in the Decree of the Mayor of Makassar Number 1572/443.24/2021, making it easier for Yamali to optimize TB eradication in Makassar City. Table 3 will explain the triangulation matrix regarding joint motivation in eradicating TB in CSO Yamali based on document review, observation, and in-depth interviews.

Table 3. Shared Motivation Triangulation Matrix

Topic	Document	Interview	Triangulation Analysis
Shared Motivation	The existence of documentary evidence of the activities of the Makassar Public Health Laboratory Center (BBLKM) in eradicating TB cases in Makassar City conveyed the results of a meeting with the Ministry of Health to collect TB examination data and identify obstacles in the examination and recording process in 2023. The Head of Adum BBLKM Makassar said that TB examinations were going well, but SITB recordings did not cover all cases, especially those carried out independently by patients outside the government program. BBLKM Makassar is ready to work with the enumerator team to record and report positive TB cases	The South Sulawesi Provincial Health Office must build high trust in CSO Yamali because Yamali has built trust and good relationships with local communities, including marginalized and vulnerable groups at high risk of TB	To increase mutual motivation in eradicating the number of TB cases in Makassar, where the number of cases in 2024 will reach more than 27,256 new TB cases, the Makassar City Government is collaborating with various stakeholders, including Yamali with a letter of legitimacy stated in the Decree of the Mayor of Makassar Number 1572/443.24/2021 to facilitate coordination and synergy between Yamali and government programs in handling TB cases.
	The existence of internal legitimacy documents from the Makassar city government as stated in the Decree of the Mayor of Makassar Number 1572/443.24/2021 in	Internal legitimacy from the Government facilitates coordination and synergy between Yamali and government programs in handling TB. This prevents duplication of efforts, optimizes the	The results of the BBLKM Makassar meeting with the Ministry of Health stated that the TB eradication program in Makassar City was running quite well, but there were still obstacles in

Topic	Document	Interview	Triangulation Analysis
	efforts to eradicate TB by Yamali	use of resources, and ensures that Yamali activities are aligned with government strategies and policies	the field, namely recording in SITB

Based on the results of the triangulation matrix related to Joint Motivation in eradicating TB in Makassar City show that joint motivation in eradicating tuberculosis (TB) has been going well. However, there are still obstacles in the field that need to be improved, namely that SITB recording does not cover all cases, especially those carried out independently by patients outside the government program. BBLKM Makassar is ready to work with the enumerator team to record and report positive TB cases, so this needs to be a joint motivation by the Makassar City Health Office, BBLKM Makassar, and Yamali in increasing the eradication of TB cases in Makassar City.

Capacity for Collective Action.

There are four stages of Capacity for Collective Action: Procedures for institutional arrangements, Leadership, Knowledge, and Resources.

- 1) Institutional arrangement procedures. The results of interviews with informants stated: "The procedure for structuring TB control institutions in South Sulawesi Province includes several steps and key components to create an integrated, effective, and sustainable system, namely: 1. Legal and Policy Framework. 2) Establishment of a Coordination Team: TB Control Acceleration Team (TP2TB); 3) Determination of Organizational Structure and Main Tasks; 4) Coordination and Communication Mechanism; 5) Partnership with NGOs and Community Organizations. 6) Monitoring and Evaluation" (Provincial Health Office, 2024).
- 2) Leadership. Interview results with informants stated: "Eradicating TB requires a multi-faceted approach involving various stakeholders. Strong leadership is essential to foster effective collaboration between government and NGOs, ensuring that efforts are coordinated, resources are used efficiently, and duplication of efforts is avoided. This synergy maximizes the impact of interventions." (R, 52 Years old, Mitra Turatea, CSO 2024).
- 3) Knowledge. The results of the interview with the informant stated: "Sharing knowledge is very important in cooperation between the government and NGOs to eradicate TB in South Sulawesi in order to strengthen shared understanding. TB disease and its treatment involve various aspects, ranging from medical, social, economic, to cultural. Sharing knowledge allows the government and NGOs to have a shared understanding of TB epidemiology in South Sulawesi, risk factors, treatment challenges, and effective interventions. This shared understanding is important for developing targeted strategies and programs." (AA, 55 years old, CSO, 2024)
- 4) Resources. The results of the interview with the informant stated: "Yamali NGO as an institution that focuses on TB control in South Sulawesi requires various funds and resources so that its programs can run effectively for Organizational Operations; Active Case Finding (ACF) Program; Patient Assistance Program; Advocacy and Outreach Program and Training and Capacity Development: and Program Monitoring and Evaluation. Funds to finance monitoring and evaluation activities for programs that are being implemented, to ensure the effectiveness and efficiency of the program." Yamali has received funds from the Global Fund amounting to IDR 5.6 billion (Yamali, CSO, 2024).

The results of the document review on capacity in TB eradication efforts in Makassar City show that a strong leadership role from the Makassar City Health Office is very much needed. The guidelines for implementing tuberculosis networks in district and city-based health facilities emphasize that the Health Office is responsible for implementing DPPM. These tasks include identifying health facilities in their area, coordinating with the Coalition of Indonesian Professional Organizations in TB Control (KOPI TB), forming a DPPM TB team, and facilitating meetings and technical support. In addition, the Health Office is also

responsible for building and strengthening cross-regional networks, conducting regular coaching, monitoring, and evaluation, ensuring TB management standards in health care facilities, forming DOTS/TB teams in hospitals, and ensuring the availability of budget and financing for the implementation of DPPM TB.

Meanwhile, the results of the document review of the TB eradication activity report by Yamali received funds from the global fund of IDR 5.6 billion to support activities to run effectively for Organizational Operations such as the Active Case Finding (ACF) Program; Patient Assistance Program; Advocacy and Outreach Program and Training and Capacity Building; and Program Monitoring and Evaluation.

In table 4. The triangulation matrix on the capacity to work together in eradicating TB in CSO Yamali based on document review, observation, and in-depth interviews will be explained as follows.

Table 4. Triangulation Matrix of Capacity to Share

Topic	Document	Interview	Triangulation Analysis
Capacity for Collective Action	Evidence of guidelines for implementing tuberculosis networks in district and city-based health facilities confirms that the Health Office has the main responsibility in implementing DPPM. These tasks include identifying health facilities in their areas, coordinating with the Coalition of Indonesian Professional Organizations in TB Control (KOPI TB), establishing a DPPM TB team, and facilitating meetings and technical support.	Eradicating TB requires a multi-faceted approach involving various stakeholders. Strong leadership is essential to foster effective collaboration between government and NGOs, ensuring that efforts are coordinated, resources are used efficiently, and duplication of efforts is avoided. This synergy maximizes the impact of interventions	Joint capacity consisting of Procedures for institutional arrangements, Leadership, Knowledge and Resources has been carried out well by the Makassar Health Office and CSO Yamali by forming a strong leadership team starting from the central government to local governments that have been given roles and responsibilities in implementing the TB eradication program in Indonesia and in the city of Makassar. There is a need for increased knowledge in cooperation between the government and NGOs to eradicate TB in South Sulawesi in order to strengthen shared understanding. TB disease and its treatment involve various aspects, ranging from medical, social, and economic to cultural.
	There is evidence of documents reporting TB eradication activities by Yamali receiving funds from the global fund of IDR 5.6 billion to support activities to run effectively for Organizational Operations	Knowledge sharing is essential in collaboration between government and NGOs to eradicate TB in South Sulawesi to strengthen shared understanding. TB disease and its management involve various aspects, ranging from medical, social, economic, to cultural. Sharing knowledge allows government and	CSO Yamali received funds from the global fund of IDR 5.6 billion to support activities to run effectively for Organizational Operations, so it is hoped that with the existing funds CSO Yamali can work effectively in eradicating TB in the city of Makassar

Topic	Document	Interview	Triangulation Analysis
		NGOs to have a shared understanding of TB epidemiology in South Sulawesi, risk factors, management challenges, and effective interventions. This shared understanding is essential to develop targeted strategies and programs	

The results of the triangulation analysis show that the joint capacity in eradicating TB in Makassar City has been carried out well by the Makassar Health Office and CSO Yamali through the formation of a strong leadership team from the central to regional levels. This collaboration includes institutional arrangements, leadership, knowledge, and resources that support program effectiveness. However, increasing knowledge in cooperation between the government and NGOs is still needed to strengthen shared understanding regarding the medical, social, economic, and cultural aspects of handling TB. In addition, funding support from the Global Fund of IDR 5.6 billion allows CSO Yamali to run organizational operations more effectively in eradicating TB in Makassar City. Funding allocated to collaborative projects allows YAMALI CSO to provide resources needed by partner organizations, such as training, logistics, or operational support, thus encouraging active participation. The presence of financial incentives or resource sharing within the framework of collaboration facilitated by funding has been shown to increase the motivation and commitment of partner organizations to work with YAMALI CSO.

Collaborative Action of Civil Society Organizations (CSOs) Yamali

Yamali CSO is vital in combating tuberculosis (TB) in Indonesia, particularly in South Sulawesi. The NGO focuses on medical and psychosocial support for TB patients, recognizing that effective treatment does not rely solely on medication.

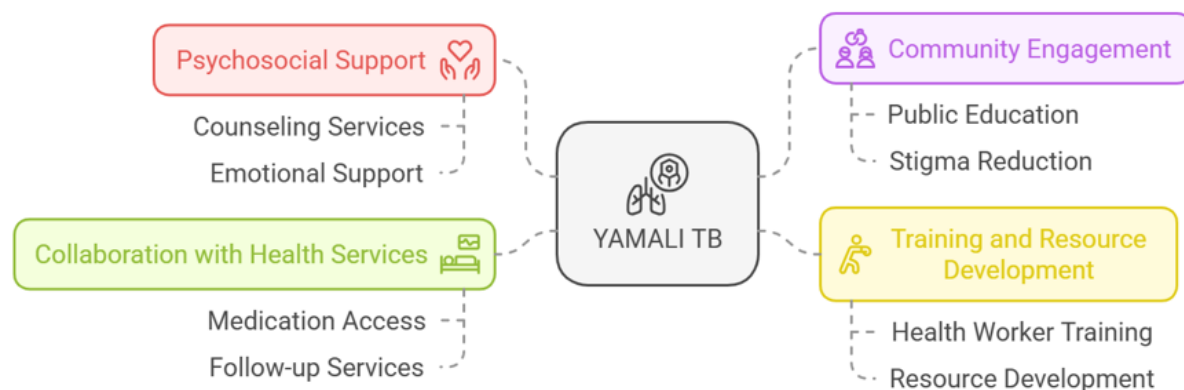


Figure 2. Four Collaborative Actions by CSO Yamali

Collaborative Actions carried out by Yamali TB in 2023 are: 1) Support for contact investigations of 5,123 people; 2) Notifications of 4,952 people; 3) Provision of TPT (Tuberculosis Prevention Therapy) of 45 people; 4) Advocacy for TB control through Makassar Mayor Regulation No. 20/2023. Meanwhile, in 2024, the collaborative actions were: 1) Support for contact investigations of 4,776 people. 2) Notifications for 5,946 people. 3) Provision of TPT (Tuberculosis Prevention Therapy) for 177 people.

DISCUSSION

Principle Involvement

Collaborative dynamics are an important element in the success of a collaboration, especially in the context of tuberculosis (TB) eradication. This dynamic reflects how various actors work together to achieve common goals through effective and sustainable interactions. Collaborative dynamics consist of three main variables: Principal Involvement, Shared Motivation, and Capacity for Collective Action. The strong and visionary leadership role in YAMALI CSO was crucial in facilitating effective collaboration with various stakeholders in tuberculosis control efforts. The analysis shows that the participatory and inclusive leadership style in YAMALI CSO significantly promoted high levels of collaboration with other civil society organizations.

The results of the study indicate that the involvement of principles in TB eradication in Makassar City has been going well. The Makassar City Health Office collaborates with various sectors, including the Ministry of Health, Local Government, and Yamali as one of the main stakeholders. Yamali has carried out its role effectively through treatment assistance programs and psychosocial support for TB patients, community empowerment through strengthening the TB KMP and involving community leaders, finding new TB cases through contact investigations and counseling, and policy advocacy to internal stakeholders. The sustainability of this collaboration is a key factor in achieving the target of TB elimination in Makassar City.

This study is in line with the research of Thakur et al, 2021, The Government of India has made various efforts to address problems related to tuberculosis (TB) (10). However, there is still a long way to go to achieve a significant reduction in the incidence and prevalence of TB in India. Some of the major challenges faced include lack of awareness and resources, inadequate infrastructure, increasing cases of drug resistance, under-reporting, and overall negligence, which requires multi-sectoral support and collaboration (10).

International partnerships play an equally important role in TB control efforts as national partnerships. As the incidence of TB declines, collaboration with national authorities in low-incidence countries, international organizations, technical partners, and global professional associations becomes increasingly important. The involvement of international consortia comprising medical and pharmacy faculties, as well as federations of professional organizations plays a crucial role in maintaining the focus on TB as a pressing global health issue. In addition, these collaborations also contribute to standardization of medical practices and encourage innovation and research to support TB elimination strategies (11). The dream of eliminating TB can be realized with the active participation of all stakeholders and the wider community, supported by accelerated development of new diagnostics, drugs, and innovative TB vaccines (12).

Shared Motivation

Joint motivation in eradicating TB in Makassar City has gone well, but there are still obstacles in recording in SITB that still need to be improved to cover all cases, including those carried out independently by patients. Therefore, collaboration between the Makassar City Health Office, Makassar BBLKM, and Yamali must continue to be strengthened to improve TB recording and eradication more effectively. The experience of TB eradication programs in large countries proves that with strong motivation, adequate resources, and solid political support, the burden of TB can be significantly reduced in a relatively short time. However, maintaining motivation in eradicating TB and achieving sustainable impacts on a larger scale remains a complex challenge (13).

Commitment to improving available health services is essential in TB eradication efforts, by ensuring that services have sufficient resources, are easily accessible, free of charge, and supported by adequate education. As TB incidence declines, eradication programs need to be integrated into universal health care systems with ongoing support to remain effective (14). Government commitment is essential to ensure the implementation of HIV/AIDS prevention and TB control strategies, as well as collaborative efforts to address TB/HIV. The establishment of a national high-level committee can improve intersectoral coordination and strengthen political and financial support, leveraging international initiatives such as the

Stop TB Partnership and the Global Fund (15). Despite significant efforts, tuberculosis (TB) remains a major threat to public health worldwide. For decades, TB control programs have focused almost exclusively on infectious active TB cases. A comprehensive strategy with an integrated approach is needed to manage latent tuberculosis infection. Trust and commitment from all parties, including governments, health organizations, and communities, are essential in supporting the implementation of this strategy to accelerate global TB elimination (16).

TB eradication is hoped to remain an aspirational goal for all countries, with realistic short-term targets and clear priorities for all parties. Strong trust and commitment from each country and internal legitimacy in health policies will ensure real progress. Thus, each country and key stakeholders can be held accountable for achieving the targets that have been set (17). The findings of this study on the dynamics of CSO collaboration in TB control in South Sulawesi show alignment with Ansell and Gash's (2007) CGR framework, especially in terms of the importance of the initial condition of trust and the influence of the face-to-face dialogue process on the outcome of collaboration (18). Global studies highlight the challenges of collaborative governance regime analysis through the lens of Ansell and Gash's framework, revealing that the Indonesian context has unique characteristics in the dimensions of input-process and output that influence the effectiveness of collaboration.

Capacity for Collective Action

The study's results related to the capacity to work together show that the eradication of TB in Makassar City has been carried out well by the Makassar Health Office and CSO Yamali through the formation of a strong leadership team from the central to regional levels. This collaboration includes institutional arrangements, leadership, knowledge, and resources that support the program's effectiveness. However, increasing knowledge in cooperation between the government and NGOs is still needed to strengthen shared understanding regarding the medical, social, economic, and cultural aspects of handling TB. In addition, funding support from the Global Fund of IDR 5.6 billion allows CSO Yamali to run organizational operations more effectively in eradicating TB in Makassar City. Government commitment, political support, adequate funding, and effective management are very important in efforts to eradicate TB. While private sector involvement is needed, especially in relation to national TB programs to ensure standardized reporting and case management (such as using validated diagnostics and WHO-recommended treatment regimens), TB control and elimination cannot be achieved without strong government commitment, adequate funding, and appropriate management (19). This study is in line with the study by Bennani et al. (2024) which emphasized the importance of inter-sectoral support and collaboration in eradicating TB cases, as well as the need to improve the quality of human resources and provide adequate treatment regimens (15). By 2023, fourteen countries had implemented a full oral treatment regimen, with three countries starting to use a 6-month regimen of bedaquiline, pretomanid, linezolid, and moxifloxacin (BPaL(M)). Treatment success of MDR/RR-TB increased from 64% in 2017 to 73% in 2020 (15).

WHO launched the End TB Strategy, which sets targets for TB prevention, care and control post-2015 and provides a framework for its implementation in countries with low incidence rates (20). Only a few countries in Latin America and the Caribbean, such as the Bahamas, Chile, Costa Rica, Cuba, the Dominican Republic, Jamaica, Puerto Rico, Trinidad and Tobago, and most English-speaking countries and territories in the Caribbean, have TB incidence rates that are low or close to these thresholds (21). However, in some other countries in the region, there are specific areas or environments with low TB incidence rates. Therefore, these countries are likely to face different challenges in implementing the WHO TB elimination strategy. To overcome these challenges, a deep understanding of TB, quality human resources, and adequate financial support from governments are needed (22).

One limitation of this study is the potential for inaccuracy or incompleteness of data sourced from the Tuberculosis Information System (SITB). For example, there were reports of delays in data updates, inconsistencies in filling out forms, and unclear definitions of variables at the primary health facility level, which could affect the availability and quality of TB case data analyzed in this study. The use of purposive sampling techniques in selecting informants based on the criteria, i.e., key informants, can potentially cause

selection bias. The selected sample may not fully represent the diversity of perspectives and experiences of all CSOs involved in TB control in South Sulawesi. While purposive sampling allowed us to gain in-depth insights from key informants with relevant experience, it is important to note that the findings of this study may reflect the views of a specific selected group and may not be representative of the broader CSO population as a whole.

CONCLUSION

This study concludes that TB eradication in Makassar City has been going well, especially through close collaboration between the Makassar City Health Office, Ministry of Health, Local Government, and Yamali as the main stakeholders. Treatment assistance programs, psychosocial support, community empowerment, and new case findings have been implemented effectively. The sustainability of this collaboration is the main key to achieving the target of TB elimination in Makassar City. However, challenges related to SITB recording still need to be improved to cover all TB cases, including those carried out independently by patients. Collaboration between the Makassar City Health Office, Makassar BBLKM, and Yamali must be strengthened to improve TB recording and eradication more effectively. Joint capacity in TB eradication has also been well-carried out. However, increasing knowledge about TB management's medical, social, economic, and cultural aspects is still needed, and financial support from the Global Fund plays a crucial role in the smooth operation of TB eradication in Makassar City.

This study makes a theoretical contribution by demonstrating the relevance and adaptability of the Collaborative Governance Regime (CGR) framework in the context of a low- and middle-income country (LMIC) such as Indonesia. Our findings illustrate how the dynamics of collaboration among CSOs in TB control in South Sulawesi align with key elements of the CGR while highlighting the adaptations needed to address unique contextual challenges such as actor fragmentation and resource constraints.

Based on the findings on challenges in recording SITB, we recommend active integration of community health cadres (KHM) in data collection at the community level. KHM can be trained to identify suspected TB cases, facilitate referrals, and assist in the initial data entry into the SITB system through a standardized mobile application.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest

REFERENCES

1. World Health Organization. Global Tuberculosis Report 2024. 1st ed. Geneva: World Health Organization; 2024. 1 p.
2. Kementerian Kesehatan RI. Laporan Program Penanggulangan Tuberkulosis 2023 [Internet]. Jakarta: Kementerian Kesehatan RI; 2024. Available from: https://www.tbindonesia.or.id/wp-content/uploads/2024/12/Laporan-Program-Penanggulangan-TBC-2023_Final.pdf
3. World Health Organization. Global tuberculosis report 2019 [Internet]. Geneva: World Health Organization; 2019 [cited 2025 Mar 27]. Available from: <https://iris.who.int/handle/10665/329368>
4. Dye C, Williams BG. Eliminating human tuberculosis in the twenty-first century. *J R Soc Interface*. 2008 Jun 6;5(23):653–62.
5. Dye C, Glaziou P, Floyd K, Raviglione M. Prospects for Tuberculosis Elimination. *Annu Rev Public Health*. 2013 Mar 18;34(1):271–86.

6. Dinas Kesehatan Kota Makassar. Profil Kesehatan Kota Makassar 2024. Makassar: Dinas Kesehatan Kota Makassar; 2024.
7. Yayasan Masyarakat Peduli Tuberkulosis Sulawesi Selatan. Laporan Tuberkulosis Yamali 2024 [Internet]. Makassar: Yayasan Masyarakat Peduli Tuberkulosis Sulawesi Selatan; 2024. Available from: <https://www.yamalitb.or.id/perpustakaan>
8. Cole B. Essential Components of a Public Health Tuberculosis Prevention, Control, and Elimination Program: Recommendations of the Advisory Council for the Elimination of Tuberculosis and the National Tuberculosis Controllers Association. *MMWR Recomm Rep* [Internet]. 2020 [cited 2025 Mar 27];69. Available from: <https://www.cdc.gov/mmwr/volumes/69/rr/rr6907a1.htm>
9. Kementerian Kesehatan RI. Laporan Program Penanggulangan Tuberkulosis Tahun 2022 [Internet]. Jakarta: Kementerian Kesehatan RI; 2023 p. 1–156. Available from: <https://tbindonesia.or.id/wp-content/uploads/2023/09/Laporan-Tahunan-Program-TBC-2022.pdf>
10. Thakur G, Thakur S, Thakur H. Status and challenges for tuberculosis control in India – Stakeholders' perspective. *Indian Journal of Tuberculosis*. 2021 Jul;68(3):334–9.
11. Liebenberg D, Gordhan BG, Kana BD. Drug resistant tuberculosis: Implications for transmission, diagnosis, and disease management. *Front Cell Infect Microbiol*. 2022 Sep 23;12:943545.
12. Mandal S. Towards building a tuberculosis free world. *Indian Journal of Tuberculosis*. 2022 Jul;69(3):259–61.
13. Migliori GB, Dowdy D, Denholm JT, D'Ambrosio L, Centis R. The path to tuberculosis elimination: a renewed vision. *Eur Respir J*. 2023 Jun;61(6):2300499.
14. Agizew TB, Dememew ZG, Leta T, Hiruy ND, Tesema E, Abelti EA, et al. Prospects for tuberculosis elimination in Ethiopia: feasibility, challenges, and opportunities. *Pan Afr Med J* [Internet]. 2022 [cited 2025 Mar 27];43. Available from: <https://www.panafrican-med-journal.com/content/article/43/146/full>
15. Bennani K, Van Den Boom M, ElMedrek MG, Hutin Y. Progress in programmatic management of drug-resistant TB, WHO Eastern Mediterranean Region, 2018-2023. *IJTLDP OPEN*. 2024 Sep 1;1(9):398–403.
16. Zellweger JP, Sotgiu G, Corradi M, Durando P. The diagnosis of latent tuberculosis infection (LTBI): currently available tests, future developments, and perspectives to eliminate tuberculosis (TB): The diagnosis of latent tuberculosis infection (LTBI). *La Medicina del Lavoro*. 2020 Jun 26;111(3):170–83.
17. The Lancet Respiratory Medicine. Tuberculosis: setting achievable targets for elimination. *The Lancet Respiratory Medicine*. 2023 Nov;11(11):945.
18. Ansell C, Gash A. Collaborative Governance in Theory and Practice. *Journal of Public Administration Research and Theory*. 2008 Oct 1;18(4):543–71.
19. Matteelli A, Rendon A, Tiberi S, Al-Abri S, Voniatis C, Carvalho ACC, et al. Tuberculosis elimination: where are we now? *Eur Respir Rev*. 2018 Jun 30;27(148):180035.
20. Lönnroth K, Migliori GB, Abubakar I, D'Ambrosio L, De Vries G, Diel R, et al. Towards tuberculosis elimination: an action framework for low-incidence countries. *Eur Respir J*. 2015 Apr;45(4):928–52.
21. Organization PAH. Tuberculosis in the Americas. Regional Report 2020 [Internet]. PAHO; 2021 [cited 2025 Mar 27]. Available from: <https://iris.paho.org/handle/10665.2/55194>
22. Rendon A, Fuentes Z, Torres-Duque CA, Granado MD, Victoria J, Duarte R, et al. Roadmap for tuberculosis elimination in Latin American and Caribbean countries: a strategic alliance. *Eur Respir J*. 2016 Nov;48(5):1282–7.