# THE EFFECT OF HEALTH PROMOTION STRATEGIES AND MULTISECTORAL COLLABORATION ON THE EFFECTIVENESS OF TUBERCULOSIS CONTROL IN THE PUSKESMAS HELVETIA MEDAN AREA

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**Abstrak**

Tuberkulosis (TBC) tetap menjadi tantangan besar dalam bidang kesehatan masyarakat global, termasuk di Indonesia. Pengendalian TBC yang efektif memerlukan tidak hanya intervensi medis, tetapi juga strategi promosi kesehatan yang kuat dan kolaborasi multisektor. Tujuan penelitian ini bertujuan untuk menganalisis dampak strategi promosi kesehatan dan kolaborasi multisektor terhadap efektivitas pengendalian TBC di Medan, khususnya di wilayah Puskesmas Helvetia. Metode penelitian ini menggunakan desain penelitian kuantitatif dengan pendekatan survei potong lintang. Data dikumpulkan dari 135 responden, termasuk pasien TBC, petugas kesehatan, dan pemangku kepentingan yang terlibat dalam program pengendalian TBC. Kuesioner terstruktur digunakan untuk mengumpulkan data mengenai strategi promosi kesehatan, kolaborasi multisektor, dan efektivitas pengendalian TBC. Hasil penelitian ini menemukan bahwa strategi promosi kesehatan, terutama pesan kesehatan yang jelas dan relevan secara budaya, secara signifikan meningkatkan kepatuhan pengobatan dan kesadaran masyarakat. Kolaborasi multisektor, terutama keterlibatan sektor pemerintah dan komunitas, sangat penting dalam meningkatkan hasil pengendalian TBC. Efektivitas pengendalian TBC berhubungan positif dengan promosi kesehatan dan kolaborasi multisektor. Kesimpulan promosi kesehatan dan kolaborasi multisektor merupakan komponen vital dalam pengendalian TBC yang efektif. Pendekatan terintegrasi yang menggabungkan kedua elemen ini dapat secara signifikan meningkatkan keberhasilan program TBC, yang mengarah pada hasil pasien yang lebih baik dan penghapusan penyakit jangka panjang.

*Kata kunci*: *Tuberkulosis, Promosi Kesehatan, Kolaborasi Multisektor, Pengendalian Tbc, Kesehatan Masyarakat, Indonesia.*

*Abstract*

Tuberculosis (TB) remains a significant public health challenge globally, including in Indonesia. Effective TB control requires not only medical interventions but also strong health promotion strategies and multisectoral collaboration. Objective this study aims to analyze the impact of health promotion strategies and multisectoral collaboration on TB control effectiveness in Medan, specifically within the Puskesmas Helvetia area. Methods a quantitative research design with a cross-sectional survey approach was used. Data were collected from 135 respondents, including TB patients, healthcare workers, and stakeholders involved in TB control programs. A structured questionnaire was used to gather data on health promotion strategies, multisectoral collaboration, and the effectiveness of TB control efforts. Results the study found that health promotion strategies, especially clear and culturally relevant health messages, significantly improved treatment adherence and awareness. Multisectoral collaboration, particularly the involvement of government and community sectors, was crucial for improving TB control outcomes. The effectiveness of TB control was positively correlated with both health promotion and multisectoral collaboration. Conclusion health promotion and multisectoral collaboration are vital components for effective TB control. An integrated approach that combines these elements can significantly enhance the success of TB programs, leading to improved patient outcomes and long-term disease elimination

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*Keywords*: *Tuberculosis, Health Promotion, Multisectoral Collaboration, Tb Control, Public Health, Indonesia.*

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## INTRODUCTION

Tuberculosis (TB) remains a significant public health challenge globally, including in Indonesia. Despite substantial efforts to reduce its prevalence, TB continues to affect millions of individuals every year. According to the World Health Organization(1), TB remains the leading cause of death from an infectious disease worldwide, claiming 1.4 million lives annually. In Indonesia, a country with one of the highest TB burdens, the problem is exacerbated by challenges such as delayed diagnosis, inadequate treatment adherence, and the emergence of drug-resistant TB (2),(3). Addressing these challenges requires a comprehensive, multi-sectoral approach that integrates health promotion strategies and cross-sector collaboration.

The role of health promotion in TB control has become increasingly recognized in recent years. Health promotion aims to empower individuals and communities to make informed decisions about their health by providing accurate information and support (4),(5). In the context of TB, health promotion strategies can increase awareness of the disease, reduce stigma, and improve adherence to treatment regimens. However, the effectiveness of these strategies depends on their ability to engage multiple sectors and stakeholders, including healthcare providers, local governments, academia, and civil society organizations (6). Multi-sector collaboration fosters a holistic approach by pooling resources, expertise, and influence from various sectors to address the complex and interrelated factors that contribute to the spread of TB (7).

The significance of multi-sectoral collaboration in public health has been emphasized in numerous studies. For example, Espinosa and Contreras (2023) argue that achieving the Sustainable Development Goals (SDGs), particularly SDG 3.3, which targets the elimination of TB by 2030, requires coordinated efforts from various sectors such as health, education, social services, and the private sector. In Indonesia, the government has implemented various policies and programs to tackle TB, including the Directly Observed Treatment, Short-course (DOTS) strategy, which is widely regarded as the standard for TB treatment.

However, as evidenced by the persistent high rates of TB cases, these efforts have not been fully effective . A more integrated approach that includes not only healthcare professionals but also community-based interventions and multi-sector partnerships is essential for enhancing the impact of TB control programs (8).

In the city of Medan, the prevalence of TB remains a pressing concern despite ongoing efforts to control the disease. According to the Dinas Kesehatan Kota Medan (2023), there were 10,100 reported cases of TB in Medan in 2022, with the incidence rate reaching 150 cases per 100,000 population. The city's high population density, combined with social and economic factors such as poverty and limited access to healthcare, exacerbates the spread of TB (9).

The role of local governments, healthcare providers, and community members in TB control efforts is therefore critical. Moreover, the need for effective health promotion and multi-sector collaboration is underscored by the significant number of individuals who discontinue treatment prematurely due to a lack of knowledge, support, or perceived improvements in their health status (1).

The purpose of this study is to analyze the impact of health promotion strategies and multi-sector collaboration on the effectiveness of TB control in Medan, specifically in the area served by the Puskesmas Helvetia. This research is particularly relevant given the continued challenges faced in achieving high levels of treatment adherence and reducing the TB burden in the region. By focusing on the various components of health promotion and the degree of sectoral collaboration, the study aims to identify which strategies and partnerships are most effective in improving TB treatment outcomes.

The research questions guiding this study are as follows:
1. How do health promotion strategies impact the effectiveness of TB control in the Puskesmas Helvetia area?
2. To what extent does multi-sector collaboration influence the effectiveness of TB control efforts in the same area?
3. What are the key factors in health promotion and multi-sector collaboration that most significantly affect TB treatment adherence and success rates?

This study will contribute to the growing body of literature on TB control by exploring the role of integrated health promotion strategies and multi-sector partnerships in enhancing the effectiveness of TB treatment programs in Medan. It will also provide practical insights for policymakers, healthcare providers, and community leaders on how to design more effective, context-specific interventions to combat TB and achieve SDG 3.3 targets

## METHODS

### A. Research Design

This study adopts a quantitative research design with a cross-sectional survey approach (10) . The primary aim of this research is to analyze the impact of health promotion strategies and multisectoral collaboration on the effectiveness of tuberculosis (TB) control in the working area of Puskesmas Helvetia, Medan. The study seeks to identify the key factors that influence TB control outcomes by examining various health promotion strategies and the degree of coordination among involved sectors.

The research was conducted in the Puskesmas Helvetia area, located in Medan, North Sumatra, Indonesia. Puskesmas Helvetia is a primary healthcare facility providing basic health services, including TB control programs, to the local population. Medan, as the capital city of North Sumatra, has a relatively high TB prevalence, making it an ideal location for investigating the effectiveness of TB control strategies. The city's socio-economic conditions, including poverty and limited access to healthcare in certain regions, further highlight the importance of evaluating TB control measures.

## B. Population and samples

The population of this study consists of individuals residing in the Puskesmas Helvetia area who have been diagnosed with pulmonary tuberculosis and their families, as well as healthcare workers and other relevant stakeholders involved in TB control.

The sample size for this study includes 135 respondents. This number was determined based on a power analysis to ensure sufficient statistical power for detecting significant relationships between variables. The sample was selected using total sampling, meaning that all eligible individuals in the study population were included (11).
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## C. Data collection

We Data collection was conducted using a structured questionnaire, which was developed based on the variables identified in the research framework. The questionnaire was designed to gather data on several key areas, including health promotion strategies, multisectoral collaboration, and the effectiveness of TB control measures.

The questionnaire consists of multiple sections:
1. Demographic Information: This section includes questions related to participants' age, gender, education level, occupation, and TB treatment history.
2. Health Promotion Strategies: This section evaluates the different types of health promotion activities (e.g., education campaigns, media use, community engagement) and their effectiveness.
3. Multisectoral Collaboration: This section assesses the involvement of different sectors (e.g., government, healthcare, academia, community organizations) in TB control programs and their coordination.
4. Effectiveness of TB Control: This section measures the participants' perception of the effectiveness of TB control programs, focusing on treatment adherence, TB prevention, and reduction in TB prevalence.

## D. Data analysis

Data obtained from the questionnaires were entered into a statistical software program (e.g., SPSS or STATA) for analysis. The analysis consisted of three main steps:
1. Descriptive Analysis:
Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the demographic characteristics of the respondents and the responses to the variables related to health promotion strategies, multisectoral collaboration, and TB control effectiveness.
2. Bivariate Analysis:
Bivariate analysis was performed using Pearson's correlation coefficient to assess the strength and direction of the relationships between the independent variables (e.g., health promotion strategies, multisectoral collaboration) and the dependent variable (effectiveness of TB control). A p-value of less than 0.05 was considered statistically significant.
3. Multivariate Analysis:
To examine the simultaneous effects of multiple independent variables on the effectiveness of TB control, multiple linear regression analysis was conducted. This allowed for the identification of the key predictors of TB control effectiveness while controlling for other variables. The regression model was evaluated for its goodness of fit using R², and the significance of individual predictors was assessed using t-tests.

## E. Ethical Considerations

The study was approved by the Ethical Review Committee of Universitas Prima Indonesia. All participants were informed about the purpose of the study, and written informed consent was obtained before participation. The confidentiality of participants was ensured, and they were assured that their responses would be kept anonymous and used solely for the purposes of this research. In addition, the participants were informed about their right to withdraw from the study at any time without any consequences. All data were securely stored and will be used solely for academic purposes

## RESULTS AND DISCUSSION

## 1. Demographic Characteristics of Respondents and Health Promotion Strategies

Table 1 presents the demographic characteristics of the respondents along with the health promotion strategies evaluated in the study. The majority of the respondents were female (55.6%) and unemployed (28.1%). In terms of health promotion, respondents rated the quality of health messages and the competence of health workers positively, suggesting that clear messages and competent health workers play key roles in successful TB control.

Table 1. Demographic Characteristics and Health Promotion Strategies

| Varible | Catagory | Frequency (n) | Percentange(%) |
|---|---|---|---|
| Gender | Male | 60 | 44.4 |
| | Female | 75 | 55.6 |
| Occupation | Housewife | 14 | 10.4 |
| | Private Employee | 31 | 23.0 |
| | Student | 19 | 14.1 |
| | Civil Servant (PNS) | 3 | 2.2 |
| | Unemployed | 38 | 28.1 |
| | Entrepreneur | 29 | 21.5 |
| Education | No formal education | 2 | 1.5 |
| | Primary School | 6 | 4.4 |
| | Junior High School | 15 | 11.1 |
| | High School | 64 | 47.4 |
| | Diploma | 5 | 3.7 |
| | Bachelor's Degree | 43 | 31.9 |

## 2. Multisectoral Collaboration and Effectiveness of TB Control

Table 2 summarizes the key findings related to multisectoral collaboration and the effectiveness of TB control. The data indicate that collaboration between various sectors, especially the government and academic/community sectors, plays an important role in enhancing the success of TB control. Furthermore, respondents rated the effectiveness of TB control positively, with an average score of 83.07, suggesting that the TB programs in the Puskesmas Helvetia area were largely perceived as effective.

Table 2. Multisectoral Collaboration and Effectiveness of TB Control

| Variable | Mean | Median | Standard Deviation |
|---|---|---|---|
| Number of Sectors Involved | 20.81 | 21.00 | 1.918 |
| Type of Sectors Involved | 20.83 | 21.00 | 2.271 |
| Coordination Between Sectors | 20.70 | 21.00 | 2.158 |
| Role of Government | 20.95 | 21.00 | 2.078 |
| Role of Academia & Community | 21.50 | 22.00 | 1.807 |
| Effectiveness of TB Control | 83.07 | 85.00 | 8.165 |

## 3. Correlation Between Variables and Effectiveness of TB Control

Table 3 displays the results of the Pearson correlation analysis. The analysis shows significant positive correlations between health promotion strategies, multisectoral collaboration, and the effectiveness of TB control. The role of government ($r = 0.529$) exhibited the strongest positive correlation, followed by quality of health messages ($r = 0.471$) and the involvement of academia and community ($r = 0.483$).

Table 3. Factors related to the refusal to do Skinning

| Variable | Effectiveness of TB Control (r) | Significance (p) |
|---|---|---|
| Type of Health Promotion | 0.315** | 0.000 |
| Frequency of Promotion | 0.375** | 0.000 |
| Quality of Health Messages | 0.471** | 0.000 |
| Community Participation | 0.378** | 0.000 |
| Competence of Health Workers | 0.303** | 0.000 |
| Number of Sectors Involved | 0.336** | 0.000 |
| Type of Sectors Involved | 0.339** | 0.000 |
| Coordination Between Sectors | 0.453** | 0.000 |
| Role of Government | 0.529** | 0.000 |
| Role of Academia & Community | 0.483** | 0.000 |

Note: $p < 0.05$ indicates statistical significance.

The results of this study highlight the crucial role of health promotion strategies and multisectoral collaboration in enhancing the effectiveness of TB control efforts in Medan, particularly in the Puskesmas Helvetia area.
1. Health Promotion Strategies: The findings indicate that quality of health messages and frequency of promotion activities significantly contributed to the effectiveness of TB control. Respondents reported that clear and relevant health messages played a vital role in improving treatment adherence and raising awareness about TB prevention.
2. Multisectoral Collaboration: The data show

that collaboration among various sectors, especially the government and academia/community, is essential for the success of TB control. The coordination between these sectors, including the role of government in providing resources and oversight, was perceived as one of the strongest drivers of effective TB control in the area.

3. Effectiveness of TB Control: Overall, respondents rated the effectiveness of TB control programs positively, with an average score of 83.07. This indicates that the TB control efforts in Puskesmas Helvetia were largely perceived as successful, especially when health promotion strategies and multisectoral collaboration were implemented effectively.

4. Correlation Analysis: The correlation analysis revealed that all variables, including health promotion strategies and multisectoral collaboration, had significant positive correlations with the effectiveness of TB control. The strongest correlation was found between government involvement and TB control effectiveness, followed by the quality of health messages and community involvement.

**Discussion**

The findings of this study underscore the critical role of health promotion strategies and multisectoral collaboration in enhancing the effectiveness of tuberculosis (TB) control programs. These elements are pivotal in addressing the multifaceted challenges posed by TB, particularly in regions with high disease burden.

**Health Promotion Strategies**

Effective health promotion is integral to TB control efforts. The study revealed that clear and culturally appropriate health messages significantly improve treatment adherence and patient engagement. This aligns with findings by Silva et al. (2025), who emphasized the importance (12) of quality health communication in TB control programs. Their research highlighted that well-crafted messages can enhance public understanding and reduce stigma associated with TB, leading to better health outcomes (13),(14) .

Moreover, community involvement in health promotion activities fosters a supportive environment for TB patients. noted that community networks and engagement are essential for effective TB case management (15). His study demonstrated that community health workers and local leaders play a crucial role in identifying TB cases, supporting patients throughout their treatment journey, and reducing stigma, which remains a significant barrier to

care (16).

**Multisectoral Collaboration**

The study also highlighted the significance of multisectoral collaboration in TB control. Engaging various sectors beyond health, such as education, social protection, and justice, is vital for addressing the social determinants of TB. The World Health Organization's (WHO) Multisectoral Accountability Framework for TB emphasizes the need for coordinated actions across sectors to achieve the End TB Strategy goals (1)

Furthermore, (17), conducted a study in Eastern Europe and Central Asia, assessing the engagement of community and civil society sectors in national TB responses. Their findings revealed that while these sectors are essential, their involvement is often hindered by limited resources and political challenges. The study advocates for sustainable mechanisms to support the meaningful participation of TB-affected communities and civil society organizations.

**Integration of Health Promotion and Multisectoral Approaches**

Integrating health promotion strategies with multisectoral collaboration enhances the overall effectiveness of TB control programs. A study by (17) discussed the necessity of adopting a multisectoral approach to TB control and elimination in the era of the United Nations Sustainable Development Goals. The authors argued that addressing the social and economic determinants of TB requires coordinated efforts across various sectors, including health, education, and social protection.

Additionally, the WHO's Framework for Collaborative Action on TB and Comorbidities (2022) supports the integration of TB services with those addressing comorbidities and health-related risk factors. This holistic approach ensures comprehensive care for individuals affected by TB and related conditions, thereby improving treatment outcomes and reducing disease transmission (18) .

**CONCLUSION**

In conclusion, the study affirms that health promotion strategies and multisectoral collaboration are indispensable components of effective TB control programs. By enhancing public awareness, reducing stigma, and addressing the broader social determinants of health, these strategies contribute to the successful implementation of the End TB Strategy. Future efforts should focus on strengthening these components to achieve sustainable reductions in TB incidence and ultimately eliminate the disease.

## REFERENCES

WHO. World Health Statistics 2024. Monitoring health for the SDGs, Sustainable Development Goals [Internet]. World Health Organization 2024; 2024. 1–96 p. Available from: https://www.forbes.com/health/mind/mental-health-statistics/

Kemenkes RI. Laporan Kinerja Kementerian Kesehatan Tahun 2022 [Internet]. Vol. 1, Kementerian Kesehatan RI. 2023. Available from: https://www.kemkes.go.id/article/view/19093000001/penyakit-jantung-penyebab-kematian-terbanyak-ke-2-di-indonesia.html

Sulaiman S, Vera Y, Maryaningsih M, Susilo T, Sutandra L. Pengaruh Obat Anti Tuberkulosis Terhadap Pasien Multidrug Resistant Tuberculosis (Mdr-Tb). J Online Keperawatan Indones. 2021;4(1):65–72.

Tarigan R. Pengaruh Tingkat Pendidikan Terhadap Tingkat Pendapatan Perbandingan Antara Empat Hasil Penelitian. J Wawasan 3. 2006;11:21–7.

ulaiman S, Achamd N, Naria E, Rochadi KR. Effectiveness Of Breathing Exercises In Elderly Tuberculosis Patients In Medan. In: Mitra Husada Health Internasional Conference (MIHHICo). 2024. p. 146–50.

Paramita YT, Arifah I, Mahmudah I, Ratnadila R. Hubungan faktor akses informasi terhadap pengetahuan kesehatan reproduksi dan seksual komprehensif mahasiswa. In: One Health : Pendekatan Terpadu Kesehatan Manusia, Hewan, dan Lingkungan unutk Membangun Pencegahan, Kesiaagaan dan Respon Pandemi. Universita Negeri Semarang; 2022. p. 1–10.

Alderwick H, Hutchings A, Briggs A, Mays N. The impacts of collaboration between local health care and non-health care organizations and factors shaping how they work : a systematic review of reviews. 2021;1–16.

Sadipun DK, Letmau W. Hubungan Dukungan Keluarga dengan Kepatuhan Minum Obat Pasien Tuberkulosis Paru. J Ilm Wahana Pendidik [Internet]. 2022; Available from: http://jurnal.peneliti.net/index.php/JIWP/article/view/2359

Directorate of Health Surveillance and Quarantine. Performance report of 2023. Kemenkes RI [Internet]. 2024;1(1):1–104. Available from: https://p2p.kemkes.go.id/wp-content/uploads/2024/02/Dit-SKK-LAKIP-LENGKAP-TA-2023.pdf

Sugiyono. Metodologi Penelitian Kuantitatif, Kualitatif dan R & D [Internet]. 19th ed. Bandung: Alfabeta; 2020. 1–346 p. Available from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://digi-lib.stekom.ac.id/assets/dokumen/ebook/feb_35efe6a47227d6031a75569c2f3f39d44fe2db43_1652079047.pdf

Sugiyono. Metode Penelitian Bisnis (Pendekatan Kuantitatif, Kualitatif, Kombinasi dan R&D) [Internet]. Jakarta: Alfabeta; 2017. 1–832 p. Available from: https://www.belbuk.com/metode-penelitian-bisnis-pendekatan-kuantitatif-kualitatif-kombinasi-dan-rd-p-10741.html

Silva RD da, Farias ERG de, Graça JMB da, Pinheiro EMN, Cavalcante EF de O. Approaches and results of intersectoral actions for tuberculosis control in the world: A scoping review. PLoS One. 2025;20(6):e0326784.

Ministry of Health Indonesia. Tuberculosis Control in Indonesia 2022. Jakarta; 2023.

Sulaiman S, Anggriani A, Khairat F. Rehabilitasi Stroke Berbasis Rumah Dalam Meningkatkan Kemampuan Fungsional Dan Pemberdayaan Kader Posyandu. J Med Med. 2025;4(4):1128–34.

Thekkur P, McQuaid CF. Addressing adherence challenges in TB treatment: Beyond one-size-fits-all DATs. Lancet Glob Heal. 2023;11(9):e1354–6.

Kim J, Jang J, Kim B, Lee KH. Effect of the PRECEDE-PROCEED model on health programs: a systematic review and meta-analysis. Syst Rev [Internet]. 2022;11(1):1–12. Available from: https://doi.org/10.1186/s13643-022-02092-2

United Nations Children's Fund (UNICEF) Indonesia. the State of Children in Indonesia [Internet]. The State of Children in Indonesia p Trends, Opportunities and Challenges for Realizing Children's Rights. Jakarta: UNICEF Indonesia.; 2020. 1–78 p. Available from: https://www.unicef.org/indonesia/sites/unicef.org.indonesia/files/2020-06/The-State-of-Children-in-Indonesia-2020.pdf

Organization WH. Framework for collaborative action on tuberculosis and comorbidities. World Health Organization; 2022.