

IMPROVING TUBERCULOSIS RESPONSE STRATEGIES BY INVOLVING THE PRIVATE SECTOR IN THE PUBLIC-PRIVATE MIX SCHEME: A SYSTEMATIC REVIEW

Novie Irawaty.L. Manurung^{1*}, Ede S. Darmawan², Putri Ardhani³

Faculty of Public Health, Universitas Indonesia, Indonesia Depok^{1,2,3}

*Corresponding author : novie.i.manurung@gmail.com

ABSTRAK

Keterlibatan sektor swasta dalam program tuberculosis (TB) nasional berdampak positif terhadap pencegahan dan pelayanan, namun tantangan tetap ada. Organisasi Kesehatan Dunia (*World Health Organization-WHO*) menyediakan kerangka kerja untuk meningkatkan keterlibatan publik-swasta. Tujuan kami adalah untuk mengeksplorasi bukti dan mengukur keberhasilan dalam program pengendalian TB. Kami melakukan tinjauan literatur sistematis menggunakan database *PubMed*, *Embase*, dan *ProQuest* untuk menemukan laporan yang diterbitkan dalam bahasa Inggris tanpa batas waktu. PRISMA digunakan untuk menyaring judul dan abstrak untuk dimasukkan. Pencarian terhadap 176 penelitian menemukan bahwa 14 studi sesuai dengan kriteria inklusi, dengan 92,8% berkolaborasi dalam berbagai intervensi untuk hasil TB. Dukungan sektor swasta, bantuan tenaga kesehatan, dan proyek-proyek inovatif, seperti asosiasi medis dan organisasi keagamaan, meningkatkan pencapaian program TB. Kesimpulannya, pemerintah telah menerapkan empat strategi intervensi dari kerangka WHO untuk meningkatkan keterlibatan sektor swasta di setiap wilayah. Strategi ini harus diterapkan dalam konteks lokal, dengan fokus pada implementasi jangka menengah dan panjang untuk memastikan hasil yang berkelanjutan.

Kata kunci : Keterlibatan, Sektor swasta, Campuran publik-swasta, Tuberkulosis

ABSTRACT

Private sector involvement in national tuberculosis (TB) programs positively impacts prevention and service, but challenges remain. The World Health Organization (WHO) provides a framework to enhance public-private engagement. Our aims were to explore evidence and measure success in TB control programs. We conduct systematic literature reviews using PubMed, Embase, and ProQuest databases to find reports published in English with no time limit. PRISMA was used to filter titles and abstracts for inclusion. A search of 176 studies found that 14 fit the inclusion criteria, with 92.8% collaborating on multiple interventions for TB outcomes. Private sector support, health worker assistance, and innovative projects, such as medical associations and religious organizations, improved TB program achievement. In conclusion, the government has implemented four intervention strategies from the WHO framework to increase private sector engagement in each region. These strategies must be implemented in the local context, with a focus on medium and long-term implementation to ensure sustainable results.

Keywords: *Engagement, Private sector, Public-private mix, Tuberculosis*

BACKGROUND

In 2021, 10.6 million people have TB, with 40% going undetected annually (Kak N, et al, 2020). The World Health Organization (WHO) introduced the public-private mix (PPM) in 2007 to optimize case management and provide quality services closer to the community (Wells WA, et al. 2015).

Private sector health services provide 40-62% of TB health services globally, but management has received less attention (Hanson C, et al. 2015). In Asian countries with high TB burdens, 66-80% of patients seek private clinics or physician practices for their first health care. However, there are inequalities in facilities, diagnostic capacity, and governance

guidelines. Only 3-7% of TB cases are reported to the National Health System (Kak N, et al. 2020). Challenges include fragile partnerships, resource constraints, mistrust, limited incentives, and service quality oversight. Unambiguous rules governing private sector rights and obligations, diverse knowledge of TB patients' management, and substandard treatment provision are also obstacles. Implementation of Public-Private Partnership (PPM) initiatives has not been fully realized in many countries (Wells WA et al. 2015)..

The Public-Private Partnership (PPM) scheme is considered a reliable and effective technique for achieving "End TB" by 2035 (WHO, 2022). Studies have shown that PPM improves case detection, treatment, and equitable access for the poor, particularly in countries with high TB burdens (Faisal S, et al. 2018). Strengthening private practitioners' involvement and synchronizing their activities into national programs can significantly improve national TB control and reduce financial costs (Shelley KD, et al. 2020)

Governments should create an environment where all healthcare providers are motivated to provide quality-assured TB care in partnership with national TB programs. The WHO has published a framework for increasing private sector involvement, which can be implemented through different implementations, which are facilitating dialogue and cooperation, technical management support and capacity building, clear, measurable, and adaptable guidelines at the local standard, and targeted financing mechanisms (Stallworthy G, et.al. 2023). Context-specific approaches are suggested to tailor PPM programs according to needs (Sah R, et al. 2021). This paper explores evidence on diverse intervention models for TB control programs, using systematic literature reviews for broad-scale references.

METHODS

Search Strategy

This systematic review follows PRISMA guidelines to investigate strategies for using the WHO framework and its impact on private sector involvement in public-private mix schemes. The review is conducted using PubMed, Embase, and ProQuest databases, with independent reviewers examining literature using prioritization and sequential exclusion approaches.

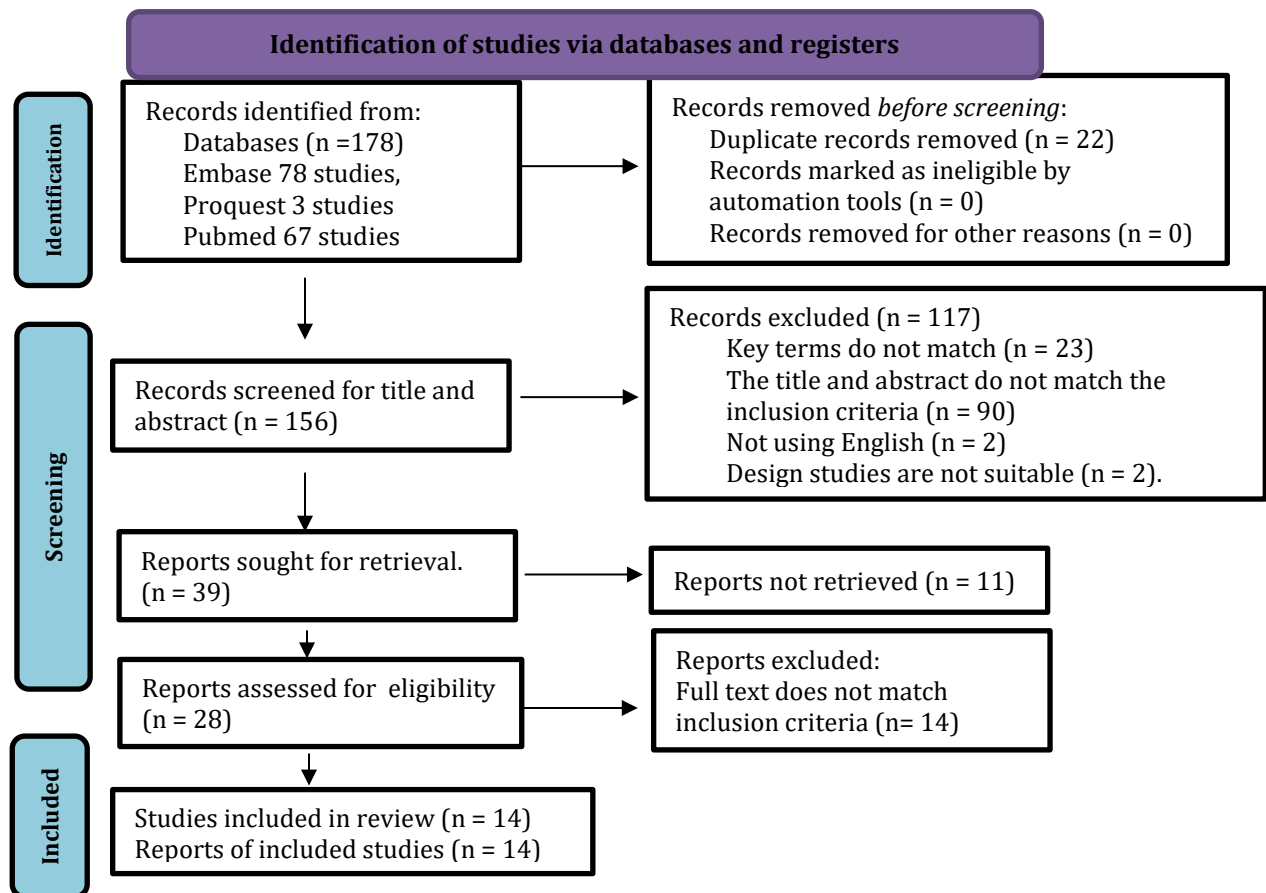
Inclusion Criteria

Studies report interventions aimed at increasing private sector involvement in tuberculosis control. Database searches identify articles across countries, focusing on private parties like clinics, hospitals, laboratories, independent practice doctors, and non-profit organizations. Intervention strategies are based on WHO frameworks, including Dialogue and Partnership (D-P), Policy and Guidelines (P-G), Financial Support (FS), and Technical Assistance and Capacity Building (TA-CB), policymaking and guidelines (P-G), and financial support (FS). Criteria include private sector engagement in national TB control programs and program achievement improvement.

Data management and analysis

Two reviewers screened titles and abstracts for study relevance, while a third resolved discrepancies. All the authors studied manuscripts, collected, synthesized data, and summarized conclusions using narrative synthesis.

Figure 1. Study selection flowchart for systematic review (PRISMA).



RESULTS

This systematic review follows PRISMA's guidelines which can be seen in Figure 1. There are a total of 176 articles from the initial search in three databases. Article search by title was entered into the first filtering stage where there were 158 articles identified without duplication from all database searches. The second step, through abstract screening, identified 39 articles that fall into the research inclusion category where there are 117 articles issued, due to titles and abstracts not matching the inclusion criteria (n=90), searching for key terms not matching (n=23), not using English (n=2), and design studies not matching (n=2). Of the 39 articles, 28 articles have full text.

The next step is full-text filtering. We reviewed six studies that were not clear on their interventions, five studies discuss basically the limits and recommend future intervention, whereas three studies indicate outcomes that do not match inclusion criteria. As a result, 14 articles were excluded because the full-text content did not fit the inclusion criteria. In the final stage, 14 of the most relevant articles were obtained to be included in this systematic review as explained in Figure 1.

We examined differences in intervention's strategy to reach the target of tuberculosis program. The private sector's size, structure, distribution, organization, and services vary greatly, but the importance of private healthcare providers' involvement in TB control is urgently highlighted. Table 1 provides examples of productive public-private mixes in countries with high TB prevalence. More than 90% of studies collaborate on more than one intervention to produce maximum TB achievement improvement.

Tabel 1. Characteristic of strategy interventions and outcome

Author	Study location	Years	D-P	P-G	FS	TA-CB	Outcomes
Probandari et al	Indonesia	2008	+	+	+	+	Average TB adherence 85.48%, 67.5% increased with advanced sputum examination
A.J Khan et al	Pakistan	2012			+	+	Tuberculosis cases to NTP doubled from 2010 to 2011 (from 1569 to 3140 cases), with mobile apps identifying over 30% of hospital
Pethani et al	Pakistan	2015		+		+	Treatment success increased to 86.3% after 2 years, with 8.7% failing.
M.S Khan et al	South Asia	2015		+	+	+	<ul style="list-style-type: none"> • Training reduces errors in inspection techniques. • New test attracts less lab owners. • Officers accelerate diagnostic enforcement. • Pakistan-specific laws restrict TB-related mass media promotion.
Kulshresta et al	India	2015	+	+		+	<ul style="list-style-type: none"> • Innovative projects involve Indian medical associations, Catholic Church, pharmaceutical associations. • Free anti-TB drug project using prescription vouchers IT systems.
Anand et al	India	2017	+	+	+	+	<ul style="list-style-type: none"> • Established 2569 NGO partnerships. • Increased notification rate from 0.3 in 2013 to 14.8/100,000 population in 2015.
Ananthkrishnan et al	India	2019				+	The private provider participation rate (nearly 50%) is much higher than expected (estimated at 10% to 15% based on REACH's previous private sector engagement work)
Shibu et al	India	2020	+	+	+	+	<ul style="list-style-type: none"> • PPIA involves over 50% doctors, 1/3rd laboratories, 10%

							chemists.
							<ul style="list-style-type: none"> 42,300 (78%) patients completed treatment and 4,979 (9%) unevaluated
Vo et al	Vietnam	2020	+	+	+	+	<ul style="list-style-type: none"> Notification data reporting rise to 68.3% But only 17.3% private providers actively trained and 1.3% reported complete data on TB patients.
Thu et al	Vietnam	2020				+	80% of suspected TB patients investigated, 95% begin treatment, higher than previous studies.
Tumuhimbise & Musiimenta	Uganda	2021	+	+	+	+	Stakeholder commitment and shared confidence in organizational change.
Sah et al	Nepal	2021				+	Intervention districts saw 17% increase in bacteriologically positive TB and 10% for all forms compared to control population notification changes.
D. Ali et al	Ethiopia	2022	+	+		+	Private sector contributes 15% to National TB program detection, with 700 trained officers active.
T. Ali et al	Nigeria	2023	+			+	Private laboratories increased from 96 in 2017 to 397 in 2020, boosting patient referrals (28 times higher) and private providers' contribution (19% to 36%) to national TB notifications.

Tabel. 2 The Strategy Innovations in 2008-2023

Intervention Categories	Year 2008 – 2012 (2 Studies)	Year 2013 – 2017 (4 Studies)	Year 2018 – 2023 (8 Studies)
Dialogue and Partnership (D-P)	Focus Group Discussion with stakeholders	<ul style="list-style-type: none"> Private sector mapping Support for new initiatives 	<ul style="list-style-type: none"> Established an intermediary institution and partnership organization for PPM coordination Building laboratory networks
Policy and Guidelines (P-G)	District-level approval for referral case	<ul style="list-style-type: none"> National TB program guidelines and data reporting Reduce logistic cost Developing indicators monitoring private sector involvement 	Develop research guidelines, provider roles, and benefits.

		<ul style="list-style-type: none"> • Flexible mechanism for private party engagement 	
Financial Support (FS)	Incentives for hospital workers	<ul style="list-style-type: none"> • Incentives for health workers • Voucher for suspected TB patients 	<ul style="list-style-type: none"> • Electronic voucher for TB drugs • Salary for volunteers
Technical Assistance and Capacity Building (TA-CB)	<ul style="list-style-type: none"> • Training for healthcare practitioner, • TB education campaigns • Voluntary screener participation 	<ul style="list-style-type: none"> • Media social promotion • New web-based system and application 	<ul style="list-style-type: none"> • Special project to improve MDR-TB detection. • Community support for patients in treatment • Professional officer for screening and TB case notification reports • New diagnostic test training (GenXpert MTB) • Active screening and on-site diagnostic testing • Integrated TB logistic system

Public-private mix in countries with high TB prevalence have shown increased collaboration, standardization of TB program management, and higher success rates in treatment. Table 2 has shown the progression over the years, in 2008 -2023. We divided it into a 5-year period and we can see the pattern of change that occurred in the 4 interventions. Innovative projects, such as collaborations with medical associations and religious organizations, are also being created. Assessing the effectiveness of the WHO approach is needed to increase private providers' involvement in TB prevention and treatment.

DISCUSSION

Building Dialogue and Partnership (D-P)

Partnership is a complex system involving diverse actors with diverse agendas and backgrounds, where strong relationships are crucial for successful governance (Salve S, et al. 2018) emphasize the importance of strong connections in fostering successful partnerships.

Private service providers face concerns about return benefits, funding sustainability, and government collaboration (Sunjaya DK, et al. 2022) . Irrational business expectations, upfront incentives, and concerns about "TB clinic brands" also hinder their involvement (Ali T, et al. 2023). Challenges include poor relationships between private providers and the state, often characterized by mutual mistrust (Sherpa J, et al. 2019). Collaborating and fostering dialogue among parties is the first crucial step for enhancing private providers' confidence in national TB treatment, ensuring successful outcomes (Adepoju VA, et al. 2022).

Indonesia, India, Nigeria, Uganda, and Vietnam are promoting private sector involvement in national TB programs through relaxation of strict policies, establishment of intermediary institutions, and decentralization of PPM management. This bidirectional approach strengthens cooperative relations and improves communication, as private service providers still have responsibility for TB control in their communities.

In addition to the private sector, building dialogue and cooperation with TB care health communities can strengthen national TB control programs. Every aspect of communication needs to be maintained to be a bridge of cooperation between the actors involved.

Understanding the interconnections of public and private sector, is crucial for closing the divide between field-level practice and central policy, fostering collaborative approaches for strengthening local healthcare systems (Rachlis B, et al. 2016).

Health Care Policies and Guidelines (P-G)

After building the partnership, health policies and guidelines are essential for national TB program implementation. Weak private sector regulations will affect TB patient handling under standard. The established policies are often seen as impartial and burdensome for the private sector (Salve S, et al. 2018). Today, private sector engagement has evolved from a service provider to a comprehensive policy reformer. Studies in Uganda, Bangladesh, Pakistan, and India show governments redesigning policies to speed up diagnostic flows, mobilize samples, and develop laboratory and radiology examination rates.

At the global level it is important to harmonize definitions of TB PPM service providers, harmonization of reporting tools, and re-evaluation of how PPM program performance is evaluated and compared across countries. However, the focus of a policy is not only implementation at the global or national level but how to monitor its implementation at the individual level in the local sector where health care practices are provided. Therefore, monitoring and evaluation are needed. Monitoring and evaluation are the keys for correctness, strengthening referral systems between public and private sectors, and providing standardized diagnosis and treatment (Salve S, et al. 2018).. For example, India monitors private sector service quality as a national indicator. Thus, in addition to the convenience provided, the quality of private sector services is maintained (Tumuhimbise W, et al, 2021).

Financial Support (FS)

More than 70% of studies result mention incentives for two different groups, which are health workers (also volunteers) and patients. Hussain et al (Hussain H, et al. 2019) mentioned that incentives for health workers and volunteers are expected to increase enthusiasm for TB control programs, as research shows they increase active case-finding activities and may also prevent DALYs rather than passive case discovery. From the patient's view, incentives such as free lab screening vouchers facilitate adherence to TB diagnostic evaluation, as long-term costs are incurred from pre-diagnostic to treatment phase³². However, further investigation is required to determine the efficacy of these incentives in producing sustained outcomes in tuberculosis programs (Tumuhimbise W, et al, 2021).

Financing tuberculosis programs is a huge concern, especially in nations with a high tuberculosis burden. The Global Fund to Fight AIDS, Tuberculosis, and Malaria is the primary source, but future financing remains (WHO,2022). The finance strategy should include three key elements, namely boosting domestic funding for public-private mix (PPM) projects, allocating TB donor funding to PPM efforts, and expanding outreach programs for promoting TB insurance and reimbursement schemes (WHO,2017). The discussion on integrating Universal Health Coverage to reduce financial burdens and address socioeconomic indicators in private healthcare providers is essential(Adepoju VA, et al. 2022).

Technical assistance and capacity building (TA-CB)

The study on technical assistance and capacity building was concluded into three distinct focus groups, including complimentary diagnostic technologies, healthcare personnel training, and engagement of TB care communities. The government implements logistical support for consistent Tb management in private and government healthcare facilities and to bring diagnostic access closer to the community. This is observed in Vietnam, Bangladesh, and Pakistan. The absence of charges to the private sector may not always be positively

appreciated. Private sector resistance in Bangladesh is attributed to limited doctors adhering to current tuberculosis diagnostic standards, resulting in resistance to testing patients (Khan MS, et al. 2015). Technological advancements in the areas of screening, examination schedule reminders, and surveillance have also shown significant growth. Competent human resources are essential for success (Thu TD, et al.2023).

Secondly, community involvement in TB control is part of the national TB program. Public health workers can be trained to screen the population and conduct door-to-door screenings for suspected cases. They can play an effective role in active screening and referral for TB identification in states that have low TB detection rates. Local governments play a crucial role in facilitating and promoting active participation in many community initiatives (Dam TA, et al. 2022).

The final activity is enhancing health workers' competency. Lack of knowledge and ability of officers can lead to differences in TB control standards. In the long-term, this can lead to an increase in MDR-TB cases (Stallworthy G, et al. 2023). The government implements training programs for health staff and volunteers to improve PPM engagement, focusing on case definition, detection, and laboratory diagnosis. This aligns with previous studies demonstrating the effectiveness of training interventions in TB patient identification and reporting (Garg S, et al. 2016). Furthermore, communication techniques, such as training, timely information transmission, and one-on-one dialogues with private practitioners, can facilitate TB notification and promote compliance with public health efforts. Trust-building techniques, such as providing comments on referred cases, conducting visits, and establishing contacts with private doctors, can also be effective (Sairu Philip, et al. 2015).

CONCLUSION

Private sector involvement in national TB programs has shown positive impacts, but achieving mutually beneficial PPM engagement remains a challenge. Despite the efforts made by government to increase the engagement with private sectors following the WHO frameworks, the four key interventions stated as recommendation above must be implemented locally and individually, taking into account the unique contextual factors of each specific place. The formulation of a comprehensive and strategic plan for the implementation of PPM is necessary in order to achieve sustainable outcomes for medium and long term.

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