

The Role of Community Pharmacy Personnel in Tuberculosis Case Detection: A Narrative Review

Carla Florencia^{1,2,3*}, Ida Ayu Andri Parwitha^{2,3}, Dian Ayu Eka Pitaloka^{3,4},
Ivan Surya Pradipta^{3,4}

¹Master Program of Pharmacoepidemiology and Pharmacoconomics, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM. 21, Jatinangor, Sumedang, West Java, 45363, Indonesia

²Doctoral Program in Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM 21, Jatinangor, Sumedang, West Java, 45363, Indonesia

³Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM 21, Jatinangor, Sumedang, West Java, 45363, Indonesia

⁴Drug Utilization and Pharmacoepidemiology Research Group, Center of Excellence in Higher Education for Pharmaceutical Care Innovation, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang KM 21, Jatinangor, Sumedang, West Java, 45363, Indonesia

*Corresponding author: Carla Florencia (carla18001@mail.unpad.ac.id)

ARTICLE HISTORY

Received: 11 February 2025

Revised: 4 May 2026

Accepted: 4 June 2026

Abstract

Tuberculosis (TB) continues to pose a global health challenge, mainly due to low case detection rates in high-burden countries like Indonesia. Community pharmacies (CP), the health facilities most commonly visited by individuals experiencing tuberculosis symptoms, play an essential role in early detection and referral to health facilities. This narrative review examines the role of community pharmacists in TB case detection through pharmacy-based interventions in developing countries with high TB burden. The following databases were used to identify articles that met the inclusion and exclusion criteria: PubMed and Scopus. Based on three eligible studies from India, Pakistan, and Cambodia, pharmacy-based TB case detection programs were associated with increased case detection and referral of presumptive TB cases. The included studies reported that structured interventions, including pharmacist training, referral systems, monitoring, and public-private collaboration, may support TB case detection in high-burden settings. However, several barriers were identified, including uncertainty about referral pathways, financial constraints, and concerns about service quality at referral facilities. Given the limited evidence from only three studies, these findings should be interpreted cautiously, and further research is needed to assess the effectiveness and sustainability of pharmacy-based TB case-detection programs. CP engagement may contribute to TB case detection when reinforced by well-defined, structured referral pathways and integration with public-private TB control initiatives.

Keywords: case detection, community pharmacist, pharmacy, tuberculosis

Introduction

Tuberculosis (TB) is an infectious respiratory disease caused by *Mycobacterium tuberculosis* and remains one of the leading causes of communicable disease-related mortality worldwide. According to the Global Tuberculosis Report 2024, TB incidence increased by 4.6% in 2023, with an estimated 10.8 million cases reported worldwide.¹ Indonesia currently ranks as the country with the second-highest TB burden worldwide, accounting for approximately 10% of total global TB cases.¹ Despite ongoing national TB control efforts, inadequate case detection remains a major challenge. In 2022, around 26% of Indonesia's estimated TB cases went unreported, totaling roughly 1,090,000 undetected cases.² Delayed diagnosis and untreated TB contribute to ongoing community transmission, increased disease burden, and poorer patient outcomes.

Evidence from Bandung, Indonesia, indicates that many individuals with TB follow complex, prolonged care-seeking pathways before receiving a definitive diagnosis. The median duration from symptom onset to TB diagnosis was reported to be 62 days.^{3,4} Furthermore, approximately 74.6% of individuals with TB initially seek care from informal healthcare providers or from private-sector facilities.³ In this context, community pharmacies (CP) frequently serve as the first point of contact for individuals experiencing TB-related symptoms, and symptomatic treatment is often sought before formal medical consultation.^{3,5} This pattern is likely due to the widespread availability of CP, their ease of access, and simpler medication-purchasing procedures compared with those at hospitals or community health centers (CHC).^{6,7}

Indonesia has over 32,000 private pharmacies, making them among the most frequently used first-line health facilities. This accessibility places CP in a strategically important position for initiatives aimed at improving TB case detection.^{3,4} Both the World Health Organization (WHO) and the International Pharmaceutical Federation (FIP) have advocated pharmacist involvement in TB-related activities, including patient education, treatment support, and case detection.⁸ Community pharmacists, who are often highly accessible and trusted by local communities, may therefore help identify and refer presumptive TB cases early.⁹

Despite this potential, the involvement of community pharmacy personnel in TB case detection remains underused.⁹ Existing evidence suggests that multiple operational and health-system factors shape pharmacy engagement.^{6,9} In addition, implementation approaches vary substantially across settings, resulting in fragmented evidence about how pharmacy-based TB case-detection programs are implemented and sustained in practice. Previous reviews have examined the role of pharmaceutical care in TB management, including treatment support, medication adherence, and patient counseling.⁹ However, limited attention has been given to community pharmacy-based TB case detection and referral interventions, particularly in developing countries with high TB burden, where pharmacies often serve as first-contact healthcare facilities. A focused review is therefore needed to synthesize existing evidence on intervention models, reported barriers and enabling factors, and implementation considerations for CP engagement in TB case detection.

This narrative review summarizes evidence on the potential role of community pharmacy personnel in TB case detection, particularly through symptom screening and referral. By identifying reported intervention approaches, barriers, and enabling factors, this review aims to support the development of contextually relevant strategies to strengthen community pharmacy engagement in TB case detection and reduce delays in TB diagnosis.

Method

Study Design

This study used a narrative review to summarize and critically discuss existing evidence on the role of community pharmacy personnel in TB case detection. A narrative review design was chosen because the studies varied widely in intervention models, settings, and outcomes, which made quantitative analysis unsuitable. The review focused on identifying intervention approaches, barriers, enablers, and implementation considerations for pharmacy-based TB case-detection programs.

Search Strategy

A structured literature search was conducted from August to October 2023 using two electronic databases: PubMed and Scopus. The search strategy combined keywords related to community pharmacy practice and TB case detection using Boolean operators ("AND" and "OR"). The following search terms were used in various combinations: "community pharmacy", "pharmacies", "pharmacy service", "community pharmacy services", "community-based", "community pharmacist-led intervention", "tuberculosis", "tuberculosis case detection", and "TB referral". The final search strategy used was: ("community pharmacy" OR "pharmacies" OR "community pharmacist-led intervention") AND ("tuberculosis" OR "tuberculosis case detection" OR "TB referral").

Article Selection Procedure

Articles were screened against the inclusion and exclusion criteria. Studies were considered eligible if they were published within the last ten years, conducted in developing countries with a high TB burden similar to that of Indonesia, and involved community pharmacy personnel or pharmacy-based interventions. Studies were considered eligible if they were published within the past 10 years, conducted in developing countries with a TB burden comparable to Indonesia's, and involved community pharmacy personnel or pharmacy-based interventions. They reported TB screening, referral, or case detection activities.

Articles retrieved from the database search were screened for relevance by one author (CF) based on titles and abstracts. Potentially eligible articles were subsequently assessed through full-text review by two authors (CF and IAAP) to determine their suitability for inclusion in the narrative synthesis. Any uncertainties regarding study eligibility were discussed with a third reviewer (ISP or DAEP) until consensus was reached.

Data Extraction and Synthesis

Relevant information from the included studies was extracted and summarized narratively. The data collected included study details, intervention methods, implementation strategies, reported barriers and enabling factors, and key findings on TB case detection in community pharmacy settings. The results from the studies were then compared descriptively to identify common themes, similarities, and differences in intervention implementation and in the factors affecting community pharmacy involvement in TB case detection.

Result

Study Characteristics

The literature search identified 211 records from PubMed and 1,871 from Scopus. After removing duplicates, 2,003 articles remained and were screened by title.

Of these, 1,819 were excluded for failing to meet the inclusion criteria, leaving 184 articles for abstract screening. A further 124 were excluded because they were not interventional or observational studies. Subsequently, 60 full-text articles were assessed for eligibility. Of these, 57 were excluded because they did not focus on community pharmacy-based TB case finding activities and were not conducted in pharmacy settings. Finally, 3 studies were included in this narrative review.

Three included studies were carried out in India, Pakistan, and Cambodia, all of which are developing countries with a high burden of TB. All included studies investigated the role of CP personnel in recognizing and referring suspected TB cases within public-private TB control initiatives. A summary of their characteristics and main results is provided in Table 1.

Table 1. Summary of Studies on Community Pharmacy Engagement in TB Cases Detection

Author	Study Design and Location	Pharmacy-Based Model Programs	Key Findings
Daftary et al., 2019. ¹⁰	<p>Study design: Implementation Study</p> <p>Location: Patna, India</p>	<ol style="list-style-type: none"> Community pharmacists conduct TB symptom screening integrated with ongoing public and private hospital programs. Train pharmacy personnel on TB screening procedures. Refer presumptive TB cases for chest X-ray examinations. Provide financial incentives to participating pharmacy personnel. Send text reminders and offer technical support during implementation. Supervise and monitor the process. 	<ol style="list-style-type: none"> 81% of 105 pharmacies remained engaged until the end of the implementation program. Registration of symptomatic individuals was 62 times higher in the intervention group compared to the control group. TB case detection was 25 times higher in the intervention group compared to the control group. An additional 240 new TB cases were identified as a result of the intervention.

Table 1. (Extension)

Author	Study Design and Location	Pharmacy-Based Model Programs	Key Findings
Ullah et al., 2020. ¹¹	Study design: Implementation Study Location: Gujrat, Lahore, Sheikhpura, Pakistan	<ol style="list-style-type: none"> 1. Train community pharmacists to conduct TB symptom screening. 2. Establish referral pathways from pharmacies to physician clinics. 3. Monitor and evaluate the referral process regularly. 	<ol style="list-style-type: none"> 1. 85% of 500 pharmacies remained engaged until the end of the program. 2. 3,025 presumptive TB cases were successfully referred. 3. 547 new TB cases were identified through the referral mechanism. 4. The program contributed approximately 9% to overall TB case detection in the study areas.
Bell et al., 2015. ¹²	Study design: Implementation Study Location: Phnom Penh, Cambodia	<ol style="list-style-type: none"> 1. Train private pharmacies to refer presumptive TB cases to public sector clinics. 2. Implement a structured referral program for TB diagnosis and treatment. 3. Monitor and evaluate referral practice. 	<ol style="list-style-type: none"> 1. 50 pharmacies (29,6%) referred 125 presumptive TB clients within three months. 2. Participation duration of more than six years was associated with referring ≥1 presumptive TB case within the previous three months (OR 5,23, 95% CI 1,93 - 14,18). 3. High willingness among pharmacy personnel was associated with referring ≥1 presumptive TB case within the previous three months (OR 12,24, 95% ci 11,61 – 93,10).

Pharmacy-Based TB Case Detection Interventions

The three studies reviewed indicate that pharmacy-based TB case detection typically involves several key elements: training, symptom screening, structured referral processes, monitoring, and partnerships with public or private TB services. Training helps pharmacy staff better identify TB symptoms, convey referral messages, and document referral actions. Screening primarily targets individuals with presumptive TB who visit pharmacies with a cough or other TB-related signs, aiming to detect possible TB cases early, before delayed or improper self-treatment.

Referral pathways were a key aspect of all included interventions, though their structures differed by setting. In India, pharmacies referred presumptive TB cases for chest X-ray exams and follow-up doctor consultations within an existing public-private mix program.¹⁰ In Pakistan, community pharmacies directed presumptive TB cases to affiliated general practitioner clinics and laboratories using a formal referral system.¹¹ In Cambodia, trained private pharmacies referred clients with TB symptoms to public DOTS clinics for diagnosis and treatment.¹²

Monitoring and support were essential parts of the intervention models. Many programs relied on referral records, regular follow-up, field supervision, or performance feedback to sustain pharmacy involvement and monitor referral results. In India, incentives are also used mainly to promote referral completion or TB case notifications.¹⁰ Overall, these interventions highlight that engaging community pharmacies in TB detection goes beyond passive referrals. It requires structured linkages to diagnostic services, ongoing support, and coordination with broader TB control efforts.

Reported Barrier and Enabling Factors

The included studies identified several barriers affecting the implementation of pharmacy-based TB case-detection programs (Figure 1.).

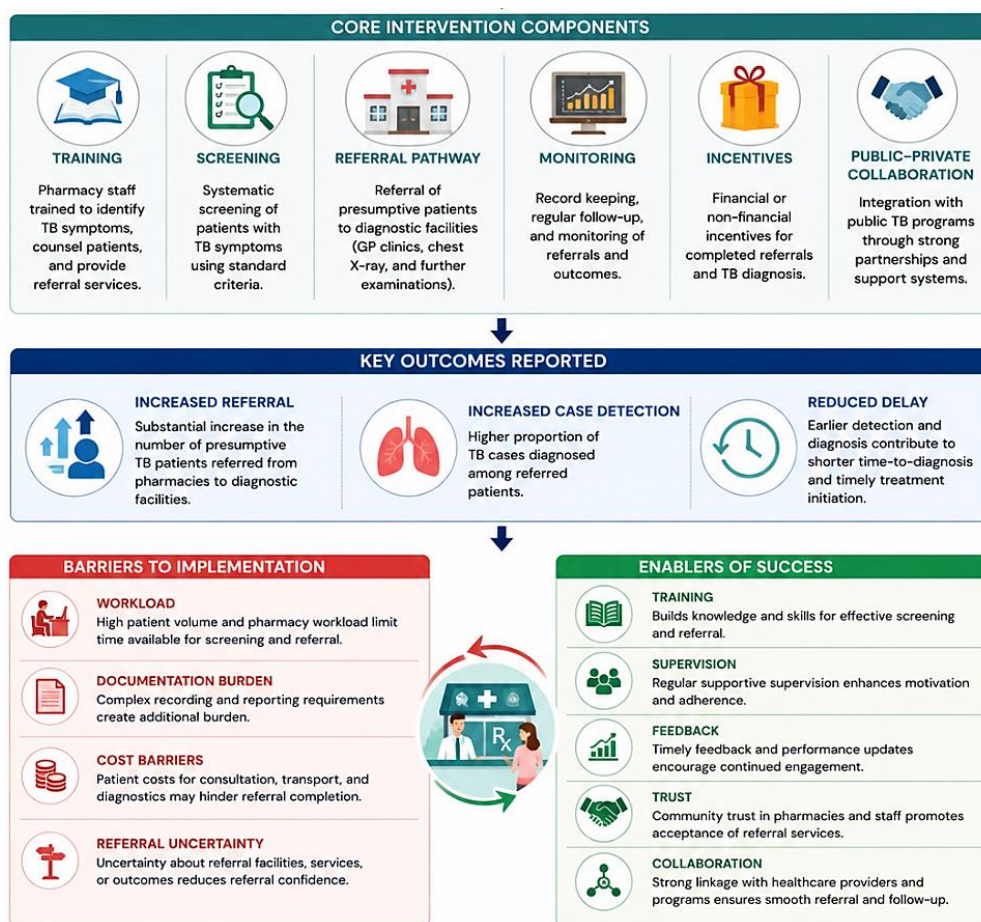


Figure 1. Summary of core components, outcomes, barriers, and enablers in the community pharmacy TB case detection program

Commonly reported barriers included a heavy workload and limited time for pharmacy staff to perform screening and referral activities, in addition to standard dispensing tasks. The documentation and reporting demands were also seen as burdensome, especially when referral procedures involved filling out multiple forms or requiring follow-up steps. Furthermore, patient-related financial obstacles, such as transportation costs, diagnostic fees, and consultation expenses, were noted to hinder referral completion in certain settings. A frequently reported challenge was uncertainty regarding referral pathways and facilities. Some pharmacy staff voiced concerns about the quality, accessibility, or acceptability of referral services, which impacted their confidence in prompting individuals with TB to pursue additional TB evaluation.

Additionally, individuals with TB who prefer self-medication and over-the-counter remedies decreased their willingness to accept referrals, especially among those with mild or ongoing cough symptoms.

Despite these barriers, several enabling factors were consistently identified across the studies. Training programs enhanced pharmacy staff's knowledge and confidence in recognizing presumptive TB cases and making referrals. Regular supervision, supportive monitoring, and performance feedback further boosted motivation and helped maintain ongoing participation. Additionally, effective collaboration between pharmacies and healthcare providers supported better coordination of referrals and follow-up. Community trust in pharmacy staff emerged as a crucial factor across studies.

Discussion

Potential Contribution of Community Pharmacy Personnel in TB Case Detection

The included studies implemented various pharmacy-based TB interventions, including symptom-based screening, verbal counseling, use of referral forms, linkage to TB clinics, follow-up communication, and performance feedback systems. Some programs also included structured pharmacist training, supervision visits, and routine monitoring to maintain implementation quality.

The three studies included in this narrative review collectively demonstrate that structured engagement of community pharmacy personnel can support early detection of TB cases in high-burden settings. All studies were conducted in countries with epidemiological and health system characteristics similar to Indonesia, namely high TB prevalence and developing health systems. Evidence from Cambodia, India, and Pakistan consistently indicates that community pharmacy personnel can play a crucial role in both early TB detection and linkage to treatment. In many instances, pharmacies frequently serve as the initial points of contact for individuals experiencing TB-related symptoms, particularly cough. Building on the potential, the study in India suggests that pharmacy-based interventions may help shorten diagnostic delays among individuals with TB.¹⁰ In the intervention group, the median time from first symptom onset to initial contact with pharmacy staff was 30 days (IQR 20-60 days). After a pharmacy referral, the median time to initiation of TB treatment was 5 days (IQR, 3-12 days). The intervention was associated with a 25-fold increase in TB case detection compared with the control group.¹⁰ These results suggest that systematic symptom screening and referral by community pharmacies can significantly accelerate the process from symptom recognition to treatment initiation. Similar findings were reported in Pakistan, where a community pharmacist-led screening program accounted for approximately 9% of overall TB case detection.¹¹ Overall, these findings support the feasibility of involving pharmacies in TB case detection and indicate that such programs could improve case identification and reduce delays in TB diagnosis.

However, the studies included also indicate that the success of pharmacy-based TB case-detection programs can depend on factors such as intervention intensity, referral systems, monitoring mechanisms, and the specific health system context. For example, Study in India implemented structured training, referral documentation, and routine follow-up with personalized feedback, which likely significantly increased TB case detection and reduced diagnostic delays.¹⁰ Conversely, studies in Pakistan¹¹ and Cambodia¹² reported lower referral completion rates, mainly due to financial barriers, uncertainty about referral facilities, and weaker links between pharmacies and TB diagnostic services. Variations in incentive structures might also affect the sustainability of these programs. While pharmacy staff valued financial incentives,

ongoing supervision and performance feedback were noted as more crucial for sustaining long-term engagement.¹⁰ These findings suggest that pharmacy involvement should not be treated as a one-size-fits-all approach, as program success depends heavily on the robustness of referral pathways and monitoring systems, and on how well these efforts are integrated into existing TB control programs within each health system.

One frequently reported issue was uncertainty about which clinic or hospital to refer presumptive TB cases to, as well as concerns among pharmacy personnel about the quality of services at the referred health facilities.¹⁰ Some pharmacy personnel preferred referring patients to specific clinics they perceived as delivering better care, even when those facilities were not the closest available. This preference can have downstream effects: longer travel distances, delays in seeking timely care, potential postponement of treatment initiation, and patient refusal to attend the referred facility due to the distance.¹⁰ Another key barrier concerns patient expenses. Even when pharmacy personnel actively refer presumptive TB cases, completing the referral can be hindered by costs such as transportation, doctor consultation fees, and diagnostic expenses at clinics. The study in Pakistan found that financial barriers remain a significant challenge to effective referral.¹¹ These results suggest that improving pharmacy-based referral programs may require supportive policies to reduce patients' financial burdens. For instance, providing free rapid molecular testing (such as Xpert MTB/RIF) at public facilities could increase referral completion and enhance the overall effectiveness of community pharmacy-led TB case detection.

Individual-Level Barriers and Enabling Factors in Community Pharmacy Engagement

In addition to system-level challenges, several individual-level factors were identified as influencing community pharmacy personnel's involvement in TB case detection. The study in India reported both factors that facilitate and hinder this process from the perspective of pharmacy personnel.¹⁰ Many pharmacy personnel who participated expressed satisfaction with their ability to contribute to TB control efforts, as it allowed them to take a more active role in public health initiatives. Nevertheless, multiple barriers were reported. The most frequently stated challenges included excessive workload in pharmacies, complex referral documentation procedures, difficulty persuading individuals with TB to accept referrals, limited knowledge of TB, and unfamiliarity with referral clinics.¹⁰ Focus group discussions in the same study revealed that some pharmacists experienced difficulty and instead chose to purchase medications from another pharmacy.¹⁰ Similar patterns have been observed in Indonesia, where pharmacy visitors often seek immediate medication rather than counseling or referral services.¹³ This behavior might decrease pharmacy personnel's motivation to stay engaged in TB case detection activities, especially when they worry about losing customers. In some cases, pharmacists reported lower referral rates, and individuals with TB refused referrals because they considered themselves knowledgeable and preferred to see a physician independently rather than follow a structured pharmacy referral process.¹⁰ Regarding motivational factors, pharmacy personnel in India valued financial incentives; however, incentives were not the primary reason for sustained participation. Participants indicated that personalized feedback, such as monthly performance-related text messages from program coordinators, was more motivating than financial rewards alone.¹⁰

Documentation requirements also emerged as a practical barrier. Some pharmacy personnel verbally referred individuals with TB without completing the program-provided referral forms. As a result, their performance indicators appeared suboptimal, and they were unable to receive incentives.¹⁰ This suggests that

recognition and performance feedback may play an important role in maintaining engagement. Referral forms were frequently described as overly complex and burdensome, particularly during peak working hours. Patients often requested medication quickly, leaving limited time to complete administrative documentation. Simplifying referral forms, potentially reducing them to a single page, was therefore suggested as a program improvement.^{10,11} Continuous training and sustained support were consistently identified as enabling factors. Training programs typically covered TB symptom education, referral processes, counseling and communication skills for presumptive TB cases, documentation methods, and information about nearby TB diagnostic centers. Ongoing mentoring and refresher sessions were also considered important to sustaining pharmacy personnel engagement. The study showed that pharmacies with longer program participation were associated with higher referral performance.¹² In addition to formal training, supportive supervision, field visits, and routine meetings to discuss implementation challenges were considered essential during the mid- and late phases of the program implementation. Such support mechanisms may strengthen confidence, improve competence, and sustain motivation among community pharmacy personnel.

Based on the findings synthesized in this narrative review, several practical considerations may support future pharmacy-engagement programs in TB case detection:

1. Provide ongoing training and periodic evaluation to ensure updated knowledge and correct referral practices,¹⁴
2. Strengthen referral systems to ensure that pharmacies refer patients to accessible and appropriate health facilities, tailored to local stakeholder needs,⁹
3. Reduce financial barriers by offering incentives or diagnostic support for referred patients,
4. Enhance collaboration between pharmacies and healthcare facilities to improve service quality and build mutual trust.^{11,12,15,16}

Conclusion

In summary, the limited evidence presented in this narrative review suggests that community pharmacy staff could assist in TB case detection when structured training, clear referral processes, systematic monitoring, and collaboration between the public and private sectors support their roles. However, since the evidence comes from only three studies in various health-system contexts, these findings should be viewed with caution. Further research is warranted to examine the effectiveness, sustainability, and scalability of pharmacy-based TB case-detection models in high-burden settings.

Acknowledgement

The authors would like to express their gratitude to the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia and Universitas Padjadjaran for their support of this article.

Reference

1. World Health Organization (WHO). Global tuberculosis report 2024. GENEVA: Geneva, Switzerland: World Health Organization; 2024. 50 p.
2. Sulisty, Utami ASF, Wicaksono AB, Salsabila A. Laporan program penanggulangan tuberkulosis tahun 2021. Kemenkes RI. Jakarta, Indonesia: Kementerian Kesehatan Republik Indonesia; 2023. 1–130 p.
3. Lestari BW, McAllister S, Hadisoemarto PF, Afifah N, Jani ID, Murray M, et al. Patient pathways and delays to diagnosis and treatment of tuberculosis in an urban

- setting in Indonesia. *Lancet Reg Heal - West Pacific*. 2020 Dec;5:100059.
4. Fuady A, Houweling TAJ, Mansyur M, Burhan E, Richardus JH. Cost of seeking care for tuberculosis since the implementation of universal health coverage in Indonesia. *BMC Health Serv Res*. 2020 Dec 3;20(1):1–10.
 5. Surya A, Setyaningsih B, Suryani Nasution H, Gita Parwati C, Yuzwar YE, Osberg M, et al. Quality tuberculosis care in Indonesia: using patient Pathway analysis to optimize public–private collaboration. *J Infect Dis*. 2017 Nov 6;216(suppl_7):S724–32.
 6. Rahmadani I, Surjoputro A, Widjanarko B. Analisis public private mix (PPM) pada program pengendalian tuberkulosis. *J Kesmas (Kesehatan Masyarakat) Khatulistiwa*. 2020 Sep 15;7(3):89–97.
 7. Pariyana, Mariana, Liana Y. Perilaku swamedikasi masyarakat pada masa pandemi Covid-19 di kota Palembang. In: *Prosiding Seminar Nasional STIKES syedza Saintika*. Padang, Indonesia: STIKES Syedza Saintika; 2021. p. 403–15.
 8. World Health Organization. The role of pharmacists in tuberculosis care and control [Internet]. World Health Organization. Hyderabad; 2011. Available from: https://www.fip.org/files/fip/WHO/Signing_ceremony_WHO_FIP_Joint_Statement.pdf
 9. Pradipta IS, Yanuar EO, Nurhijriah CY, Maharani NP, Subra L, Destiani DP, et al. Practical models of pharmaceutical care for improving tuberculosis Patient detection and treatment outcomes: A systematic scoping review. *Trop Med Infect Dis*. 2023 May 20;8(5):287.
 10. Daftary A, Satyanarayana S, Jha N, Singh M, Mondal S, Vadnais C, et al. Can community pharmacists improve tuberculosis case finding? A mixed methods intervention study in India. *BMJ Glob Heal [Internet]*. 2019 May 13;4(3):1–10.
 11. Ullah W, Almansour H, Fatima R, Saini B, Khan GM. Engaging community pharmacies in early detection of missing tuberculosis patients through public–private mix intervention in Pakistan. *Am J Trop Med Hyg*. 2020 Jul 8;103(1):221–30.
 12. Bell CA, Ilomäki J, Pichenda K, Duncan GJ, Saini B. Referral of tuberculosis symptomatic clients from private pharmacies to public sector clinics for diagnosis and treatment in Cambodia. *J Eval Clin Pract [Internet]*. 2015 Apr 5;21(2):285–91.
 13. Abdulah R, Barliana MI, Pradipta IS, Halimah E, Diantini A, Lestari K. Assessment of patient care indicators at community pharmacies in Bandung City, Indonesia. *Southeast Asian J Trop Med Public Health*. 2014;45(5):1196–1201.
 14. Pradipta IS, Khairunnisa K, Bahar MA, Kausar MN, Fitriana E, Ruslami R, et al. Knowledge, attitude, and practice of community pharmacy personnel in tuberculosis patient detection: a multicentre cross-sectional study in a high-burden tuberculosis setting. *BMJ Open*. 2022 Jul 5;12(7):e060078.
 15. Satyanarayana S, Kwan A, Daniels B, Subbaraman R, McDowell A, Bergkvist S, et al. Use of standardised patients to assess antibiotic dispensing for tuberculosis by pharmacies in urban India: a cross-sectional study. *Lancet Infect Dis*. 2016;16(11).
 16. Zawahir S, Le H, Nguyen TA, Beardsley J, Duc AD, Bernays S, et al. Standardised patient study to assess tuberculosis case detection within the private pharmacy sector in Vietnam. *BMJ Glob Heal*. 2021 Oct;6(10):1–11.