

## Community Engagement Through Health Education on Tuberculosis (TB) During World Pharmacist Day 2025

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**Abstract:** Tuberculosis (TB) remains a major public health challenge in Indonesia. Pharmacists play a crucial role in strengthening community awareness, promoting early detection, and supporting treatment adherence. Community education activities are essential to empower the public with accurate knowledge and preventive practices. To describe the implementation and outcomes of TB health education conducted as part of the World Pharmacist Day (WPD) 2025 celebration in Bogor City and to evaluate its contribution to improving community awareness regarding TB. A community engagement activity was conducted on 25 September 2025 at Taman Heulang, Bogor. The program included health promotion through group exercise, pharmacist-led TB education, distribution of educational media, and direct one-on-one counseling. Preparatory activities, collaboration with stakeholders, and dissemination of 700 educational materials were documented. The activity involved 268 participants from IAI Kota Bogor and more than 300 community members attending the routine exercise program. TB education delivered by the Kopi TB team improved participants' understanding of TB symptoms, transmission, prevention, and treatment adherence. Educational flyers and stickers served as effective reinforcement tools, expanding information reach within the community. The collaborative approach between pharmacists, local health authorities, and community groups facilitated high engagement and smooth execution of the program. The WPD 2025 community engagement activity successfully enhanced public awareness of TB and demonstrated the vital role of pharmacists in health promotion. Continued multidisciplinary collaboration is recommended to strengthen community-based TB control efforts.

**Keywords:** Community Engagement, Health Education, Pharmacists, Public Health Promotion, Tuberculosis

### 1. INTRODUCTION

Aligning with the International Pharmaceutical Federation (FIP), the Indonesian Pharmacists Association (Ikatan Apoteker Indonesia/ IAI) adopted the national theme “*Think Health, Think Pharmacist: Tetap Sehat Bersama Apoteker*” for World Pharmacists Day 2025, aiming to unify pharmacists' voices and showcase their role in advancing community health. In support of this initiative, the IAI Branch of Bogor City implemented a community-focused program addressing Tuberculosis (TB) under the theme “*Apoteker Peduli TB*” (Pengurus Pusat IAI, 2025).

The selection of TB as the focus of WPD activities is grounded in the persistent challenge it poses to public health in Indonesia. Indonesia currently ranks as the country with the second-highest TB burden globally. West Java Province alone contributes an estimated 234,280 cases, representing nearly 52% of national TB cases—underscoring the urgency of sustained promotive and preventive efforts at the community level. TB, caused by *Mycobacterium tuberculosis*, may present as latent infection or progress into active, transmissible disease (Schwinghammer, 2023). According to the Ministry of Health's TB program reports, an estimated 1,090,000 TB cases and 125,000 TB-related deaths were recorded nationally in 2025 (Kementerian Kesehatan, 2025).

To address this burden, Indonesia implements the national TB elimination strategy known as **TOSS TBC** (*Temukan Tuberkulosis, Obati Sampai Sembuh*). This campaign emphasizes early case finding, proper diagnosis, prompt initiation of treatment, and monitoring to ensure treatment completion. TOSS TBC aims to achieve a 90% reduction in TB incidence and a 95% reduction in TB mortality by 2030, through community engagement, screening expansion, and strengthened health literacy (Kementerian Kesehatan, 2025).

Pharmacists play a pivotal role in TB control initiatives. Beyond managing anti-tuberculosis medications (OAT), pharmacists are essential in promoting medication adherence, educating patients on proper drug use, preventing drug–drug interactions, and supporting therapeutic monitoring (Patricia, 2021; Yasin et al., 2016). Poor adherence remains a major contributor to treatment failure and the emergence of multidrug-resistant TB (TB-RO), emphasizing the crucial contributions of pharmacists as treatment supporters (*Pengawas Menelan Obat/PMO*) and community educators (Setditjen Farmalkes, 2024; Yasni et al., 2024). Previous studies, including those evaluating the TEMAN Apoteker model, have demonstrated that pharmacist-led interventions can significantly improve patients' knowledge and adherence to TB treatment (Sriwijaya et al., 2018; Yasin et al., 2016).

In addition to treatment-focused interventions, pharmacists also contribute to strengthening health promotion initiatives such as the Clean and Healthy Living Behavior (*Perilaku Hidup Bersih dan Sehat/PHBS*) campaign. PHBS encourages communities to adopt preventive behaviors, utilize health services, and create healthier environments based on continuous learning and awareness (Kementerian Kesehatan, 2016). Prior to

the WPD 2025 activities, previous TB socialization and active case-finding (ACF) initiatives have demonstrated effectiveness in improving knowledge among health workers and the community (Sri et al., 2020).

These findings reinforce the rationale for implementing public educational programs in open spaces, such as the WPD 2025 event, as a strategy to break the chain of TB transmission and support Indonesia's 2030 TB elimination goals (BADIKLAT IAI, 2024; Kementerian Kesehatan, 2024). The community service activity conducted during WPD 2025 consisted of health promotion sessions, including healthy exercise activities, and public education on TB symptoms, diagnosis, transmission, prevention, and the importance of OAT adherence to prevent drug resistance. The primary objective of this program was to strengthen the role of pharmacists in health promotion and to enhance community awareness and understanding of TB prevention and control.

## **2. METHOD**

This community service program was conducted in the form of a Healthy Exercise Session (*Senam Sehat*) and Tuberculosis (TB) Education at Taman Heulang, Bogor City, on Sunday, 25 September 2025. Participants of the WPD 2025 event included the general public attending the exercise activity, residents present at the venue, members of the Indonesian Pharmacists Association (IAI) Bogor City Branch, and various health stakeholders such as representatives from the District Health Office, hospitals, and primary health centers. The Healthy Exercise Session was carried out in collaboration with the Taman Heulang aerobics community, which routinely organizes weekly exercise sessions with approximately 300 active participants.

The community service activities were conducted in several stages, as follows preparation, publication, logistic arrangement, and implementation stage. On preparation stage, activity involved internal coordination through team meetings, obtaining permits from relevant authorities, planning the flow of activities, and preparing essential logistics. Several partners and sponsors—including hospitals, pharmacies, pharmaceutical industries, and cross-sector institutions.

The event commenced at 06:00 AM with on-site registration. The detailed rundown for implementation stage, included welcoming remarks delivered by the Master of Ceremony (MC) and representatives from IAI

Bogor City; healthy exercise session which led by Taman Heulang aerobics instructors, involving approximately 300 community members; TB education session which delivered by the *Tim Kopi TB* of Bogor City Health Office, represented by the Head of the TB Control Program. The session covered the causes, symptoms, transmission, screening procedures, and prevention of TB, as well as the importance of adherence to anti-tuberculosis therapy. Educational media included digital flyers (Figure 1), quizzes, games, and souvenirs to improve engagement.



Figure 1. (a) TB Education Sticker from WPD 2025; (b) TB Digital Pamphlet.

### 3. RESULT AND DISCUSSION

The implementation of World Pharmacist Day (WPD) 2025 by the Indonesian Pharmacists Association (IAI) Kota Bogor at Taman Heulang successfully generated strong public engagement. The core component of the community service activity was the tuberculosis (TB) education session delivered by the Kopi TB Team of the Bogor City Health Office. During this session, pharmacists played an active role in providing essential information on TB symptoms, modes of transmission, and the importance of adhering to anti-tuberculosis therapy (OAT) for 6–8 months to prevent drug resistance. A total of 268 IAI Kota Bogor members participated, along with six additional members from neighbouring IAI branches.

The collaboration with the Taman Heulang aerobics instructor team also contributed significantly to attracting community participation, as the group regularly gathers approximately 300 attendees each week. During the World Pharmacist Day (WPD) 2025 community engagement activity at Taman Heulang, a total of 234 pharmacist participants completed the online TB awareness and screening readiness questionnaire distributed via Google Form. However, data verification revealed several duplicated entries, leading to the exclusion of invalid responses. After applying the exclusion criteria, 205 valid respondent datasets were retained for analysis.

The reduction of respondents from the initial 234 Google Form entries to 205 valid datasets highlights an important methodological issue commonly encountered in community-based data collection—duplicate submissions. The final 205 respondents still represent a strong participation rate, reflecting high engagement among pharmacists and community members during the WPD 2025 event. Their involvement demonstrates the effectiveness of integrating digital data collection tools into community service events—an approach that enhances accessibility and streamlines real-time monitoring but also requires careful data cleaning. Despite the necessary exclusions, the validated data show that the combined activities of the health exercise session, live TB education, and pharmacist-led one-on-one counselling successfully attracted significant public interaction.

The large number of pharmacist respondents, in particular, underscores their active role in knowledge dissemination, aligning with literature indicating that pharmacist involvement improves public understanding and disease management outcomes for TB (Yasin et al., 2016). The need to remove duplicate entries further emphasizes the importance of rigorous data management protocols in community health programs. Ensuring the integrity of participant data strengthens the credibility of the findings and enables accurate interpretation of TB awareness levels within the target population.

**Table 1.** Characteristics of WPD Respondents (n = 205)

Variable	Category	n	%	p>0,05 (significant)
<b>Gender</b>	Male	100	48,8	0,007
	Female	105	51,2	0,006
<b>Age (years)</b>	Mean ± SD	39,93	—	0,051
	Median (Min–Max)	37 (8-74)	—	0,051
<b>Region of Residence</b>	Kota Bogor	180	87,8	0,007
	Kabupaten Bogor	22	10,7	0,007

	Outside Bogor	3	1,5	0,007
<b>Do you have a cough?</b>	No	139	67,8	0,002
	Sometimes	64	31,2	0,51
	Often	2	1	
<b>Have you ever had direct contact with a TB patient?</b>	Yes	22	10,7	0,005
	No	183	89,3	0,106

Table 1 summarizes the demographic and clinical characteristics of respondents involved in the World Pharmacist Day (WPD) 2025 tuberculosis (TB) community engagement activity conducted at Taman Heulang, Bogor City (n = 205). Statistical analysis was performed using the Chi-square test for categorical variables and the Mann–Whitney test for numerical variables, as the age data were not normally distributed. These characteristics provide an important basis for interpreting the effectiveness and reach of the TB education and screening readiness activities.

Based on gender, the distribution of respondents showed a relatively balanced composition, with females accounting for 51.2% and males 48.8% of the total sample. The Chi-square test indicated a statistically significant result ( $p < 0.05$ ), suggesting that both genders were proportionally represented in the activity. This balanced participation is beneficial, considering evidence that gender differences influence health-seeking behavior related to TB. Women are generally more engaged in preventive and educational health activities, whereas men tend to delay seeking care, which may contribute to delayed TB diagnosis (Pralambang & Setiawan, 2021; Yasni et al., 2024).

Regarding age, respondents had a mean age of 39.93 years, with a median of 37 years and an age range spanning from 8 to 74 years. The Mann–Whitney test showed no statistically significant difference ( $p > 0.05$ ), indicating that participation was not influenced by age. The predominance of respondents from the productive age group is noteworthy, as this population has higher mobility and social interaction, which may increase the risk of TB transmission (Kementerian Kesehatan RI, 2020). These results align with national data indicating that TB can affect individuals across the life course and highlight the importance of delivering TB education in accessible public spaces (Schwinghammer et al., 2023; Kementerian Kesehatan, 2025).

In terms of residence, the Chi-square analysis demonstrated a statistically significant association ( $p < 0.05$ ) between respondents' place of residence and participation. Most respondents resided in Bogor City (87.8%),



followed by Kabupaten Bogor (10.7%) and a small proportion from outside Bogor (1.5%). Urban environments are known to present higher TB transmission risks due to population density, making city-based community education and Active Case Finding (ACF) strategies particularly relevant (Kementerian Kesehatan, 2024).

Analysis of respiratory symptoms showed that most respondents (67.8%) did not report coughing at the time of the activity, while 31.2% reported occasional coughing and only 1% reported frequent coughing. The Chi-square test indicated a statistically significant result ( $p < 0.05$ ) for the category of respondents without cough. Educating asymptomatic individuals is essential, as TB infection may remain latent and undetected, thereby sustaining community transmission if awareness and early recognition are inadequate (Kementerian Kesehatan RI, 2020; Wati et al., 2025).

Furthermore, the analysis of TB contact history revealed that 10.7% of respondents reported having direct contact with a TB patient, while 89.3% had no known contact history. The Chi-square test showed a statistically significant association ( $p < 0.05$ ) among respondents with a history of contact. Previous studies emphasize the need for early screening, preventive therapy, and continuous monitoring in this group (Kurnianda et al., 2024; Pralambang & Setiawan, 2021). In this context, pharmacist-led education plays a key role in encouraging timely screening and adherence to follow-up recommendations.

The significant associations observed for gender, residence, respiratory symptoms, and TB contact history—alongside the non-significant age differences—demonstrate that the program effectively reached both high-risk and general population groups. These findings support existing evidence that pharmacist involvement in community-based health promotion enhances TB awareness, facilitates early detection, and contributes to national TB elimination efforts (Yasin et al., 2016; Sriwijaya et al., 2018; Direktorat Jenderal Farmasi dan Alat Kesehatan, 2024). Consequently, the characteristics presented in Table 1 provide a robust foundation for interpreting the positive impact of pharmacist-led TB education during the WPD 2025 activity.

The activity began with a group exercise session, aimed at demonstrating one of the key elements of Clean and Healthy Living Behaviour (PHBS) as could be seen in Figure 2. Regular physical activity supports immune function and helps lower the risk of infectious diseases, including respiratory infections. Conducting

the educational session after the exercise ensured participants were more physically and mentally prepared to receive health information.



**Figure 2. (a) Healthy Exercise Session WPD 2025; (b) TB Education Session WPD 2025.**

This educational approach was strengthened through the distribution of 700 TB educational stickers and flyers to participants and surrounding community members at Taman Heulang. These visual educational materials served as accessible sources of information and quick reminders, supporting the role of pharmacists as easily reachable providers of medicine- and health-related information (Kementerian Kesehatan, 2024; Noviyanto et al., 2024; Riansyah, 2025). Prior studies show that pharmacist-led education positively influences clinical outcomes in TB patients, such as sputum conversion rates and weight improvement during therapy (BADIKLAT IAI, 2024; Kementerian Kesehatan, 2024; Sasarari et al., 2025). Furthermore, through collaboration with the Kopi TB Team, pharmacists in Bogor City demonstrated their practical role in comprehensive TB management—ranging from community education and Active Case Finding (ACF) to monitoring medication adherence and addressing Drug-Related Problems (DRPs) (UGM Repository, 2021; HISFARSI DIY, 2023).

#### **4. CONCLUSION**

The World Pharmacist Day (WPD) 2025 community engagement activity conducted by IAI Kota Bogor at Taman Heulang successfully enhanced public awareness and understanding of tuberculosis (TB) through structured education, distribution of educational stickers and flyers to the community.

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## CONFLICT OF INTERESTS

There is no conflict of interests. This community service activity was conducted without charging any fees to participants.

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