

Feasibility, acceptability, and scalability of a community-based, peer-led psychosocial support intervention for people with TB in Indonesia: a qualitative study from the TB-CAPS project

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Abstract

Background

Indonesia has the world's second-highest TB burden and faces public health challenges to interrupting disease transmission, improving treatment adherence, and mitigating psychosocial distress and stigma—key social determinants hindering TB eradication. Previous mixed-methods research identified unmet psychosocial needs amongst people with TB in Indonesia. To address this, we implemented TB-CAPS: a community-based, peer-led psychosocial support intervention for people with TB. The intervention comprised individual counselling, monthly peer-led group counselling, community-based “TB Talks,” and an online group messaging. We evaluated key stakeholders’ perceptions of the TB-CAPS intervention.

Methods

This qualitative study was conducted in two cities through Focus Group Discussions (FGDs), In-depth Interviews (IDIs), and Key Informant Interviews (KIIs) to explore the intervention’s feasibility, acceptability, and scalability. Fifty informants were recruited through maximum variability sampling across stakeholder groups. Informants comprised people with TB, peer supporters, and district health officials. The data were analyzed using Braun and Clarke’s thematic analysis method.

Results

Five themes emerged: (1) Improved TB information and education, including dedicated time that peer supporters provided for group counseling, reduced stigma, clarified misconceptions, and improved medication adherence. (2) Sharing lived experiences by peer supporters and TB survivors, providing crucial psychosocial support, mitigating feelings of isolation and hopelessness, and motivating to complete treatment. (3) Empowerment derived from the intervention’s information and psychosocial support motivated people with TB to actively serve as peer educators, inspiring them to extend knowledge and assistance to other affected people. (4) To achieve large-scale sustainability of TB-CAPS activities, participants identified additional financial support as essential, especially to enable people with TB and peer supporters to attend community activities. (5) Multisectoral collaboration was considered indispensable to provide psychosocial support, yet no single entity was identified as inclined to assume leadership.

Conclusions

Stakeholders perceived TB-CAPS effectively reduced stigma, served as a significant motivator, and empowered people with TB to complete their treatment and extend mutual support to fellow affected

people. However, they reported that the long-term, sustainability of TB-CAPS would necessitate financial resources and proactive collective commitment across health and other sectors.

Background

Tuberculosis (TB) remains a significant infectious cause of illness and death in Indonesia. The Global TB Report 2024 identifies Indonesia as the country with the second-highest TB burden worldwide, after India¹. An estimated 1,09 million people develop TB and 125,000 TB-related deaths annually, equivalent to approximately 14 deaths every hour². Indonesia faces significant public health challenges not only related to disease transmission and treatment adherence but also to the pervasive stigma and psychosocial distress experienced by those affected by TB³. TB stigma is recognized as a significant social determinant and consequence of TB that impedes efforts to eradicate this disease of poverty^{4,5}. This is because TB stigma hinders individuals from seeking healthcare, leading to delays in diagnosis and compromising their ability to complete treatment and cure^{6,7}.

Our previous research in Indonesia showed that TB stigma is closely linked to depression and that both can lead to a decrease in the quality of life (QoL) of those affected⁸. In the same research, people with TB also identified unmet needs for psychosocial support, particularly involving people with lived experiences of TB and taking place in communities – strategies which are currently under-utilised and under-evidenced in the TB response in Indonesia⁸. To address these needs, we designed, delivered and evaluated a community-based, peer-led psychosocial support intervention that engaged and trained TB survivors as peer supporters to lead structured mutual-support groups that offer emotional and informational support, combat stigma, and promote empowerment^{3,9,10}.

This study was part of the larger “Community-Based, Peer-Led Intervention to Reduce TB Stigma in Indonesia (TB-CAPS)” implementation study, and was conducted in three phases: peer training, intervention, and evaluation. The training was held to provide the knowledge and skills needed for TB survivors to become peer supporters and lead group counselling as facilitators and for primary care physicians as co-facilitators. The sessions also covered skills in providing psychosocial support and were complemented by a manual book¹¹, which was followed by refresher training 6 months later. The intervention included individual screening and counselling at the Puskesmas (Primary Health Center), monthly peer-led group counselling, TB Talks as a community education activity, and an online group messaging support. Informants were newly diagnosed individuals with TB or undergoing the intensive treatment phase, recruited through Puskesmas or hospitals, based on eligibility criteria reported⁹.

Here, we present a qualitative evaluation of the perspectives of key stakeholders on the feasibility, acceptability, and sustainability of the TB-CAPS psychosocial support intervention for potential scale-up and integration into routine TB care in Indonesia.

Methods

Study setting and context

This qualitative study was conducted as part of the TB-CAPS project in two cities, Padang and Depok. Data were collected through Focus Group Discussions (FGDs) and in-depth interviews (IDIs) with key stakeholders including people with TB who participated in TB-CAPS, and Key Informants Interviews (KII) with District Health officials. Interviews and FGDs between January 18th until March 14th 2025.

Participants

FGD participants were selected using maximum variability sampling¹². This technique was used to ensure representation of the perspectives of people of both sexes, a wide range of adult age groups, and diversity of stakeholder background (persons with TB, peer supporters, Puskesmas staff, hospital staff, and District Health officials). Two researchers (DFAH, FRH) who had been closely engaged with the group counselling activities throughout TB-CAPS intervention, purposively selected and recruited persons with TB and peer supporters who had provided or received intervention activities. To obtain diverse and potentially contrasting perspectives on intervention activities and consider refinements required to improve equity of uptake, we conducted IDIs with purposively selected people with TB who had challenges engaging with group counselling but remained participants without withdrawing. In addition, KIIs were performed with the Head of District Health Office and District Health officials involved in the Indonesia National TB Programme (NTP). All participants received the TB-CAPS Participant Information Sheet (PIS) and gave their informed consent to join the TB-CAPS activities (individual counselling, peer-led group counselling, and online group messaging) and all assessments. Participants invited to FGDs or interviews received separate PIS and gave their informed consent to join prior to the FGDs or interview. In addition, community members participated in TB Talks, a community-based educational activity to improve TB-related knowledge.

Data collection technique and tools

Semi-structured guides were developed to explore participant experiences throughout TB care and their perceptions regarding the intervention's feasibility, acceptability, and scalability **[Supplementary 1]**. The guides were informed by Glasgow's RE-AIM (Reach Effectiveness Adoption Implementation and Maintenance) Planning and Evaluation Framework¹³, Sekhon's TFA (Theoretical Framework of Acceptability)¹⁴, and Nuttall and Fuady's conceptual framework of pathways to impact of TB stigma interventions³. FGDs and KIIs were conducted with informants in the local language of the study sites, Bahasa Indonesia, facilitated by researchers (MANH, TAP, FFY) who have experience in qualitative studies and TB management but did not have prior relationships with the informants, and were not healthcare providers involved in the TB diagnosis or care of the informants. Discussions and interviews were conducted in a calm, quiet, secure, and confidential meeting room outside healthcare facilities, which was attended only by informants and researchers. Each session lasted approximately 55 minutes

(range 30–80 minutes), was audio recorded with informants' consent, and was supplemented with field notes.

Data processing and analysis

We employed thematic analysis using a combined deductive–inductive approach, according to Braun and Clarke's 6 steps of thematic analysis¹⁵ to accommodate a flexible framework and systematic procedures for identifying and interpreting patterns of meaning within qualitative data. To facilitate systematic analysis and the extraction of key insights, the discussions were transcribed verbatim into textual form and deidentified, with the exception of stakeholders group, age, sex, and location. The transcripts were analyzed supported by MAXQDA version 24, a qualitative data analysis software program. Two researchers (MANH, MH) familiarized themselves with the data through transcript reading and confirmed any ambiguous transcripts with the interviewer and note taker. Afterward, the two researchers independently coded the transcripts, compared coding structures, and resolved discrepancies through discussion until consensus was achieved **[Supplementary 2]**. Data collection and analysis continued iteratively until data saturation was reached, indicated by the absence of new themes or meaningful insights emerging from subsequent transcripts¹⁶. During the coding process, the analysts maintained ongoing communication with the data collectors to review and refine interpretations of the findings and update codes, thereby reducing potential bias. After coding, the data were categorized and then summarized to identify patterns and themes related to stigma reduction, intervention acceptability, and feasibility, presented in the form of a mind map which was drawn according to the TB journey pathway (Fig. 1) and reviewed by the co-principal investigators (AF, TW). Findings from this qualitative study were presented to the stakeholders and received feedback, including from those who participated in the FGDs and interviews, at the Second National Participatory Workshop of TB-CAPS, which will be reported elsewhere. The study reporting was conducted in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) **[Supplementary 3]**.

Results

Six FGDs, three IDIs, and ten KIIs were conducted with a total of 50 informants. Some potential informants declined to participate in FGDs and IDIs mainly due to schedule conflicts, illness and/or limited mobility among informants with drug-resistant TB (DR-TB). Three District Health officials in Depok and two in Padang participated in both an FGD and KII. All TB program officers of Puskesmas and District Health officials in both cities were female; thus, we could not obtain male informants from these stakeholder groups. Participating informants are summarised in Table 1.

Table 1
Informants in FGD and Interviews

Stakeholders	Number of Informants	Depok			Padang		
		Female	Male	Age median (range)	Female	Male	Age median (range)
FGDs							
Person with TB	11	2	4	51.5 (16–68)	3	2	29 (24–45)
Peer supporters	15	7	1	34 (23–47)	2	5	36 (28–47)
Hospital staff (TB program PIC)	4	1	1	32 (29–35)	2	0	42 (41–42)
Puskesmas staff (TB program PIC, Head of Puskesmas)	7	4	0	47 (39–62)	3	0	44 (40–54)
District Health officials (TB program coordinator, Infectious Disease program coordinator)	5	3	0	44 (27–50)	2	0	38 (32–44)
In-Depth Interviews							
Person with TB*	3	1	1	46 (44–47)	1	0	23 (23–23)
Key Informant Interviews							
District Health Officials**	10	6	0	49 (27–54)	4	0	44 (32–51)
TOTAL	50	24	7	43 (16–68)	17	7	40 (23–54)

* Person with TB invited for IDIs are those who received initial individual counselling and expressed willingness to join monthly group counselling but never attended.

** Three district health officials in Depok and two in Padang participated in both FGD and KII. Therefore, the total number of informants was 50 persons.

Five main themes emerged related to the TB-CAPS intervention.

1. Enhanced information and education about TB reduces self-stigma

The findings from discussions with people who have TB demonstrate that they received more TB information and education through individual counseling and monthly peer-led group counselling than was received during their interactions with healthcare workers as part of standard of care. The dedicated time allotted for group counseling and the fact that the counseling was led by peer supporters and co-facilitated by primary care physicians enabled participants to ask questions that they reported not feeling able to ask in Puskesmas due to time constraints, reluctance, and reticence to approach the TB program PIC (person in charge). Informants reported that enhanced information and education, especially regarding the effect of TB on daily life and the side effects of TB medication, contributed to reductions in TB-related self-stigma and higher compliance with and completion of TB treatment.

"Before joining TB-CAPS, I thought this disease (TB) was incurable, so I was desperate. I tried suicide by overdosing on 50 tablets and left a message for my husband to care for our children. However, following these group counseling sessions, I've regained the will to live and the desire to recover for my young children and husband." (45 yo, female with TB from Padang, FGD 6)

These findings were further supported by the TB program PIC in Puskesmas, who stated that people with TB participating in the intervention demonstrated improved attendance at Puskesmas to pick up their TB medication. It was also reported that the information shared through peer-led group counseling helped to dispel myths surrounding TB and promote the importance of treatment completion to facilitate cure.

"[The intervention] brought great benefits. We hope that in the future the dropout rate will significantly decline because the people with TB who participated in this intervention were very eager to come and receive treatment." (48 yo, female TB program PIC in a Puskesmas at Depok, FGD 3)

The psychosocial support provided was perceived by stakeholders to complement the care provided by healthcare workers in Puskesmas and hospitals, whose efforts are primarily focused on administering medications and ensuring compliance with treatment. Although this information was deemed crucial, many informants believed it fell short of addressing their real-life daily challenges.

"As the TB program PIC in Puskesmas, we usually give education to people with TB. Currently, we do not have staff to address myths or stigma related to TB." (44 yo, female TB program PIC in a Puskesmas in Padang, FGD 4)

"There's a huge difference [between information given in the TB-CAPS intervention vs standard of care in Puskesmas], ma'am. From the Puskesmas they only tell you a little bit, like TB is contagious, so you have to get treated. But if you join the counseling, everything is laid out—what the causes are, and how it can be cured. Basically, every single thing about TB is explained. So during that counseling, my will to live returned." (45 yo, female with TB from Padang, FGD 6)

Participants mentioned that during intervention activities, they sought practical information regarding how TB impacts their social and home life, such as the safety of sharing utensils, how to engage with others without causing discomfort, and how to address or prevent stigma within their communities.

"Even though we provided some education at the beginning of the treatment, it turned out [that the people with TB we were caring for] still had some misconceptions and incorrect beliefs, which were clarified during the peer-led group counselling. For instance, the belief that TB can be transmitted through utensils." (45 yo, female TB program PIC in a Puskesmas in Depok, FGD 3)

1. Peer sharing provides mental support

Sharing experiences by peer supporters who had lived with and survived TB was reported as offering mental support and motivation to complete treatment. People with TB described that when they heard and saw a peer facilitator share their story of overcoming obstacles related to the peer's own illness with TB, it inspired them to believe in their own potential for recovery. Additionally, joining monthly peer-led group counselling allowed people with TB to share their journeys and learn from others who had faced similar struggles. This sense of belonging was perceived as potentially alleviating feelings of isolation and hopelessness.

"When we needed support, we were given a chance to share our experience, which can strengthen our mental state... Hearing our peer facilitator's experience with drug-resistant TB, which was more severe and where they suffered more than I do [during treatment], I became more motivated." (16 yo, female with TB in Depok, FGD 2)

"We shared our ups and downs while taking medications within our [counselling] group. We gained both information and new friends!" (35 yo, female with TB in Padang, FGD 6)

For some informants, group counselling sessions became their chance to meet people who were going through a similar experience and even to regain agency to make jokes with other participants and feel entertained despite their condition.

"For fellow patients (people with TB), it's about keeping your sense of humor. Since we share all sorts of experiences, it's like a way to make sure we don't take things too seriously. So, we keep that sense of humour just to stay stable. If you dwell on it constantly, it just weighs you down every day. That's why I was really looking forward to these counseling sessions." (23 yo, male with TB in Depok, FGD 2)

1. Empowerment through information and psychosocial support motivates people with TB to play an active role as peer educator

Participants broadly reported that the intervention empowered people with TB so that they not only gained confidence but became increasingly willing to extend their support to fellow persons with TB who may be struggling with similar challenges. They opined that this occurred because peer facilitators were seen as role models, exemplifying the strength and resilience required to navigate the complexities of living with TB. Furthermore, there was a suggestion from participants that, having personally benefited from the support and encouragement provided by these facilitators, empowered individuals feel a sense of responsibility and motivation to pay it forward. They became eager to support others who were in need of encouragement.

"The counseling gave me a lot of information; it broadened my knowledge. So, I thought, what if I tell it [the information] to my friends? So that they understand the right information. I also want to support other people with TB so they do not feel alone. When they listen to our experiences and see that we have been cured, it can be a great support." (23 yo, male with TB in Depok, FGD 2)

"The patients involved in the intervention educated other patients. For instance, when those participating [TB-CAPS] come to Puskesmas to take medication and meet new patients, they take the initiative to share [information they have learnt through the intervention] with them." (48 yo, female TB program PIC in a Puskesmas at Depok, FGD 3)

Some of the informants expressed a wish to attend the training to enable them to become peer supporters.

"I personally feel I still lack the knowledge. Perhaps before we become facilitators, we can receive some training." (23 yo, female with TB in Depok, FGD 2)

1. Sustainability requires consistent, sustainable financial support

Given the perceived benefits of the TB-CAPS intervention, informants from FGDs, IDIs, and KIIs broadly supported its continuation and scale-up. Nevertheless, some challenges were also identified. One of the perceived barriers to sustaining the intervention is the need for consistent and reliable funding. In addition to the perceived benefits, adherence to the intervention was thought to be attributed to the provision of transportation fees during the intervention period. By providing transportation costs, our intervention enabled persons with TB to attend the peer-led group counselling sessions.

"Participants receive transportation fees and a meal box or snack box, which is part of their motivation to participate." (32 yo, female TB program official in Padang district health office, FGD 4)

This is particularly relevant for individuals with TB who, due to financial constraints, cannot afford additional counseling sessions. Some informants reported that they could not even cover the transportation costs to reach healthcare facilities for their TB medication, leading to incomplete treatment. This indicates that the financial burden on individuals with TB impedes their access to necessary healthcare and the successful treatment completion.

"I was previously diagnosed with DS-TB (Drug-sensitive Tuberculosis). After 4 months, I dropped out because I did not have money for transportation. Now I am diagnosed with DR-TB." (43 yo, female with TB in Depok, FGD 2)

The TB-CAPS intervention also covered transportation costs for peer supporters to lead the monthly peer group counseling and for physicians to deliver the initial individual counseling. We ensured that only the minimal costs required to enable them to deliver the psychosocial intervention to the community were covered. To maintain its sustainability, it was recommended by stakeholders that funding to consistently cover these transportation costs would be necessary.

However, Puskesmas' TB program PIC and Health District officials stated that Puskesmas lacks the necessary funding, and the District Health Office may be unable to allocate the required resources for psychosocial support similar to that provided by TB-CAPS. Some potential funding alternatives were identified, such as BOK (*Bantuan Operasional Kesehatan* / Supporting Operational Fund for Health), APBD (*Anggaran Pendapatan dan Belanja Daerah* / Regional Revenue and Expenditure Budget), and philanthropic organizations.

"There is potential funding in the form of local government budgets for each ward, but it is usually allocated for physical [infrastructure] expenses. In Puskesmas, the health operational fund's utilization depends on each Puskesmas priority. We also received donations for community TB programs [Konsorsium Penabulu STPI], which we hope can continue." (50 yo, female, Infectious Disease program coordinator of Depok District Health Office, FGD 3)

Furthermore, every Puskesmas is mandated to implement mental health programs, which offer potential for integration into TB care. This integration was considered by stakeholders to, at a minimum, contribute to covering the cost of individual counseling. The TB program's PIC from the Puskesmas reported that while some collaboration with the mental health program has taken place, it has mainly been limited to referrals for individuals with TB who exhibit acute and/or severe mental health problems or are defaulting on treatment. Notably, one Puskesmas in Depok had its mental health program's PIC initiate proactive screening for mental health problems among people with TB.

"It just so happens that mental health screening has started to become active now. Sometimes the mental health program asks to screen people with TB. If there is indeed an indication from the scoring that points to a mental health issue, usually the doctor will say something like, 'Please provide counseling for this patient.' But so far, we haven't found any." (39 yo, female, TB program PIC in a Puskesmas at Depok, FGD 3)

1. Multisectoral collaboration is regarded as indispensable, yet no single actor is inclined to assume leadership

It was deemed essential by participants for various stakeholders, including healthcare providers, district health offices, local government agencies, and NGO (non-governmental organizations)—particularly those focused on TB peer support groups— to coordinate their respective roles in delivering psychosocial support and program implementation to maximise the intervention's impact. Informants from peer supporters, the TB program PIC, and district health offices raised the issue that multi- and inter-sectoral collaboration was greatly needed to effectively reduce TB stigma within the community. However, it was unclear to stakeholder informants who would be willing to take the leadership for this collaboration, with many from one stakeholder group pointing out another person/institution to take the role.

"As an NGO [of TB survivors] we should collaborate with Puskesmas, which is responsible for the community. We expect Puskesmas to facilitate [the collaboration]." (28 yo, male peer supporter in Depok,

FGD 1)

"With our already heavy workload at Puskesmas, it's hard for us to organize it [activities similar to those of TB-CAPS] ourselves. It would be better if an external party could coordinate it, and Puskesmas would just provide direction." (50 yo, female Infectious Disease program coordinator of Depok District Health Office, FGD 3)

Prior to the TB-CAPS intervention, participants reported that there had been efforts to promote multi-sectoral collaboration for TB care and prevention in the community. However, due to the lack of clear leadership for the initiative, it had not been implemented or maintained effectively.

"We have KAPITU (Kampung Peduli TB / TB care community), a village/ward base program to eradicate tuberculosis. We can recruit volunteers from the community, have them trained by academics to provide support, and bring the support closer to the community. However, we need commitment and strong leadership [from the head of the village as the leader of KAPITU]." (50 yo, female Infectious Disease program coordinator of Depok District Health Office, FGD 3)

Beyond the exploration of informants' experiences throughout their TB journey and the influence of the TB-CAPS intervention on this trajectory, additional themes were identified, including the lived experience of illness, experience of stigma, and support mechanisms for individuals with TB.

Family Support

Family members were considered to serve as a crucial source of support for informants throughout their TB journey. Family support was mentioned as especially important in encouraging people with illness to seek care and receive a diagnosis of TB. Many people recounted receiving practical assistance, including help with transportation to health facilities, reminders to adhere to medication schedules, the provision of nutritious meals, and encouragement to maintain regular physical activity.

"My wife is a bit of a nag; she keeps reminding me to take my meds on time. But my wife also told me that just taking medicine without supporting it with nutritious food is practically useless. Thank God, my wife really pays close attention to me. Yeah, even though our business income back then was pretty tight and we didn't have that many customers, my wife still managed to give me extra milk to drink—goat's milk." (61 yo, male with TB in Depok, FGD 2)

"I have support from my wife. Every morning, she encourages me to exercise so I get some fresh air, go for a walk and do some light exercises." (60 yo, male with TB in Depok, FGD 2)

Stigma upon diagnosis

The majority of our informants with TB experienced self-stigma upon diagnosis. Some informants reported encountering stigma within their own families and anticipated stigma from their neighbors.

"So I really didn't want everyone to know that I had TB. I just didn't want that. But I took it upon myself to be careful. I was disciplined, so they wouldn't have too much contact with me. I limited my interactions with other people, including my neighbours. I also rarely left the house." (60 yo, male with TB in Depok, FGD 2)

"At first, when my family found out that I had this TB, my relatives—like my younger siblings—kind of distanced themselves from me. So it made me feel... I don't know, just really awful, it made me even more stressed out." (35 yo, female with TB in Padang, FGD 6)

In a few cases, healthcare workers observed stigma, where family members were affected by anticipated stigma and denied that their family member had TB, even prohibiting them from taking medicine.

"The family really did not want it to be known and even tried to prevent us from coming [for close contact investigation]. They were in denial and said that their child is okay, that they just had a stomach problem. Even though we had the data [diagnosis]." (48 yo, female TB program PIC in a Puskesmas at Depok, FGD 3)

We visualized the findings of this study into the conceptual pathway of psychosocial support within TB care for affected individuals, specifically examining the extant support mechanisms preceding intervention, the manner in which the TB-CAPS intervention addressed identified support deficiencies, and considerations for its sustained implementation in Fig. 1.

Discussion

The study's findings underscore the significant role of adequate information and peer support in improving knowledge, reducing TB stigma, empowering, and enhancing compliance with treatment. Informants revealed that both individual and peer-led group counseling were crucial in providing essential information, thereby dispelling TB misconceptions and reducing stigma. Personal testimonies further illustrated how a deeper understanding of TB significantly aids individuals grappling with the psychological impact of a TB diagnosis, including potentially averting self-harm and transforming despair into hope. This underscores the critical importance of comprehensive TB-related information in cultivating a supportive environment that enables people with TB to actively engage with care. Importantly, these qualitative insights complement the quantitative results of the TB-CAPS intervention, which demonstrated significant reductions in TB-Stigma scores and depression symptoms, alongside improvements in participants' QoL compared to baseline measurements⁹.

Our findings indicate that peer sharing is a powerful and beneficial mechanism for providing mental support. Listening to personal narratives and testimonials from TB survivors, for instance, can inspire informants by offering motivation drawn from the experiences of their peers¹⁷. Shared experiences among those facing similar challenges can foster a sense of belonging, solidarity, and community¹⁸. While participants reported that family support facilitated informants' access to help and adherence to treatment, it did not adequately address the self-stigma and anticipated stigma stemming from their diagnosis, as experienced by a 60 year old male with TB in Depok who received support from his wife but

still had self and anticipated stigma (FGD 2). Therefore, addressing the profound feelings of isolation often accompanying TB illness and diagnosis is crucial. Collectively, these findings underscore the imperative for person-centred interventions to prioritize not only the medical aspects of TB treatment but also the psychological, social and emotional needs of those affected.

Empowerment is a crucial factor in fostering a proactive approach to TB care. The findings suggest that individuals empowered through adequate information and peer support are more inclined to extend help to others, with the potential to effectively create a cycle of encouragement and resilience within the community. This peer-led model not only promotes individual growth and strengthens communal ties by reinforcing health-related social networks but also has the potential to sustain and scale up the study intervention. As empowered participants begin supporting others, the intervention's reach extends beyond its original recipients. This aligns with evidence showing that psychosocial programs grounded in community participation—where shared experiences and reciprocal support foster a sense of empowerment—can significantly reduce stigma^{3,10}.

Even with the recognized benefits and informants' support for sustaining and expanding the TB-CAPS intervention, its long-term viability was perceived to face significant challenges, especially concerning sustainable financial support for the program. Informants observed that covering transportation costs eased financial burdens for participants and peer supporters attending group counseling, underscoring the necessity of consistent funding to uphold these initiatives. Participants' reports of current insufficient financial commitment from Puskesmas and the District Health Office suggest a considerable barrier to the ongoing operation of interventions like TB-CAPS. This highlights the need for robust evidence of the intervention's effectiveness and health benefits to strengthen decision-making regarding resource allocation and support for future scale-up. Sustainable and consistent financing is essential to maintain transportation subsidies, peer supporter activities, supervision, and other routine operational components required to deliver TB-CAPS. Without structured financing mechanisms, including transportation subsidies and operational resources, participant engagement diminishes, and the long-term stability of programs such as TB-CAPS can be jeopardized¹⁹. Our study estimated that delivering psychosocial support cost approximately US\$26.7–28.4 per person with TB, suggesting that the intervention may be affordable and feasible to implement⁹. Identifying existing government financing mechanisms, such as Supporting Operational Fund for Health (Bantuan Operasional Kesehatan/BOK), General and Specific Allocation Funds (Dana Alokasi Umum dan Dana Alokasi Khusus), local government budgets and integrating community-based peer support models into formal district-level budgeting could significantly enhance their sustainability, particularly for TB adherence interventions²⁰. Additionally, as suggested by participants, integrating psychosocial support with other Puskesmas programs, such as the mental health program, could potentially cover the individual counseling component of the TB-CAPS intervention. Developing peer support networks within local communities may reduce transportation cost while facilitating psychosocial support²¹.

Finally, formal leadership in cross-sector collaboration is paramount for effectively addressing TB-related stigma. While all stakeholders recognized the importance of this collaboration, there is a noticeable reluctance to assume the lead. This reluctance may reflect uncertainty regarding institutional responsibilities for coordinating multisectoral activities and mobilizing the resources required to sustain them. A clearly designated lead agency could coordinate stakeholder engagement, define roles and responsibilities, mobilize resources, streamline processes and maximize the effectiveness of initiatives aimed at reducing community TB stigma. Evidence synthesized in recent umbrella reviews indicates that clearly defined leadership structures and well-coordinated multisectoral engagement can reinforce accountability mechanisms and facilitate the uptake of community-centered interventions²². Engaging healthcare providers, local governments, and NGOs through coordinated initiatives and public education campaigns has been shown to reduce enacted stigma²³. These efforts require a designated leader to ensure coordinated action, maximizing resource utilization and enhancing the overall effectiveness of stigma-reduction campaigns through the integration of healthcare services, community engagement, and continuous stakeholder collaboration²⁴. The official appointment of such a leader is critical to oversee these collaborative initiatives, guaranteeing a clear division of roles among all involved parties. For example, local governments can facilitate awareness campaigns, while healthcare providers can offer training sessions to address misconceptions about TB.

Limitations

This study has several limitations. Firstly, relying on self-reported experiences introduces potential recall and social desirability biases, especially regarding topics such as stigma, empowerment, and treatment adherence. Secondly, the study's execution within a distinct geographic and health system context might limit the generalizability of its findings to environments characterized by varying resource availability, cultural practices, or organizational frameworks, in both Indonesia and beyond. Furthermore, the peer-led intervention investigated here received financial support for transportation subsidies. Such support may not be universally replicable, potentially impacting the feasibility and long-term sustainability of analogous programs.

Conclusions

In conclusion, these findings underscore the profound interconnectedness of peer support, adequate information, empowerment, and sustainable funding, to effectively address TB stigma, improve mental health, and increase treatment adherence. For interventions such as TB-CAPS to become sustainable for integration into routine care and lead to stigma-free TB care, clear leadership, multisectoral collaboration, and suitable funding are required.

Abbreviations

APBD

Anggaran Pendapatan dan Belanja Daerah (Regional Revenue and Expenditure Budget)

BOK
Bantuan Operasional Kesehatan (Supporting Operational Fund for Health)
KAPITU
Kampung Peduli TB (TB-caring community)
AIM
Acceptability of Intervention Measure
DS-TB
Drug-sensitive Tuberculosis
DR-TB
Drug-resistant Tuberculosis
FGD
Focus Group Discussion
KII
Key Informant Interview
NGO
Non-Government Organization
PIC
person in charge
POP TB
Perhimpunan Organisasi Pasien Tuberkulosis (Association for Tuberculosis patients and survivors in Indonesia)
Puskesmas
Primary Health Centre
QOL
quality of life
RE-AIM
Reach Effectiveness Adoption Implementation and Maintenance
TB
tuberculosis
TFA
Theoretical Framework of Acceptability.

Declarations

Ethics approval and consent to participate

This study received research ethical approval from the Research Ethical Committee of Liverpool School of Tropical Medicine (RGETEM044) and the Faculty of Medicine Universitas Indonesia (KET-1169/UN2.F1/ETIK/ PPM.00.02/2023). All participants received Participant Information Sheet and gave their informed consent to participate prior to the FGDs or interviews.

Consent for publication

All informants gave their consent for publication.

Availability data and materials

The data from this study are not publicly available due to confidentiality and ethical reasons, but are available by requesting them from the corresponding author.

Competing interests

The authors have no competing interests to declare.

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Author Contribution

MANH: methodology, data collection, data validation, analysis, visualisation, writing – original draft, writing – review & editing. MH: methodology, analysis, writing – original draft, writing – review & editing. AF: conceptualisation, funding acquisition, investigation, methodology, supervision, validation, writing – review & editing. FFY, TAP: investigation, methodology, data collection, writing – review & editing. DFAH, ERF, AFR, FRH, IA, MA, AMNP: data curation, investigation, project administration. AK, FA: resources, writing – review & editing. TW: conceptualisation, funding acquisition, methodology, supervision, validation, writing – review & editing. All authors reviewed the manuscript and agreed on the latest version before submission.

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Data Availability

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Figures

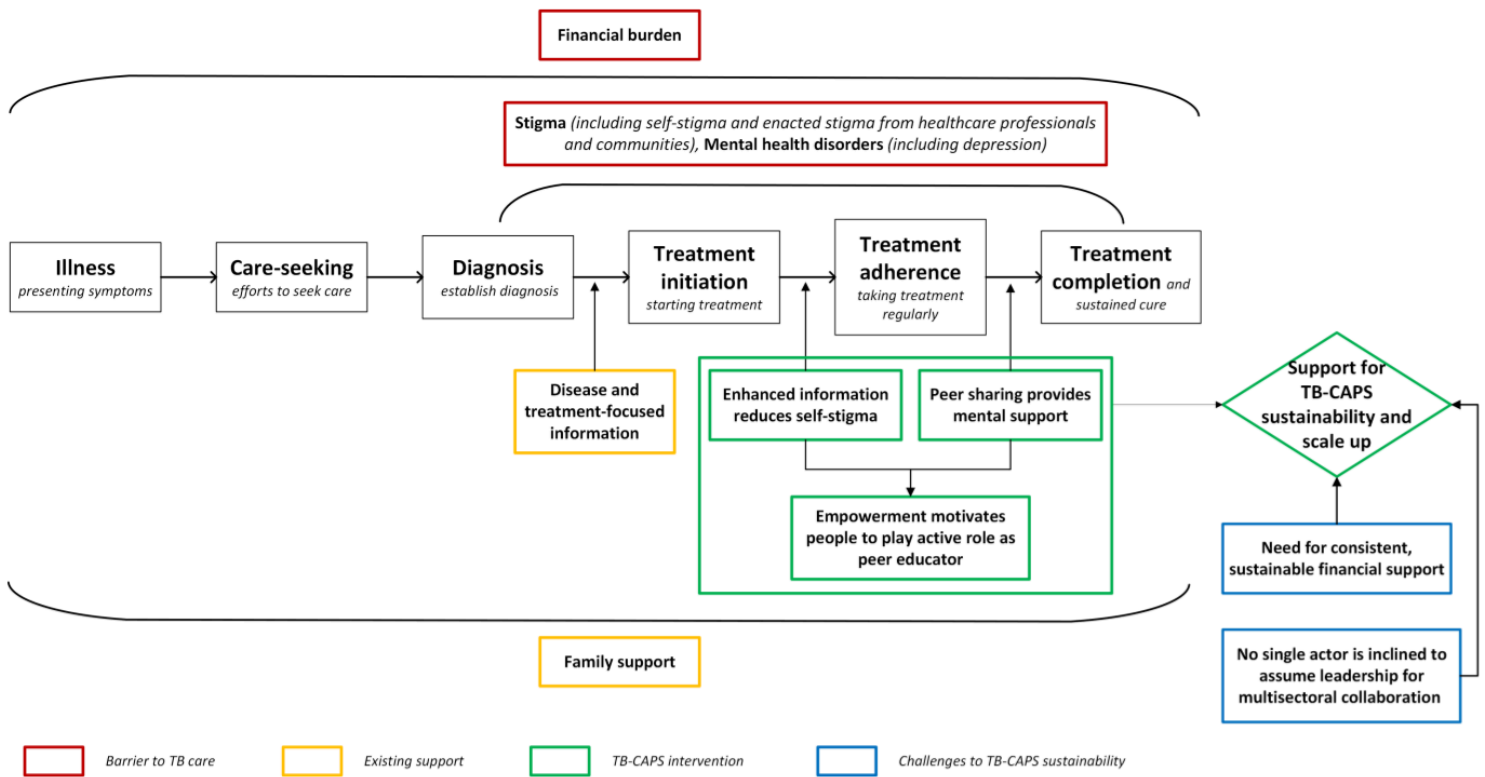


Figure 1

Psychosocial support throughout TB care

Supplementary Files

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- [TBCAPSSupplementary1.FGDandInterviewGuide.pdf](#)
- [TBCAPSSupplementary2.Codes03.09.2026.xlsx](#)