

REVIEW ARTICLE

Community-based Tuberculosis Screening Strategies: A Systematic Review of Active Case Finding and Contact Investigation

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ABSTRACT

Introduction: Delays in tuberculosis (TB) diagnosis remain a persistent challenge to TB control across the care cascade in low- and middle-income countries (LMICs). Community-based active case finding (ACF) and contact investigation provide opportunities to expand diagnostic services beyond healthcare facilities. However, evidence of their effects at different stages of the TB care cascade varies considerably across studies. This systematic review aimed to assess the effects of community-based TB screening interventions at different stages of the care cascade in LMICs, with behavioural frameworks applied to interpret the findings after synthesis.

Methods: This systematic review followed the PRISMA 2020 guidelines and was registered in PROSPERO (CRD420261288243). We searched Scopus, PubMed, and ProQuest for studies published from January 2016 to March 2026. We included randomised controlled trials (RCTs) and quasi-experimental studies on community-based TB screening in low- and middle-income countries (LMICs). Study quality was assessed using the Joanna Briggs Institute (JBI) critical appraisal tools. The findings were summarised narratively according to TB care cascade outcomes and study design.

Results: The 13 included studies comprised seven randomised controlled trials (RCTs) and six quasi-experimental studies. The findings varied according to study design and stages of the TB care cascade. Although evidence directly evaluating outcomes at the early stages of the TB care cascade remained limited, a few studies reported improvements in screening participation and progression to diagnostic evaluation. Positive effects on TB case detection, notification, and population-level outcomes were also reported in several studies. However, studies with control groups showed varied findings; some reported favourable effects, while others found no statistically significant effects. Evidence on the initiation of tuberculosis preventive treatment (TPT) was limited and mainly came from studies involving children who were household contacts of TB patients.

Conclusion: Community-based TB screening may improve access to diagnosis and support TB case detection in some settings. However, the results vary by study design, population, intervention, and implementation context. Evidence on improved screening participation and completion of diagnostic evaluation remains limited. Therefore, the effects of community-based TB screening across the TB care cascade should be interpreted carefully based on the outcomes assessed at each stage.

Keywords: Tuberculosis; Active Case Finding; Contact Investigation; Community-Based Screening; Care Cascade

INTRODUCTION

Tuberculosis (TB) is a leading infectious disease globally, especially in low- and middle-income countries (LMICs). In 2024, an estimated 10.7 million people developed TB worldwide, including approximately 10% in Indonesia (1). Although TB diagnosis and treatment services have improved, a substantial gap remains between the estimated number of TB cases and the number of cases reported each year (2,3). Substantial contributions to this gap come from delays in presentation for treatment, continued dependence on passive case finding, and limitations of health systems (4,5). Other barriers, including limited geographic access, economic barriers, inadequate health literacy, and stigma associated with tuberculosis, may further delay diagnosis and contribute to transmission in the community (6–9).

Active case finding (ACF) and contact investigation have been gradually introduced in many high-TB-burden countries to allow earlier diagnosis of TB in high-risk populations (10). ACF involves systematic screening of groups such as household contacts and other at-risk populations in high-burden settings (11,12). Contact investigation allows the early identification and assessment of exposed individuals to confirm active TB and initiate appropriate treatment or provide tuberculosis preventive treatment (TPT) to eligible individuals with latent TB infection (13,14). However, the effectiveness of these strategies in practice may depend on continuity across the TB care cascade, including initial programme reach and screening uptake, diagnostic evaluation, case detection, and initiation of treatment. Despite the availability of services, screening uptake may remain low because of stigma, limited awareness, low perceived risk, and weak trust in health systems (15,16). Consequently, significant attrition may occur along this continuum, with some individuals identified through screening not completing diagnostic evaluation or initiating TPT (17,18).

Participation in TB screening is affected by social and behavioural factors. Stigma, low perceived susceptibility, and lack of trust in health services are barriers to screening (19–23). The Health Belief Model (HBM) suggests that people are more likely to participate in screening if they perceive themselves to be susceptible to disease, recognise the severity of the disease, and understand the benefits of early detection. Perceived barriers may reduce willingness to participate in screening (22). The Capability–Opportunity–Motivation–Behaviour (COM-B) framework also describes how capability, opportunity, and motivation interact to influence behaviour (24). Community-based approaches that involve community health workers, volunteers, and local leaders have been identified as promising strategies to overcome these barriers and support participation in screening and subsequent care by bringing TB services closer to communities (25–29).

The cost-effectiveness of TB screening interventions, including ACF strategies and diagnostic approaches, has been the subject of previous systematic reviews. These reviews tend to focus on aggregate diagnostic yield rather than outcomes at different stages of the care cascade. However, limited evidence directly examines how community-based approaches influence the transition from programme reach and screening participation to diagnostic evaluation, TB case detection, and preventive treatment. This review categorises the evidence by specific care-cascade outcomes, rather than simply grouping strategies that involve community health workers, contact investigation, and mobile units. The HBM and COM-B frameworks are used as conceptual lenses to interpret possible behavioural explanations for variations in intervention effects after the evidence has been synthesised, rather than as formal coding or analytical frameworks.

This systematic review assesses the effects of community-based TB screening interventions across the care cascade among high-risk populations in LMICs, including programme reach, screening participation, diagnostic completion, TB case detection or notification, and TPT initiation. The findings are synthesised according to these care-cascade outcomes. HBM and COM-B are then applied retrospectively as post-synthesis interpretive frameworks to contextualise variations in the findings without inferring construct-level effects unless these constructs were explicitly measured in the primary studies.

METHODS

Research Type

We conducted a systematic review to synthesise evidence on community-based initiatives for TB screening and their impact at different points along the TB care cascade. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement was used to guide the review process and ensure methodological transparency and reproducibility (30). To enhance transparency and reduce the possibility of reporting bias, the review protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO; registration number CRD420261288243).

Search Strategy

The search strategy was organised in accordance with the Population, Intervention, Comparison, and Outcome (PICO) framework. The population consisted of high-risk community members and household contacts of index TB patients in LMICs. Age eligibility was intervention-specific: household contact investigations were eligible for all age groups, including children and adults, to capture contact-management and preventive-treatment cascades. Conversely, general community-wide screening studies were restricted to participants aged 15 years or older. Community-based ACF and contact investigation were eligible interventions, and they were administered through community health workers (CHWs), volunteers, local leaders, or peer-led networks. The comparators consisted of baseline/historical control periods or routine facility-based passive case finding. The primary outcome was screening participation, while secondary outcomes were TB case detection or notification and TPT initiation. Other cascade outcomes, including programme reach, diagnostic completion, and population-level outcomes, were also recorded when reported by the included studies. These additional outcomes were not prespecified primary or secondary outcomes.

Systematic searches were conducted in PubMed/MEDLINE, Scopus, and ProQuest for English-language primary empirical studies published between 1 January 2016 and 31 March 2026. Boolean operators (AND, OR), wildcards, and field restrictions were used to combine database-specific controlled vocabulary with free-text terms in three domains: condition (“tuberculosis,” “pulmonary TB,” “TB”), intervention strategy (“active case finding,” “contact investigation,” “contact tracing,” “community-based screening,” “community screening”), and delivery personnel (“community health worker*,” “community volunteer,” “volunteer,” “peer,” “community engagement,” “outreach”). Retrieved records were exported to Mendeley Reference Manager for deduplication. Database searches were supplemented by screening the reference lists of eligible studies and relevant systematic reviews. Database-specific search syntax, search dates, filters, and search yields are reported in Supplementary file 1.

Study Criteria

Studies published in English as peer-reviewed primary empirical research from 1 January 2016 to 31 March 2026 that assessed community-based TB screening strategies in LMICs were included. Eligible study designs included randomised controlled trials (RCTs), cluster RCTs, stepped-wedge or crossover cluster trials, and quasi-experimental designs evaluating strategies of ACF or home contact investigation. Eligibility for age varied by intervention model: household contact tracing studies were eligible for all age groups (including children and adults), while general community-wide screening studies needed to include participants aged ≥ 15 years. Review papers, conference abstracts, study protocols with no published findings, editorials, commentaries, articles for which full text was unavailable, and grey literature were excluded. Grey literature was excluded to ensure methodological consistency with the evidence base in the peer-reviewed literature. Ethical approval and informed consent were not required for this systematic review because only data from previously published studies were used and no direct human participant involvement occurred.

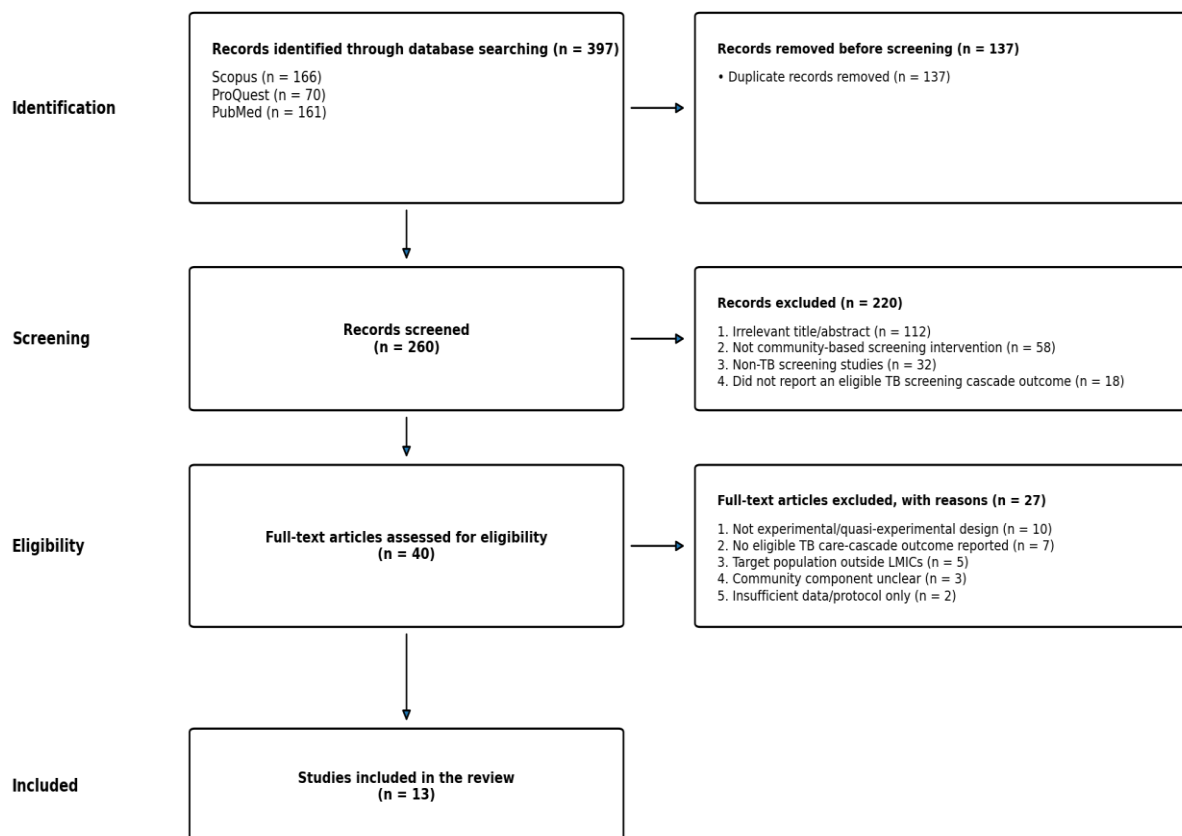


Figure 1. PRISMA 2020 Flow Diagram of Study Selection

Study Selection, Data Extraction, and Data Synthesis

The study selection process was conducted in successive steps according to PRISMA 2020. After duplicates were removed, one primary reviewer screened the titles and abstracts, and three members of the research team subsequently verified the screening decisions. The same approach was used for the full-text assessment of potentially eligible studies. This process constituted team verification rather than fully independent duplicate screening. Any uncertainties or disagreements identified

during verification were resolved through team discussion until consensus was reached. The detailed study-selection process and reasons for full-text exclusion are presented in Figure 1.

Methodological quality and risk of bias were evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal Tools for randomised controlled trials and quasi-experimental studies (31,32). Data were extracted by one primary reviewer using a structured Microsoft Excel form capturing study characteristics, intervention characteristics, outcome measures, reported numerators and denominators when available, effect estimates, and principal findings, with extracted information subsequently verified by three members of the research team. This constituted verification rather than independent duplicate data extraction. Given heterogeneity in intervention designs, outcome definitions, denominators, and effect measures, meta-analysis was not undertaken; findings were synthesised narratively by cascade endpoint and then by study design. Within each endpoint, findings from randomised or concurrently controlled studies were distinguished from uncontrolled before–after, trend, or programmatic findings.

For narrative synthesis, cascade outcomes were classified according to their reported stage: screening uptake/participation, diagnostic evaluation/completion, TB case detection/notification, population-level TB outcomes, and TPT initiation. Outcomes were retained according to the definitions and denominators reported in the primary studies. Notification rates, prevalence measures, diagnostic yields, and raw case counts were not reclassified as screening participation. Detailed outcome classification and the available numerators and denominators for each included study are provided in Supplementary Table S2.

RESULTS

The database search identified 397 records (166 from Scopus, 70 from ProQuest, and 161 from PubMed). After removing 137 duplicate records, 260 records remained for title and abstract screening. A total of 40 full-text articles were retrieved and assessed for eligibility, of which 13 primary studies met all inclusion criteria and were included in the final synthesis. The included studies were conducted in several high-TB-burden LMICs including Nigeria, Vietnam, India, Mozambique, Cambodia, Peru, Malawi, South Africa, Uganda, and Bangladesh.

The quality of the included studies was evaluated using the JBI critical appraisal tools, with individual domains categorised as “Yes,” “No,” or “Unclear.” The final synthesis included 13 primary studies, comprising seven randomised controlled trials (RCTs) and six quasi-experimental studies (Table 1 and Table 2). Among the RCTs, randomisation procedures and baseline comparability were generally reported, and most studies used consistent outcome measurement and appropriate statistical analyses (Table 1). However, participant and intervention-provider blinding was not feasible in the included community interventions, and allocation concealment or outcome-assessor blinding was unclear in several trials. These domain-level concerns were considered when interpreting the certainty of individual findings rather than being reduced to a single overall quality label.

Most quasi-experimental studies clearly described the temporal relationship between the intervention and study outcomes and reported appropriate outcome measurement and statistical analyses (Table 2). However, three studies did not include control groups, substantially limiting causal interpretation because secular trends, concurrent programmes, and changes in case ascertainment could not be excluded. Accordingly, uncontrolled before–after changes and programme case counts were treated as descriptive evidence and were not given the same evidentiary weight as controlled effect estimates. All studies were retained to describe the available evidence, but inclusion in the synthesis should not be interpreted as indicating low risk of bias.

Table 1. JBI Critical Appraisal Tool for Assessment of Risk of Bias for Randomized Controlled Trials

JBI Criteria (Question)	Akwaowo et al., 2024 (13)	Shah et al., 2020 (14)	Machavariani et al., 2025 (31)	Feasey et al., 2023 (32)	Marks et al., 2019 (11)	Kaswaswa et al., 2022 (12)	Davis et al., 2019 (33)
1) Was true randomization used for assignment of participants to treatment groups?	Y	Y	Y	Y	Y	Y	Y
2) Was allocation to treatment groups concealed?	UC	Y	UC	Y	Y	Y	UC
3) Were treatment groups similar at the baseline?	Y	Y	Y	Y	Y	Y	Y
4) Were participants blind to treatment assignment?	N	N	N	N	N	N	N
5) Were those delivering treatment blind to treatment assignment?	N	N	N	N	N	N	N

JBICriteria (Question)	Akwaowo et al., 2024 (13)	Shah et al., 2020 (14)	Machavariani et al., 2025 (15)	Feasey et al., 2023 (16)	Marks et al., 2019 (17)	Kaswaswa et al., 2022 (18)	Davis et al., 2019 (19)
6) Were outcome assessors blind to treatment assignment?	UC	UC	UC	UC	Y	UC	UC
7) Were treatment groups treated identically other than the intervention?	Y	Y	Y	Y	Y	Y	Y
8) Was follow-up complete and if not were differences between groups explained?	Y	Y	Y	Y	Y	Y	Y
9) Were participants analyzed in the groups to which they were randomized?	Y	Y	Y	Y	Y	Y	Y
10) Were outcomes measured in the same way for treatment groups?	Y	Y	Y	Y	Y	Y	Y
11) Were outcomes measured in a reliable way?	Y	Y	Y	Y	Y	Y	Y
12) Was appropriate statistical analysis used?	Y	Y	Y	Y	Y	Y	Y
13) Was the trial design appropriate and deviations accounted for?	UC	Y	Y	Y	Y	Y	Y
Overall appraisal:	I	I	I	I	I	I	I

Note: Y = Yes; N = No; UC = Unclear; I = Include. For cluster-randomised, stepped-wedge, household-cluster, and cluster-crossover trials, the trial-design domain additionally considered cluster allocation, recruitment and loss of clusters, baseline cluster comparability, potential contamination or carry-over where applicable, and whether statistical analyses appropriately accounted for clustering. Where reporting or design-specific handling was insufficient to permit a confident judgment, the domain was rated as unclear (UC).

Table 2. JBI Critical Appraisal Tool for Assessment of Risk of Bias for Quasi-experimental Studies

JBICriteria (Question)	Vo et al., 2020 (20)	Garg et al., 2020 (21)	José et al., 2020 (22)	Morishita et al., 2016 (23)	Sarwar et al., 2023 (24)	Codlin et al., 2018 (25)
1) Is it clear what is the cause and what is the effect?	Y	Y	Y	Y	Y	Y
2) Were the participants included in any comparisons similar?	Y	Y	Y	Y	Y	Y
3) Were participants included in any comparisons receiving similar treatment/care other than the exposure/intervention?	Y	Y	Y	Y	Y	Y
4) Was there a control group?	Y	N	Y	Y	N	N
5) Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Y	Y	Y	Y	N	Y
6) Was follow-up complete and if not, were differences between groups explained?	Y	Y	Y	Y	Y	Y
7) Were the outcomes of participants included in any comparisons measured in the same way?	Y	Y	Y	Y	Y	Y
8) Were outcomes measured in a reliable way?	Y	Y	Y	Y	Y	Y

JBI Criteria (Question)	Vo et al., 2020 (40)	Garg et al., 2020 (41)	José et al., 2020 (42)	Morishita et al., 2016 (43)	Sarwar et al., 2023 (44)	Codlin et al., 2018 (49)
9) Was appropriate statistical analysis used?	Y	Y	Y	Y	Y	Y
Overall appraisal:	I	I	I	I	I	I

Note: Y = Yes; N = No; I = Include.

Table 3. Summary of Included Studies (n = 13)

No	Author & Year	Method	Study Population	Intervention	Cascade Outcome	Key Findings
1	Akwaowo et al., 2024 (33)	Cluster RCT	CHWs working in 6 Local Government Areas in Nigeria, and community members targeted for TB screening	CHW training and financial incentives to support community-based TB screening and referral	TB notification	Training plus incentives did not significantly improve TB notification compared with control ($p > 0.05$); training alone also showed no significant improvement.
2	Vo et al., 2020 (40)	Controlled quasi-experimental	321,020 individuals screened verbally in 12 districts of Ho Chi Minh City, Vietnam	Community mobilization, verbal TB screening, and referral for diagnostic testing	TB notification	1. TB notification increased by 15.9% versus control areas (95% CI: 15.0–16.7%; $p = 0.001$). 2. Salaried CHW districts showed higher notification trends than volunteer districts (IRR = 1.005; $p = 0.021$).
3	Garg et al., 2020 (41)	Quasi-experimental	Community members in Samastipur district, India, with 9,895 presumptive TB individuals identified	CHW-led household visits, TB education, and symptom screening	TB notification	1. TB notification increased from 45.8 to 105.8 per 100,000 population in intervention areas. 2. The programme cost approximately US\$133.9 per diagnosed TB case. 3. CHW involvement did not disrupt routine health services.
4	José et al., 2020 (42)	Controlled before-and-after evaluation	CHWs and communities in Mozambique	Community-based TB screening and contact investigation by CHWs	Case detection/TB notification	1. TB notifications increased by 14.6% in intervention districts. 2. CHWs identified 8,532 presumptive TB cases, with 1,502 diagnosed TB cases. 3. Bacteriologically confirmed TB increased by 28.8%.
5	Morishita et al., 2016 (43)	Quasi-cluster design	Household contacts and neighbours of TB patients in Cambodia	Household contact investigation using symptom screening, chest X-ray, and Xpert MTB/RIF testing	TB notification	1. ACF increased all TB notifications by 18.5% and bacteriologically confirmed TB by 9.6%. 2. TB notifications increased up to 46% during intervention implementation.
6	Shah et al., 2020 (34)	Stepped-wedge cluster RCT	3,222 TB index patients and 12,566 household contacts in Peru	Household contact investigation through home visits and TB screening	TB case detection	1. ACF detected more TB cases than passive case finding (IRR = 1.51; 95% CI: 1.21–1.88). 2. Approximately 67 additional TB cases per 10,000 contacts were identified annually.
7	Machavariani et al., 2025 (35)	Cluster-randomised crossover trial	1,269 TB index patients and 1,882 household contacts in South Africa	Incentive-based versus household-visit screening strategies	Diagnostic evaluation/sputum submission	Sputum submission was higher with incentive-based screening than with household-visit screening (73.8% versus 52.5%); contacts in the incentive group were more likely to submit sputum samples (aOR = 2.12).
8	Feasey et al., 2023 (36)	Cluster RCT	Approximately 517,957 adults from 72 community clusters in Malawi	Door-to-door community TB screening using sputum testing	TB notification	Bacteriologically confirmed TB notification rates were 71.3 per 100,000 population in intervention areas and 62.5 per 100,000 in controls, without significant differences (adjusted RR = 1.12; 95% CI: 0.61–2.07).

No	Author Year	Method	Study Population	Intervention	Cascade Outcome	Key Findings
9	Marks et al., 2019 (37)	Cluster RCT	83,830 individuals aged ≥15 years in Vietnam	Annual community-wide ACF using sputum examination and Xpert MTB/RIF testing	Population-level TB prevention	1. TB prevalence decreased significantly in intervention areas (PR = 0.56; 95% CI: 0.40–0.78; $p < 0.001$). 2. Approximately 1,002 individuals need annual screening to prevent one TB case.
10	Kaswaswa et al., 2022 (38)	Household cluster RCT	214 TB index patients and 838 household contacts in Malawi	Patient-delivered household contact investigation and TB screening	Screening participation; TPT initiation	1. TB diagnosis did not differ significantly between groups. 2. TPT initiation among children aged <5 years was higher in the intervention group, reaching 58.0% compared with 41.4% in the control group. 3. Household TB screening participation increased significantly (aOR = 2.58).
11	Davis et al., 2019 (39)	Household RCT	919 household contacts from 372 TB index patients in Uganda	Home-based TB investigation with sputum collection and SMS notification	Diagnostic completion; TB case detection	1. No significant difference in TB evaluation completion between groups ($p = 0.81$). 2. TB detection remained similar between groups ($p = 0.62$).
12	Sarwar et al., 2023 (44)	Quasi-experimental study	Sexual minority populations enrolled in HIV prevention programmes in Bangladesh	Peer-led community TB screening and referral through Drop-In Centres	Programme reach/referral	The peer-led programme reached approximately 141,671 individuals and supported the identification and referral of presumptive TB cases among underserved populations.
13	Codlin et al., 2018 (45)	Quasi-experimental trend analysis	2,068 adults aged ≥55 years screened in Cambodia	Mobile chest X-ray and Xpert MTB/RIF screening	Case detection/TB notification	1. A total of 319 bacteriologically confirmed TB cases and 574 clinical TB cases were identified. 2. Bacteriological TB notifications increased by 119.2% overall and 262.7% among adults ≥55 years. 3. Treatment success rates improved significantly (88.8% to 94.5%; $p = 0.012$).

Abbreviations: ACF = active case finding; CHW = community health worker; TPT = tuberculosis preventive treatment; IRR = incidence rate ratio; RR = risk ratio; PR = prevalence ratio; aOR = adjusted odds ratio; Xpert MTB/RIF = Xpert Mycobacterium tuberculosis/rifampicin.

DISCUSSION

This review of 13 studies indicates that the effects of community-based TB screening differ across cascade endpoints, study designs, target populations, and implementation settings. Direct evidence for screening uptake and diagnostic completion was limited, whereas most studies reported downstream outcomes such as TB case detection, notification, case counts, or population prevalence. Controlled studies reported both favourable and non-significant findings, while several quasi-experimental evaluations showed favourable trends in downstream outcomes. Accordingly, the evidence is best interpreted according to specific outcome categories and study designs rather than as indicating a uniform effect of community-based screening.

Community Reach and Screening Uptake

Community-based strategies appear to offer considerable potential for extending the reach of TB services, as reflected in the substantial numbers of individuals screened or reached in Vietnam and Bangladesh (40,44). However, distinguishing programme reach from screening uptake remains important, particularly when information on the eligible or invited population is not available. Several included studies primarily reported notification trends or case counts, which provide valuable evidence of programmatic outcomes but do not directly estimate screening participation. More direct comparative evidence was provided by the household cluster trial in Malawi, where patient-delivered household contact investigation was associated with higher screening participation (aOR = 2.58) (38).

CHWs may further support community-based delivery by helping to reduce geographic and structural barriers to TB services, although their contribution appeared to vary across settings. CHW-led interventions in Vietnam, India, and Mozambique reported favourable downstream case-finding or notification outcomes (40–42), whereas a cluster-randomised trial in Nigeria found no statistically significant improvement in TB notification following CHW training with or without financial incentives (33).

Collectively, these findings suggest that CHWs may play an important role in facilitating community engagement and service delivery, while the extent to which this translates into improved screening participation is likely to depend on the broader implementation context and should be assessed using participation-specific measures.

Diagnostic Evaluation and Completion

Evidence regarding progression from screening to diagnostic evaluation was mixed. In South Africa, incentive-based contact investigation was associated with higher sputum submission than household-visit screening (35), suggesting greater engagement with a specific step in the diagnostic pathway. However, home-based screening in Uganda did not significantly increase completion of TB evaluation relative to usual care (39). Overall, the findings indicate that increased community screening may help to promote engagement with diagnostic services, although the uptake of diagnostic completion may differ by setting and intervention style. This underscores the need to incorporate screening uptake and diagnostic completion as related but different components of the TB care cascade.

Diagnostic technologies and communication approaches may also support community-based pathways by facilitating access to testing and follow-up. In Cambodia, mobile chest radiography combined with Xpert MTB/RIF contributed to community-based identification of TB cases (45), while the Uganda household trial incorporated SMS communication for returning test results (39). However, the contribution of these components should be interpreted in relation to the specific outcomes measured, as evidence of improved case detection or the use of communication technologies does not necessarily demonstrate improved diagnostic completion.

TB Case Detection, Notification, and Population-Level Outcomes

Controlled evidence for downstream TB outcomes was heterogeneous. Household active case finding in Peru increased TB case detection compared with passive case finding (34), while repeated community-wide screening in Vietnam was associated with reduced TB prevalence (37). In contrast, controlled trials in Nigeria and Malawi found no significant improvement in TB notification (33,36), and household trials in Malawi and Uganda did not show significant increases in TB diagnosis or detection (38,39). Taken together, these findings suggest that the effects of community-based screening on downstream TB outcomes may vary across settings and are likely influenced by population characteristics, intervention design, and implementation context.

Several quasi-experimental evaluations reported increased TB notification or case finding in Vietnam, India, Mozambique, and Cambodia (40–43,45). However, the strength of inference varied according to study design and the availability of a concurrent comparison group. Although before–after and trend-based findings provide useful evidence of programmatic changes, they may also be influenced by secular trends, concurrent programme activities, or changes in case ascertainment. These findings therefore provide supportive evidence for community-based approaches but warrant more cautious interpretation than controlled effect estimates.

TPT Initiation

Evidence for TPT initiation was limited and derived primarily from a specific population. In Malawi, patient-delivered household contact investigation was associated with higher TPT initiation among children younger than five years (38). This finding suggests that community-based household contact investigation may contribute not only to identifying individuals at risk of TB but also to facilitating progression toward preventive treatment among eligible child contacts. Such an approach may be particularly relevant where household-based delivery helps bridge the transition from contact identification to preventive care. However, because the available evidence was specific to paediatric household contacts, its applicability to adults and other high-risk populations remains uncertain.

Behavioural and Contextual Perspectives on Community Engagement

The variability observed across cascade outcomes suggests that the effectiveness of community-based TB strategies may be shaped by the context in which they are delivered. Across the included studies, approaches ranged from CHW-led outreach and education (33,40–42) and household contact investigation (34,38,39,43) to incentive-based strategies (35), peer-led outreach (44), and mobile diagnostic services (45). Differences in target populations, service accessibility, intervention intensity, community support, and diagnostic pathways may contribute to variations in engagement and subsequent cascade outcomes. However, as these contextual factors were not consistently measured across studies, their relative contribution to the observed effects remains difficult to determine.

HBM (22) highlights the potential influence of perceived susceptibility, severity, benefits, and barriers on health-seeking behaviour, whereas COM-B (24) considers capability, opportunity, and motivation as interacting influences on behaviour. In the context of community-based TB screening, these frameworks may help explain how outreach, household-based services, and interpersonal support could influence engagement with screening and subsequent care. However, because the corresponding behavioural constructs were not consistently measured in the included studies, these relationships cannot be directly established from the available evidence. HBM and COM-B are therefore applied as post-synthesis interpretive lenses rather than as empirically demonstrated mechanisms of intervention effect.

Limitations and Implications

Several limitations should be considered when interpreting the findings of this review. Heterogeneity in study design, population, intervention approach, outcome definition, and follow-up duration limited direct comparability across studies. Many studies reported downstream outcomes, such as TB notification, case detection, and population-level measures, rather than denominator-defined screening uptake or diagnostic completion. These results were therefore considered separately according to the respective stage of the TB care cascade. Methodological quality also varied across studies, especially in terms of reporting of cluster-specific risks and study design. Study selection was conducted by one primary reviewer, and the screening and eligibility decisions were subsequently verified by three members of the research team, with disagreements resolved through consensus. However, this procedure did not constitute fully independent duplicate screening. The breadth of evidence captured may have been further limited by the inclusion of only English-language, peer-reviewed publications. Nonetheless, outcome-specific synthesis offers a structured and transparent evaluation of the potential contributions of community-based TB screening to outcomes along the TB care cascade.

Recommendations for Future Research

Future research should use well-defined, denominator-based outcomes at successive stages of the TB care cascade, especially screening uptake and diagnostic completion, to contribute to the evidence base on community-based TB screening. Future studies should assess whether gains in early engagement are maintained through later stages, including case detection and preventive treatment, using robust comparative designs with adequate follow-up. More consistency in reporting intervention components and implementation contexts may also improve cross-setting comparability. Where behavioural frameworks such as HBM and COM-B are used, the role of relevant constructs in engagement with community-based TB services could be examined more clearly through prospective measurement.

CONCLUSION

Community-based TB screening may have a role in improving outcomes at specific points along the TB care cascade. Effects varied by study design, population, intervention strategy, and implementation context. Evidence for improving community reach and supporting TB case detection or notification was more consistent in some contexts, but evidence for increased screening uptake and diagnostic completion was limited, and findings from controlled studies were not consistently statistically significant. Evidence for TPT initiation was similarly limited and population-specific. Overall, community-based TB screening interventions may be a useful complement to facility-based TB services, especially when adapted to local settings and specific stages of the care cascade. These findings support a cautious and outcome-specific assessment of their potential contribution to improving TB screening and subsequent care in LMICs.

DECLARATIONS

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Declaration of Generative AI And AI-Assisted Technologies in the Writing Process: During the preparation of this manuscript, the authors used ChatGPT (OpenAI; GPT-5.6 Luna), NotebookLM (Google; no user-facing application version number provided), and QuillBot Paraphraser (QuillBot, Learneo, Inc.; v44.179) for language refinement and paraphrasing. All AI-assisted content was reviewed and verified by the authors. The authors take full responsibility for the final content and integrity of the manuscript.

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