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## Community views on active case finding for tuberculosis in low- and middle-income countries: a qualitative evidence synthesis (Review)

Taylor M, Medley N, van Wyk SS, Oliver S

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**Community views on active case finding for tuberculosis in low- and middle-income countries: a qualitative evidence synthesis (Review)**

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[Qualitative Review]

# Community views on active case finding for tuberculosis in low- and middle-income countries: a qualitative evidence synthesis

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## ABSTRACT

### Background

Active case finding (ACF) refers to the systematic identification of people with tuberculosis in communities and amongst populations who do not present to health facilities, through approaches such as door-to-door screening or contact tracing. ACF may improve access to tuberculosis diagnosis and treatment for the poor and for people remote from diagnostic and treatment facilities. As a result, ACF may also reduce onward transmission. However, there is a need to understand how these programmes are experienced by communities in order to design appropriate services.

### Objectives

To synthesize community views on tuberculosis active case finding (ACF) programmes in low- and middle-income countries.

### Search methods

We searched MEDLINE, Embase, and eight other databases up to 22 June 2023, together with reference checking, citation searching, and contact with study authors to identify additional studies. We did not include grey literature.

### Selection criteria

This review synthesized qualitative research and mixed-methods studies with separate qualitative data. Eligible studies explored community experiences, perceptions, or attitudes towards ACF programmes for tuberculosis in any endemic low- or middle-income country, with no time restrictions.

### Data collection and analysis

Due to the large volume of studies identified, we chose to sample studies that had 'thick' description and that investigated key subgroups of children and refugees. We followed standard Cochrane methods for study description and appraisal of methodological limitations. We conducted thematic synthesis and developed codes inductively using ATLAS.ti software. We examined codes for underlying ideas,

connections, and interpretations and, from this, generated analytical themes. We assessed the confidence in the findings using the GRADE-CERQual approach, and produced a conceptual model to display how the different findings interact.

## Main results

We included 45 studies in this synthesis, and sampled 20. The studies covered a broad range of World Health Organization (WHO) regions (Africa, South-East Asia, Eastern Mediterranean, and the Americas) and explored the views and experiences of community members, community health workers, and clinical staff in low- and middle-income countries endemic for tuberculosis. The following five themes emerged.

### • ACF improves access to diagnosis for many, but does little to help communities on the edge.

Tuberculosis ACF and contact tracing improve access to health services for people with worse health and fewer resources (High confidence). ACF helps to find this population, exposed to deprived living conditions, but is not sensitive to additional dimensions of their plight (High confidence) and out-of-pocket costs necessary to continue care (High confidence). Finally, migration and difficult geography further reduce communities' access to ACF (High confidence).

### • People are afraid of diagnosis and its impact.

Some community members find screening frightening. It exposes them to discrimination along distinct pathways (isolation from their families and wider community, lost employment and housing). HIV stigma compounds tuberculosis stigma and heightens vulnerability to discrimination along these same pathways (High confidence). Consequently, community members may refuse to participate in screening, contact tracing, and treatment (High confidence). In addition, people with tuberculosis reported their emotional turmoil upon diagnosis, as they anticipated intense treatment regimens and the prospect of living with a serious illness (High confidence).

### • Screening is undermined by weak health infrastructure.

In many settings, a lack of resources results in weak services in competition with other disease control programmes (Moderate confidence). In this context of low investment, people face repeated tests and clinic visits, wasted time, and fraught social interaction with health providers (Moderate confidence). ACF can create expectations for follow-up health care that it cannot deliver (High confidence). Finally, community education improves awareness of tuberculosis in some settings, but lack of full information impacts community members, parents, and health workers, and sometimes leads to harm for children (High confidence).

### • Health workers are an undervalued but important part of ACF.

ACF can feel difficult for health workers in the context of a poorly resourced health system and with people who may not wish to be identified. In addition, the evidence suggests health workers are poorly protected against tuberculosis and fear they or their families might become infected (Moderate confidence). However, they appear to be central to programme success, as the humanity they offer often acts as a driving force for retaining people with tuberculosis in care (Moderate confidence).

### • Local leadership is necessary but not sufficient for ensuring appropriate programmes.

Local leadership creates an intrinsic motivation for communities to value health services (High confidence). However, local leadership cannot guarantee the success of ACF and contact tracing programmes. It is important to balance professional authority with local knowledge and rapport (High confidence).

## Authors' conclusions

Tuberculosis active case finding (ACF) and contact tracing bring a diagnostic service to people who may otherwise not receive it, such as those who are well or without symptoms and those who are sick but who have fewer resources and live further from health facilities. However, capturing these 'missing cases' may in itself be insufficient without appropriate health system strengthening to retain people in care. People who receive a tuberculosis diagnosis must contend with a complex and unsustainable cascade of care, and this affects their perception of ACF and their decision to engage with it.

## PLAIN LANGUAGE SUMMARY

### What do people think of strategies to identify cases of tuberculosis in low- and middle-income countries?

#### What is active case finding?

Active case finding (ACF) involves health workers going out into communities to identify people with tuberculosis who otherwise might not have sought help in clinics (e.g. because they live too far from health facilities or cannot afford to get there). The aim of ACF is to find people who have tuberculosis and provide them with treatment, in order to reduce the spread of disease and improve the health of infected people.

#### What did we want to find out?

We aimed to understand the experiences and perspectives of people who had been involved in ACF, including people with tuberculosis, community members, and health workers.

## What did we find?

We included 45 studies and sampled from 20 across a broad range of World Health Organization (WHO) regions (Africa, South-East Asia, Eastern Mediterranean, and the Americas). From these data, we drew the following five main conclusions.

- **ACF improves access to diagnosis for many, but does little to help the poorest people.**

ACF improves access to health services for people with worse health and fewer resources. However, programmes are not always sensitive to the challenges people have in their daily lives. Those who migrate for work or who live in remote areas also have little access to ACF.

- **People are afraid of diagnosis and its impact.**

Being targeted for screening is frightening. It exposes people to discrimination due to stigma, and people may also assume they have HIV. For this reason, some people may refuse to participate in diagnosis and treatment. In addition, people report feeling overwhelmed and afraid upon diagnosis, as they anticipate medicine side effects and the prospect of living with a serious illness.

- **Screening is undermined by weak health infrastructure.**

In many settings, lack of investment has resulted in poor services. As a result, people face repeated tests and clinic visits, wasted time, and difficult interactions with health workers. People with tuberculosis or other conditions who attend screening expect follow-up care, which they may or may not receive. Finally, community members, parents, and health workers often receive inadequate information, which can lead to harm for children.

- **Health workers are an under-valued but important part of ACF.**

ACF can feel difficult for health workers due to lack of support. They are also poorly protected against tuberculosis and fear that they or their families might become infected. Despite these obstacles, the care and support provided by health workers helps people feel able to manage their condition.

- **Local leadership is necessary but not sufficient for ensuring appropriate programmes.**

When people from the local community promote or conduct ACF, it increases support for the service. However, health workers need to balance professional authority with local knowledge and rapport.

## How up to date is this evidence?

We searched for studies published before 22 June 2023.

## SUMMARY OF FINDINGS

### Summary of findings 1. Summary of qualitative findings table

Theme	Subtheme	Studies contributing to review finding	CERQual assessment of confidence in the evidence
Theme 1: ACF improves access to diagnosis for many, but does little to help communities on the edge	Finding 1.1: CF improves access for people missed in previous case finding strategies and protects communities from transmission.	<a href="#">Ayakaka 2017</a> ; <a href="#">Emerson 2020</a> ; <a href="#">Hirsch-Moverman 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a>	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
	Finding 1.2: Many communities suffer from material deprivation, and this hinders their ability to engage with ACF.	<a href="#">Chiang 2015</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a> ;	<b>High confidence:</b> Minor concerns regarding coherence; no concerns regarding methodological limitations, relevance, or adequacy
	Finding 1.3: Out-of-pocket costs for travel, treatment, and nutrition persist even in the context of community tuberculosis programmes. Care initiated in the community cannot always be completed in clinics.	<a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Onazi 2020</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a>	<b>High confidence:</b> Minor concerns regarding relevance and coherence; no concerns regarding methodological limitations and adequacy
	Finding 1.4: Migrant and unstable populations, difficult geography, and environmental pollution further compromise some marginalized communities.	<a href="#">Ayakaka 2017</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Onazi 2020</a>	<b>High confidence:</b> Minor concerns regarding adequacy, relevance, and coherence; no concerns regarding methodological limitations
Theme 2: People are afraid of diagnosis and its impact.	Finding 2.1: Community members are afraid of the breakdown of their relationships, security, and ability to work due to stigma.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">De Santo 2023</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Onazi 2020</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a>	<b>High confidence:</b> Minor concerns regarding coherence; no concerns regarding methodological limitations, adequacy, and relevance
	Finding 2.2: Community members avoid diagnosis to protect themselves from stigma.	<a href="#">Ayakaka 2017</a> ; <a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">De Santo 2023</a> ; <a href="#">Hirsch-Moverman 2021</a> ; <a href="#">Medina-Marino 2021</a> ; <a href="#">Onazi 2020</a>	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
	Finding 2.3: Community members fear they may be unable to cope with illness and its treatment regimen.	<a href="#">Tulloch 2015</a> ; <a href="#">Chawla 2021</a> ;  <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Singh 2017</a>	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
Theme 3: Screening is undermined by	Finding 3.1: Lack of investment has resulted in a weak and sparse tuberculo-	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Onazi 2020</a>	<b>Moderate confidence:</b> Some concerns regarding relevance; minor concerns regarding coherence;

weak health infrastructure.	sis infrastructure in competition with other disease campaigns.		no concerns regarding methodological limitations and adequacy
	Finding 3.2: Lack of investment makes follow-up care difficult. People face repeated tests and visits, wasted time, and fractious interactions with health providers.	<a href="#">Ayakaka 2017</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Emerson 2020</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Marangu 2017</a> ; <a href="#">Onazi 2020</a>	<b>Moderate confidence:</b> Some concerns regarding relevance; minor concerns regarding coherence; no concerns regarding methodological limitations and adequacy
	Finding 3.3: People with tuberculosis or other conditions who attend screening programmes expect follow-up health care, which they may or may not receive.	<a href="#">Lorent 2015</a> ; <a href="#">Tulloch 2015</a>	<b>High confidence:</b> Minor concerns regarding adequacy, relevance, and coherence; no concerns regarding methodological limitations
	Finding 3.4: Community education improves awareness of tuberculosis in some settings, but lack of full information impacts community members, parents, and health workers, and sometimes leads to harm for children.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Emerson 2020</a> ; <a href="#">Hirsch-Moverman 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Marangu 2017</a> ; <a href="#">Ndakidemi 2019</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Singh 2017</a> ; <a href="#">Tulloch 2015</a>	<b>High confidence:</b> No concerns regarding adequacy, relevance, coherence, or methodological limitations
Theme 4: Health workers are an undervalued but important part of ACF.	Finding 4.1: Health workers are undervalued and take on difficult work.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Onazi 2020</a>	<b>Moderate confidence:</b> Some concerns regarding relevance; minor concerns regarding coherence; no concerns regarding methodological limitations and adequacy
	Finding 4.2: Often the compassion of health workers and their ability to go above and beyond their job is what retains people with tuberculosis in appropriate care.	<a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">De Santo 2023</a> ; <a href="#">Lorent 2015</a>	<b>Moderate confidence:</b> Some concerns regarding relevance and coherence; minor concerns regarding adequacy; no concerns regarding methodological limitations
Theme 5: Local leadership is necessary but not sufficient for ensuring appropriate programmes.	Finding 5.1: Local leadership creates an intrinsic motivation for communities to value ACF and contact tracing.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Onazi 2020</a> ; <a href="#">Shamanewadi 2020</a>	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
	Finding 5.2: ACF and contact tracing programmes need to balance local rapport with knowledge and professionalism.	<a href="#">Lorent 2015</a> ; <a href="#">Shamanewadi 2020</a>	<b>High confidence:</b> Minor concerns regarding adequacy and relevance; no concerns regarding methodological limitations and coherence

Abbreviations: ACF: active case finding



## BACKGROUND

### Description of the topic

Care for tuberculosis (TB) has involved public health and primary care systems identifying people with the disease and ensuring they receive treatment through a variety of approaches. In 2022, an estimated one-third of the 10 million people with tuberculosis were not diagnosed or reported to the World Health Organization (WHO; WHO 2023). Standard case detection for tuberculosis takes place in health facilities when people present with tuberculosis symptoms such as cough, night sweats, fever, or weight loss. Standard case detection is sometimes termed passive case finding and describes a patient-initiated pathway in clinics (Lönnroth 2013). Active case finding (ACF) is a more recent tuberculosis care approach, where health workers actively look for people with presumptive tuberculosis in communities and amongst populations who do not present themselves to health facilities (Lönnroth 2013; WHO 2015). ACF is defined as "the systematic identification of people with presumptive active tuberculosis in a predetermined target group by the application of tests, examinations or other procedures" (Kranzer 2013).

The WHO End TB Strategy aims to reduce tuberculosis incidence by 90% and tuberculosis deaths by 95% by 2035 (WHO 2015). Early tuberculosis case detection via ACF is a key component of this strategy. ACF is a complex intervention with multiple components, such as community tuberculosis health education, symptom screening in communities via mobile health clinics, screening by community health workers during household visits, and community- or facility-based screening of close contacts of index persons with tuberculosis. Dey 2019 offers a good example of ACF that includes health worker engagement in high-risk communities, door-to-door systematic tuberculosis symptom screening, referral of screen-positive individuals for diagnostic testing in clinics, and community-based tuberculosis contact tracing.

ACF covers a wide range of tuberculosis health promotion and surveillance activities that target high-risk individuals or communities. Historically, due to the lack of a quick, affordable, and feasible point-of-care screening tool, symptom screening via a structured questionnaire was often the only tool used in ACF interventions. Presumptive tuberculosis cases identified in this way would then need to be confirmed with further testing (e.g. sputum smear microscopy or chest X-ray) at nearby health facilities (WHO 2013). More recently, effective point-of-care tests such as mobile chest X-ray and rapid diagnostic tests (e.g. Gene Xpert MTB/RIF) have been implemented, either alone or in addition to symptom screening in communities (WHO 2021). Some ACF interventions screen for high-risk factors (e.g. HIV) in combination with tuberculosis symptom screening.

ACF programmes may identify symptomatic people with presumptive tuberculosis via symptom screening, or asymptomatic people with presumptive tuberculosis via chest X-ray or rapid diagnostic tests, depending on the different components of the ACF programme. Table 1 presents definitions of different tuberculosis case finding approaches.

### How this review might inform or supplement what is already known

The WHO developed the End TB Strategy alongside their Sustainable Development Goals, which highlight the social and structural determinants of health. Tuberculosis has long been associated with structural inequality, including poverty, malnutrition, lack of education, poor housing and working conditions, and limited access to health care (Lönnroth 2009). Tuberculosis reduction in high-income countries has resulted from improved access to health care overall (not just for tuberculosis), improved nutrition, and reduced poverty (Uplekar 2013). The WHO guidance regarding ACF for tuberculosis aims to address access to tuberculosis diagnosis for high-risk populations and depends on countries to adopt these policies in their national programmes (Lichtenstein 2018). Tuberculosis public health programmes also operate alongside a global narrative related to the WHO DOTS (Directly Observed Treatment, Short-Course) strategy, adopted in 1994. Furthermore, tuberculosis programmes have always navigated local social and political forces, including race (Cummiskey 2014). Efforts to identify people with tuberculosis to disrupt transmission and offer treatment will encounter this complex history and may well be met with resistance.

In the past, the WHO used quantitative proxies to understand community views of tuberculosis screening. For example, one commissioned study considered programme acceptability as the proportion of eligible individuals who freely accepted tuberculosis screening (Mitchell 2012; Mitchell 2013). The study authors acknowledged that a limitation of this quantitative acceptability was the lack of "qualitative ethnographic work on reasons for refusal of tuberculosis screening, as well as the perceived risks and benefits of screening," especially in high-burden settings (Mitchell 2013). The study authors also argued that programme acceptability was a composite construct. One scoping review collated primarily quantitative studies and systematic reviews to identify community- and individual-level factors that shaped tuberculosis ACF policy. The factors identified were stigma and discrimination, culture, fear, mistrust, and prior knowledge of tuberculosis (Biermann 2019).

To answer Mitchell and colleagues' call for further research (Mitchell 2013), and to elaborate themes noted in Biermann 2019 and identify further themes, we aimed to synthesize evidence from qualitative studies that capture community views of ACF in low- and middle-income countries (LMICs), where the tuberculosis burden is greatest.

### How the intervention might work

Tuberculosis is one of the top 10 causes of death worldwide. Early disease detection and treatment with antibiotics can cure most people, but approximately 1.3 million people die from tuberculosis each year. Tuberculosis overwhelmingly impacts people living in Southeast Asia and Africa, where over 60% of worldwide cases were detected in 2022 (WHO 2023).

The logic of ACF within communities and amongst household contacts of people with tuberculosis is to detect otherwise 'missing cases' that may occur amongst people remote from diagnostic and treatment facilities and those suffering from material hardship (WHO 2021). ACF programmes may also reduce prevalence and prevent onward transmission of tuberculosis within communities (WHO 2021; Wingfield 2019). Finally, many ACF programmes



incorporate some form of contact tracing to identify contacts without tuberculosis disease who could benefit from tuberculosis preventive therapy (WHO 2021).

Mhimbira 2017 reviewed the effectiveness of ACF. Trial evidence showed that tuberculosis programmes probably increased case detection in the shorter term in settings where prevalence was 5% or more, but may have had little or no effect on treatment success across different settings. The impact of ACF on treatment failure or mortality was unclear (Mhimbira 2017).

Our review will not consider the effectiveness of individual components of ACF programmes. We are concerned with community responses to ACF programmes in LMICs, regardless of whether the specific components of these complex interventions are proven effective in clinical trials.

### Why is it important to do this review?

Previous research on ACF for early tuberculosis detection has not considered qualitative studies of community views of tuberculosis programmes, because this evidence was not available. We aimed to synthesize new qualitative ethnographic research on the experience of ACF in LMICs, from the viewpoint of individuals with tuberculosis and their families, community members, and community health workers.

### Potential concerns with active case finding (ACF)

ACF identifies all individuals with symptoms of tuberculosis or chest X-ray findings of tuberculosis (or both) in a target population and ensures that those individuals receive a confirmatory diagnosis through sputum collection and testing. It is almost always a top-down public health approach. ACF is a type of systematic screening approach that could be used to screen high-risk groups that do not spontaneously present to health facilities. High-risk groups that the WHO recommends for screening include urban poor communities, homeless communities, communities in remote or isolated areas, indigenous populations, migrants, refugees, internally displaced persons, and other vulnerable or marginalized groups with limited access to health care (WHO 2021). The WHO also recommends HIV screening as part of tuberculosis screening algorithms (WHO 2021). WHO recommendations for tuberculosis programmes are intended to shape national health policy and its implementation via health systems.

The UK National Screening Committee audits population screening programmes because screening assumes harm, and harm "requires balancing against the potential for benefit and cost-effectiveness" (McCartney 2020). Our review aimed to identify community views of screening to better understand policy in action and the perceived benefit relative to the harm of ACF.

ACF has several potential harms. In many societies, the stigma associated with tuberculosis persists due to its infectiousness and its relationship to poverty, poor housing, and HIV. Communities will consider ACF, and the subsequent management of the information arising from the screening, in the context of stigma (Murray 2013). All ACF programmes introduce the conflicting goals of public health practice and individual or parental informed choice. Where possible, our review considered the information available to targeted individuals and populations to enable informed individual and community consent. ACF programmes also introduce the potential for false positives. Where data allowed, we explored

the unintended consequences for individuals who screen positive but do not have active tuberculosis. A related problem for ACF programmes is providing access to health care for people with symptoms who test negative for tuberculosis (Tulloch 2015).

To date, several innovative ACF programmes using complex, multipronged approaches have been tested in LMICs (Mhimbira 2017). We have started exploring the components of these interventions (Van Wyk 2022). We proposed this review because we wanted to know whether there was any documentation of community views towards ACF programmes over the last 10 years and what themes their synthesis might contribute to WHO recommendations regarding ACF programmes going forward.

## OBJECTIVES

To synthesize community views on tuberculosis active case finding (ACF) programmes in low- and middle-income countries.

## METHODS

### Criteria for considering studies for this review

#### Types of studies

We included studies that used a qualitative study design and data collection methodology, such as structured and unstructured interviews, focus groups, participant observation, and oral histories. In addition, eligible studies used qualitative data analysis methods, such as thematic analysis, framework analysis, or ethnographic analysis. We included mixed-methods studies where it was possible to extract the data collected and analysed using qualitative methods.

We did not include unpublished or grey literature. We included studies regardless of whether they were conducted alongside studies of the effectiveness of ACF. We imposed no language restrictions.

We excluded studies that analysed and reported qualitative or survey data, or both, with summary descriptive statistics. Case studies drawn together according to the methods described above were eligible.

We did not exclude studies based on our assessment of methodological limitations or study quality.

#### Topic of interest

We were interested in any studies related to tuberculosis ACF, which includes the targeted screening of high-risk populations (e.g. whole communities, miners at work, refugees in camps, prisoners in residential institutions, and tuberculosis contacts). We included studies of tuberculosis programmes that invited tuberculosis contacts to facility-based screening services. We excluded studies of programmes that screened people seeking health care at health facilities and high-risk groups at specific care clinics, if these screening interventions were not part of a larger ACF programme in the community. Tuberculosis programmes could be organized through government services or non-governmental organizations (NGOs).

## Participants and populations

We included populations screened via ACF activities. These populations included tuberculosis household contacts, whole communities (including refugee camps), children at school, miners or other workers in the workplace, and people in residential institutions (e.g. prisoners). This review is constrained to the responses of community members (individuals, families, community members, and community health workers) and individuals from other high-risk populations such as miners, refugees, and prisoners where applicable. The views of laboratory staff and tuberculosis programme managers delivering the programmes could be used to triangulate back to the community responses, especially where these individuals themselves have tuberculosis or describe community responses. However, we did not prioritize evidence for the effectiveness or implementation of tuberculosis programmes.

We applied no age restrictions for participation in eligible qualitative studies. Participants in qualitative studies may or may not have had tuberculosis themselves. Populations already situated on a competing care pathway that may include tuberculosis screening (e.g. tuberculosis screening and sputum collection during antenatal care visits, during routine HIV care, or geriatric services) were ineligible.

## Setting

We included studies of tuberculosis ACF conducted in any LMIC setting with programmes in the community. Individuals could be approached directly for screening at work, home, school, or in a residential institution, or they could be approached in the community and invited to a dedicated screening service at a mobile clinic or a health facility.

We defined LMIC according to the World Bank country rankings for 2020. We also aimed to include studies in countries that the WHO considers have a high tuberculosis burden ([Stop TB Partnership 2021](#)).

We included studies that considered ACF of people displaced within LMICs (within and between countries) but excluded studies of refugees and migrants moving from areas of conflict to high-income countries, because we were interested in the experience of ACF programmes in high tuberculosis-burden settings.

## Comorbidities

Participants in qualitative studies could have had symptoms of upper respiratory tract infection or feel healthy, without symptoms. We sought all community views, from people with tuberculosis, people with respiratory symptoms, asymptomatic people who were feeling well, and caregivers or health workers with no apparent health problems.

## Interventions

Active tuberculosis case finding programmes implemented in the community in households, residential institutions, mobile clinics, schools, or workplaces, and dedicated screening services at health facilities (i.e. where individuals are invited for tuberculosis screening specifically). Programmes included health promotion activities to improve uptake of screening services. Active tuberculosis case finding could also be combined with screening for HIV, as tuberculosis screening algorithms in people living with

HIV may differ from tuberculosis screening algorithms used for the general population.

[Table 1](#) provides definitions of ACF and related case-finding terminology. This review aimed to include studies of case-finding interventions that took place in the community.

## Search methods for identification of studies

### Electronic searches

The Cochrane Infectious Diseases Group (CIDG) Information Specialist searched the following databases up to 22 June 2023 (see [Appendix 1](#)).

- MEDLINE Ovid (1946 to 22 June 2023)
- Embase Ovid (1947 to 22 June 2023)
- LILACS (Latin American and Caribbean Health Science Information database; 1982 to 22 June 2023)
- CINAHL (EBSCOhost; from 1982 to 22 June 2023)
- PsychINFO (EBSCO; from 1967 to 22 June 2023)
- Global Index Medicus
- Science Citation Index (Web of Science; from 1900 to 22 June 2023)
- Social Science Citation Index (Web of Science; from 1900 to 22 June 2023)
- Conference Proceedings Citation Index - Science (CPCI-S, from 1990 to 22 June 2023)
- Conference Proceedings Citation Index - Social Sciences & Humanities (CPCI-SSH, from 1990 to 22 June 2023)

We searched for papers published from 2010, because we wanted to capture recent evidence on current tuberculosis screening strategies and diagnostic tests to ensure optimum relevance. We did not impose language restrictions or apply a filter to limit studies to LMICs.

### Searching other resources and grey literature

We consulted with tuberculosis experts to enquire about qualitative studies, and we checked the references of included studies and known systematic reviews to identify additional studies.

### Selection of studies

We conducted and reported this qualitative evidence synthesis according to the ENTREQ (Enhancing transparency in reporting the synthesis of qualitative research) reporting guidelines ([Tong 2012](#)).

We collated records from database searches in EndNote reference management software and removed duplicates and irrelevant titles ([EndNote](#)). Two of three review authors (MT, NM, SvW) independently assessed the abstracts against a priori eligibility criteria developed with PICO (population, intervention, comparison, outcome) and SPIDER (sample, phenomenon of Interest, design, evaluation, research type) elements ([Cooke 2012](#)). We used Covidence software for the title and abstract screen ([Covidence](#)). After we had retrieved the full texts of all the records identified as potentially relevant by at least one review author, two of three review authors (MT, NM, SvW) assessed these papers independently. We resolved any disagreements by discussion or, when required, by involving a third author (SO). We recorded

reasons for excluding ineligible studies in a [Characteristics of excluded studies](#) table.

### Language translation

No language translation was necessary for included studies.

### Sampling of studies

Because we identified many studies that were eligible for inclusion, we decided to purposefully sample studies, as prespecified in our protocol ([Medley 2021](#)). One review author (MT) assessed the included studies for 'thickness' and 'richness' and selected a sample of around 30%. For the purpose of quality assurance, a senior review author (SO) reviewed this sample. Here, 'thickness' refers to the amount of contextual detail provided, and 'richness' refers to the amount of conceptual detail provided ([Noyes 2023](#)). As limited guidance exists on how to assess the level of contextual/conceptual detail in qualitative research, we adopted the following definitions.

- 'Thick' studies had a detailed description of the study setting or context linked to the findings in the review.
- 'Rich' studies showed evidence of higher levels of interpretation, through either explaining, comparing, or contrasting findings; or produced conceptual models and organizing frameworks.

According to our criteria, there were more 'thick' studies than 'rich' studies. As a result, we chose to sample based on thickness, to ensure the broadest and most comprehensive sample for analysis. To further ensure a holistic understanding of the phenomenon, we further sampled 'thin' studies that included a key population of interest. With reference to WHO guidelines, we aimed to identify any study that described the experiences of homeless communities, communities in remote or isolated areas, indigenous populations, migrants, refugees, internally displaced persons, and other vulnerable or marginalized groups with limited access to health care, including children, people with disabilities, and women in patriarchal societies ([WHO 2021](#)). We identified thick studies that investigated children, refugees, migrants, and women in patriarchal societies. However, from the remaining 'thin' studies, we were only able to identify further information relating to children.

### Data extraction

We mapped basic details for eligible studies to create broad categories of study identifiers, including study author, year of publication, study location, intervention type, screening and diagnostic tools used, risk group or target population, scale of the programme and the agencies responsible for implementing them, background prevalence of tuberculosis, study question and rationale, method of data collection, study respondents or participants, method of data analysis, and key study findings.

We also examined whether qualitative researchers were part of the teams designing or implementing the tuberculosis programmes, or were separate from programme delivery. We then explored whether the people evaluating consumer responses were entirely independent of those designing or implementing the screening approach, or whether they were from the same research group and funding source.

### Assessing the methodological limitations of studies

Two of three review authors (NM, MT, SVW) independently assessed methodological limitations for each study using the Evidence for Policy and Practice Information (EPPI) centre tool (as described in [Lester 2019](#)). The tool considers the following domains of qualitative study methods.

- Rigour in sampling
- Rigour in data collection
- Rigour in analysis
- Grounding of data
- Breadth and depth of study findings.

We resolved disagreements by discussion. We reported our assessments in [Table 2](#).

### Data management, analysis, and synthesis

#### Strategy for data synthesis

We employed inductive methods associated with thematic synthesis to develop codes and themes evident in the included studies and to construct synthesis statements for community views of tuberculosis ACF programmes. We produced a conceptual model to illustrate and explain community views of ACF and how the findings are interrelated.

Two review authors (NM, MT) independently identified codes and themes in the data. During discussion of codes and themes, one review author (MT) entered these data into Atlas.ti software ([Atlas.ti 2020](#)). Through discussion, MT and NM considered patterns in the data, or themes, across studies to create summaries of findings and overarching synthesis statements ([Downe 2019](#)). These findings were discussed with the wider review team at regular intervals. Our methods were iterative, with repeated returns to the original studies, coding framework, and themes as understanding developed. A single review author (NM or MT) coded the remaining included studies (i.e. those not identified as 'thick' but that explored key subgroup populations) and entered these data into Atlas.ti.

### Assessing our confidence in the review findings

MT used the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative research) approach to assess our confidence in review findings (subthemes) before sharing and discussing each judgement with the wider review team ([Lewin 2018](#); [Lewin 2019](#)). CERQual assesses confidence in the evidence, based on the following four key components.

- Methodological limitations of included studies: the extent to which there are concerns about the design or conduct of the primary studies that contributed evidence to an individual review finding
- Adequacy of the data contributing to a review finding: an overall determination of the degree of richness and quantity of data supporting a review finding
- Relevance of the included studies to the review question: the extent to which the body of evidence from the primary studies supporting a review finding is applicable to the context (perspective or population, phenomenon of interest, setting) specified in the review question

- Coherence of the review finding: an assessment of how clear and cogent (compelling or well supported) the fit is between the data from the primary studies and a review finding that synthesizes those data

After assessing each of the four components, we made a judgement about the overall confidence in the evidence supporting the review findings. We judged confidence as high, moderate, low, or very low. The final assessment was based on consensus amongst the review authors. All findings started as high confidence but could be downgraded if there were important concerns regarding any of the CERQual components.

### Summary of qualitative findings tables and evidence profiles

We presented summaries of the findings and our assessments of confidence in these findings in [Summary of findings 1](#). We presented detailed descriptions of our confidence assessment in [Table 3](#).

### Review author reflexivity

The review authors have diverse research and clinical experience, including expertise in clinical tuberculosis care, infectious disease research, WHO guideline development, and quantitative and qualitative evidence synthesis. Most review authors also have experience of conducting research in LMICs. Regular team discussions encouraged identification of personal biases and judgements as the synthesis proceeded.

MT has authored a similar qualitative review describing the community views of mass drug administration programmes. Wider sociopolitical influences on acceptability and the weight of benefit versus harms were key findings of the review and may influence her interpretation of the data in this qualitative evidence synthesis. MT

has no prior knowledge of tuberculosis screening or intervention programmes.

NM trained as a historian, which may make her more attuned to the way local history and experience with public health programmes shape community views of tuberculosis case finding and screening. She has authored quantitative systematic reviews but has not written about tuberculosis previously.

SVW has clinical and research experience in high tuberculosis- and HIV-burden communities in South Africa. She is also working on a systematic review on screening tests for active pulmonary tuberculosis in children.

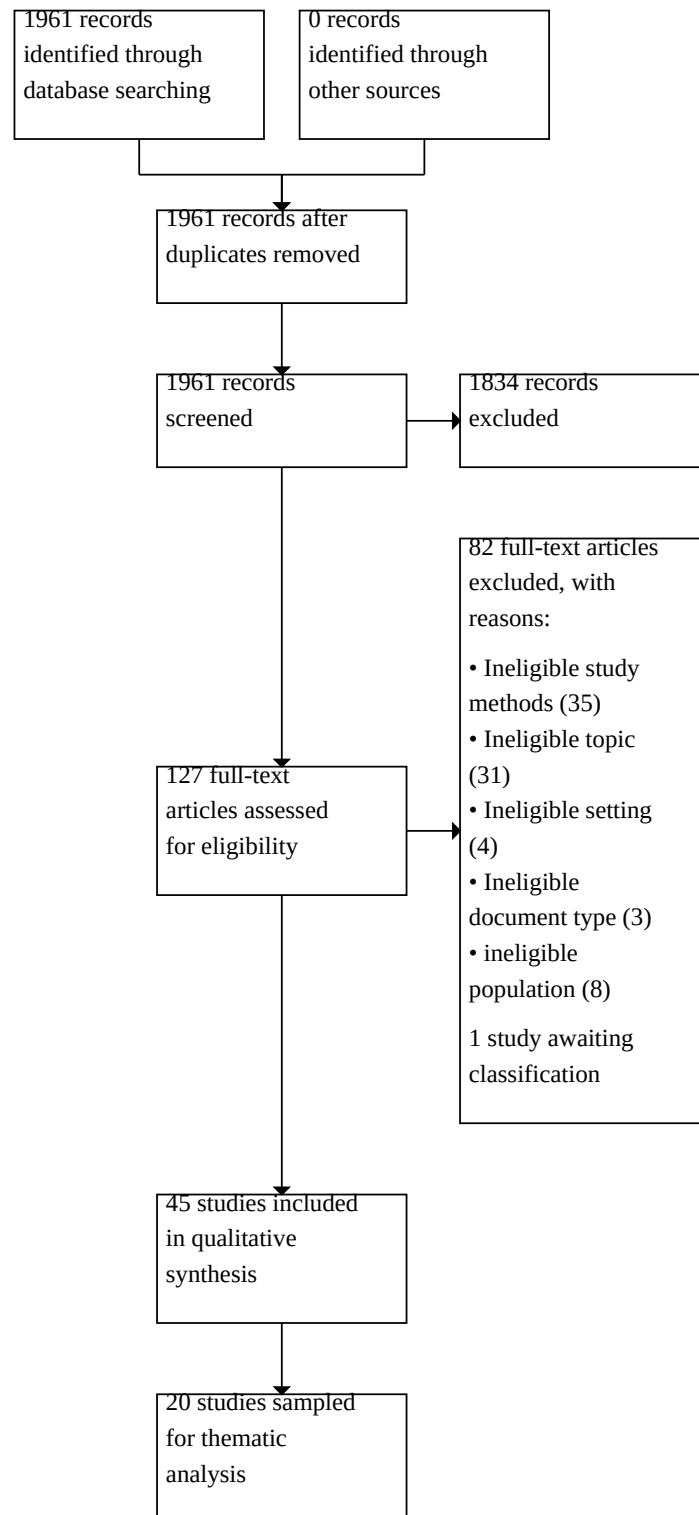
SO has co-authored a similar review describing parents' and practitioners' views of newborn bloodspot screening. Her experience of this work made her sensitive to the possibility of screening pathways and false positive or false negative results affecting experiences of screening. She has no prior knowledge or experience with tuberculosis screening or intervention programmes.

## RESULTS

### Search results

Our search returned 1961 records. After screening the titles and abstracts, we retrieved and reviewed 127 full-text articles. We included 45 studies in the review, and sampled 20. One further study is awaiting classification. We excluded 82 studies during the full-text review. The [Characteristics of excluded studies](#) table provides justifications for the exclusion of studies that readers may assume were eligible. [Figure 1](#) presents the study selection process in a PRISMA diagram.

**Figure 1. PRISMA flow diagram illustrating the study selection process.**





## Description of included studies

A detailed overview of study characteristics can be found in the [Characteristics of included studies](#) table.

The studies were conducted in a diverse range of LMIC contexts. Most included studies (26) were from Africa ([Ajuda 2022](#); [Armstrong-Hough 2018a](#); [Ayakaka 2017](#); [Buregyeya 2022](#); [Chetty-Makkan 2021](#); [Der 2022](#); [De Santo 2023](#); [Emerson 2019](#); [Emerson 2020](#); [Ereso 2020](#); [Hirsch-Moverman 2021](#); [Isangula 2023](#); [Kerrigan 2017](#); [Khaji 2021](#); [Marangu 2017](#); [Medina-Marino 2021](#); [Monk 2018](#); [Mwansa-Kambafwile 2013](#); [Ndakidemi 2019](#); [Onazi 2020](#); [Salazar-Austin 2021](#); [Sathar 2020](#); [Tesfaye 2020](#); [Tulloch 2015](#); [Vasiliu 2022](#); [White 2018](#)). Seventeen studies were conducted in South-East Asia ([Akingbade 2023](#); [Biermann 2021a](#); [Biermann 2021b](#); [Chawla 2021](#); [Dey 2019](#); [Garg 2020](#); [Goroh 2023](#); [Khan 2019](#); [Lorent 2015](#); [McAllister 2017](#); [Ngamvithayapong-Yanai 2019](#); [Phyo 2020](#); [Roxas 2023](#); [Shamanewadi 2020](#); [Singh 2017](#); [Thu 2012](#); [Tuot 2019](#)). The WHO regions of the Eastern Mediterranean and the Americas are under-represented, with just one study conducted in Iran ([Moosazadeh 2018](#)), and one in Peru ([Chiang 2015](#)).

Most studies (26) explored a home/community-based model of contact tracing ([Ajuda 2022](#); [Armstrong-Hough 2018a](#); [Ayakaka 2017](#); [Biermann 2021a](#); [Biermann 2021b](#); [Buregyeya 2022](#); [Chawla 2021](#); [Chetty-Makkan 2021](#); [Chiang 2015](#); [De Santo 2023](#); [Dey 2019](#); [Ereso 2020](#); [Goroh 2023](#); [Hirsch-Moverman 2021](#); [Kerrigan 2017](#); [McAllister 2017](#); [Medina-Marino 2021](#); [Mwansa-Kambafwile 2013](#); [Onazi 2020](#); [Phyo 2020](#); [Roxas 2023](#); [Sathar 2020](#); [Singh 2017](#); [Tesfaye 2020](#); [Thu 2012](#); [White 2018](#)). Seventeen studies evaluated home/community-based indiscriminate symptom screening ([Akingbade 2023](#); [Biermann 2021b](#); [Buregyeya 2022](#); [Dey 2019](#); [Ereso 2020](#); [Garg 2020](#); [Kerrigan 2017](#); [Khaji 2021](#); [Khan 2019](#); [Lorent 2015](#); [McAllister 2017](#); [Monk 2018](#); [Moosazadeh 2018](#); [Shamanewadi 2020](#); [Singh 2017](#); [Thu 2012](#); [Tulloch 2015](#)). Screening approaches that took place in health facilities were less frequent, with two studies exploring symptom screening ([Kerrigan 2017](#); [Tulloch 2015](#)), and six exploring contact tracing ([Ereso 2020](#); [Isangula 2023](#); [Marangu 2017](#); [Ndakidemi 2019](#); [Salazar-Austin 2021](#); [Vasiliu 2022](#)). One study used a seed-and-recruit model, whereby people with tuberculosis were encouraged to identify other people who may have tuberculosis in their community in a snowball manner ([Tuot 2019](#)). Five studies used a combination of approaches ([Buregyeya 2022](#); [Dey 2019](#); [Kerrigan 2017](#); [McAllister 2017](#); [Tulloch 2015](#)).

Most studies (33) included people with confirmed tuberculosis or people with presumptive tuberculosis ([Ajuda 2022](#); [Armstrong-Hough 2018a](#); [Ayakaka 2017](#); [Biermann 2021a](#); [Biermann 2021b](#); [Buregyeya 2022](#); [Chetty-Makkan 2021](#); [Chiang 2015](#); [De Santo 2023](#); [Dey 2019](#); [Emerson 2020](#); [Ereso 2020](#); [Garg 2020](#); [Goroh 2023](#); [Hirsch-Moverman 2021](#); [Isangula 2023](#); [Kerrigan 2017](#); [Lorent 2015](#); [Marangu 2017](#); [McAllister 2017](#); [Medina-Marino 2021](#); [Mwansa-Kambafwile 2013](#); [Ngamvithayapong-Yanai 2019](#); [Phyo 2020](#); [Roxas 2023](#); [Salazar-Austin 2021](#); [Shamanewadi 2020](#); [Singh 2017](#); [Tesfaye 2020](#); [Thu 2012](#); [Tulloch 2015](#); [Tuot 2019](#); [Vasiliu 2022](#)). In addition, 38 studies included community or government health workers ([Ajuda 2022](#); [Akingbade 2023](#); [Armstrong-Hough 2018a](#); [Ayakaka 2017](#); [Biermann 2021a](#); [Biermann 2021b](#); [Buregyeya 2022](#); [Chawla 2021](#); [Chetty-Makkan 2021](#); [Chiang 2015](#); [Der 2022](#); [De Santo 2023](#); [Dey 2019](#); [Emerson 2019](#); [Ereso 2020](#); [Garg 2020](#); [Goroh 2023](#); [Hirsch-Moverman 2021](#); [Isangula 2023](#); [Kerrigan 2017](#); [Khaji 2021](#); [Khan 2019](#); [Lorent 2015](#); [McAllister 2017](#); [Medina-](#)

[Marino 2021](#); [Monk 2018](#); [Moosazadeh 2018](#); [Ndakidemi 2019](#); [Onazi 2020](#); [Phyo 2020](#); [Roxas 2023](#); [Salazar-Austin 2021](#); [Sathar 2020](#); [Singh 2017](#); [Tulloch 2015](#); [Tuot 2019](#); [Vasiliu 2022](#); [White 2018](#)), 11 included tuberculosis programme leaders or staff ([Biermann 2021b](#); [Buregyeya 2022](#); [Chawla 2021](#); [Ereso 2020](#); [Khan 2019](#); [Medina-Marino 2021](#); [Monk 2018](#); [Moosazadeh 2018](#); [Onazi 2020](#); [Tesfaye 2020](#); [Tuot 2019](#)), three included community leaders ([Buregyeya 2022](#); [Khaji 2021](#); [Vasiliu 2022](#)), three included caregivers of children identified by contact tracing ([Emerson 2020](#); [Goroh 2023](#); [Singh 2017](#)), two included government provincial authorities ([Moosazadeh 2018](#); [Onazi 2020](#)), and one included policymakers ([Isangula 2023](#)).

Due to the high volume of studies retrieved, we chose a sampling approach in line with our protocol methods ([Medley 2021](#)). Therefore, 15 studies assessed as 'thick' were subsequently included in thematic analysis along with the five 'thin' studies conducted in key populations of interest (children).

## Assessment of methodological limitations

[Table 2](#) presents an overview of the assessment.

For steps taken to increase rigour in sampling: seven studies made a 'fairly thorough attempt' ([Ayakaka 2017](#); [Biermann 2021b](#); [De Santo 2023](#); [Isangula 2023](#); [Medina-Marino 2021](#); [Ngamvithayapong-Yanai 2019](#); [Tulloch 2015](#)), eight studies 'took several steps' ([Biermann 2021a](#); [Chiang 2015](#); [Lorent 2015](#); [Marangu 2017](#); [Ndakidemi 2019](#); [Onazi 2020](#); [Shamanewadi 2020](#); [Singh 2017](#)), four studies 'took a few steps' ([Buregyeya 2022](#); [Chawla 2021](#); [Emerson 2020](#); [Hirsch-Moverman 2021](#)), and one study provided insufficient information to make a judgement ([Salazar-Austin 2021](#)).

For steps taken to increase rigour in the data collected: six studies made a 'fairly thorough attempt' ([Ayakaka 2017](#); [Biermann 2021a](#); [Lorent 2015](#); [Ngamvithayapong-Yanai 2019](#); [Onazi 2020](#); [Salazar-Austin 2021](#)), eleven studies 'took several steps' ([Biermann 2021b](#); [Chiang 2015](#); [De Santo 2023](#); [Emerson 2020](#); [Isangula 2023](#); [Marangu 2017](#); [Medina-Marino 2021](#); [Ndakidemi 2019](#); [Shamanewadi 2020](#); [Singh 2017](#); [Tulloch 2015](#)), two studies 'took a few steps' ([Buregyeya 2022](#); [Chawla 2021](#)), and one study provided insufficient information to make a judgement ([Hirsch-Moverman 2021](#)).

For steps taken to increase rigour in the analysis of data: seven studies made a 'fairly thorough attempt' ([Ayakaka 2017](#); [Biermann 2021a](#); [Chiang 2015](#); [Ngamvithayapong-Yanai 2019](#); [Onazi 2020](#); [Salazar-Austin 2021](#); [Tulloch 2015](#)), nine studies 'took several steps' ([Biermann 2021b](#); [De Santo 2023](#); [Isangula 2023](#); [Lorent 2015](#); [Marangu 2017](#); [Medina-Marino 2021](#); [Ndakidemi 2019](#); [Shamanewadi 2020](#); [Singh 2017](#)), two studies 'took a few steps' ([Emerson 2020](#); [Hirsch-Moverman 2021](#)), and two studies provided insufficient information to make a judgement ([Buregyeya 2022](#); [Chawla 2021](#)).

For grounding of findings in the data: 13 studies made a 'fairly thorough attempt' ([Ayakaka 2017](#); [Biermann 2021a](#); [Biermann 2021b](#); [Chiang 2015](#); [De Santo 2023](#); [Isangula 2023](#); [Lorent 2015](#); [Medina-Marino 2021](#); [Ngamvithayapong-Yanai 2019](#); [Onazi 2020](#); [Salazar-Austin 2021](#); [Shamanewadi 2020](#); [Tulloch 2015](#)), four studies 'took several steps' ([Buregyeya 2022](#); [Chawla 2021](#); [Ndakidemi 2019](#); [Singh 2017](#)), and three studies 'took a few steps' ([Emerson 2020](#); [Hirsch-Moverman 2021](#); [Marangu 2017](#)).

Finally, for breadth and depth of data: six studies made a 'fairly thorough attempt' (Ayakaka 2017; De Santo 2023; Lorent 2015; Ngamvithayapong-Yanai 2019; Onazi 2020; Tulloch 2015), eleven studies 'took several steps' (Biermann 2021a; Biermann 2021b; Buregyeya 2022; Chawla 2021; Chiang 2015; Isangula 2023; Marangu 2017; Medina-Marino 2021; Salazar-Austin 2021; Shamanewadi 2020; Singh 2017), and three studies 'took a few steps' (Emerson 2020; Hirsch-Moverman 2021; Ndakidemi 2019).

## Synthesis findings

Synthesis findings are constructed from a purposeful sample of 15 'thick' studies and five studies regarded as 'thin' but that included key subgroups. Table 4 presents an overview of the studies included in the thematic analysis.

### Theme 1: ACF improves access to diagnosis for many, but does little to help communities on the edge.

**Synthesis statement:** Tuberculosis ACF and contact tracing improve access to health services for those with worse health and fewer resources. ACF helps to find this population, exposed to deprived living conditions, but is not sensitive to additional dimensions of their plight and out-of-pocket costs necessary to continue care. Tuberculosis is associated with material deprivation, meaning some people view secure socioeconomic status as protective against disease. Finally, migration and difficult geography further reduce communities' access to ACF.

#### **Finding 1.1: ACF improves access for those missed with previous case finding strategies and protects communities from transmission (High confidence).**

Tuberculosis ACF and contact tracing identified at least two different populations that were previously missed by surveillance programmes: people who were well, or without symptoms that they considered serious (South-East Asia: Lorent 2015; Ngamvithayapong-Yanai 2019), and people who were sick but who had fewer resources and lived further away from health facilities (Africa: Ayakaka 2017; Emerson 2020; Tulloch 2015; South-East Asia: Lorent 2015; Shamanewadi 2020). ACF located both populations by offering community-based services.

One woman living with tuberculosis in Ethiopia said she was unable to go to "far places" due to lack of money, but that through ACF she was able to access care, "here in my community, without going to the health centre" (Tulloch 2015). Another person in Nepal expressed their satisfaction with the programme:

"It (ACF) is a happy thing for us. If she (the volunteer) hadn't come to our home, till now – either because of my stubbornness or I would have stayed idealistic assuming nothing has happened to me – my condition would have worsened and I would have been unable to go to health post" (Biermann 2021a).

An additional role of ACF programmes is the identification of people who could benefit from preventive therapy through contact tracing. In one study in Lesotho, community members appreciated the ability to protect their children from a serious illness. They also recognized preventing future cases would help the entire community through reducing onward transmission (Hirsch-Moverman 2021). However, in another study conducted in India, health workers believed people were "less aware of the necessity of [preventive therapy] and were more reluctant to participate

in latent TB screening" (Chawla 2021). The difference in these viewpoints may be due to the level of information provided to communities.

#### **Finding 1.2: Many communities suffer from material deprivation, and this hinders their ability to engage with ACF (High confidence).**

Although community-based tuberculosis screening aims to address deprivation as a known barrier to successful disease management, lack of resources hinders tuberculosis care. Respondents across several settings described a damaging lack of the material resources considered necessary in a society, such as secure food, adequate physical infrastructure, and an opportunity to earn a wage (South-East Asia: Chawla 2021; Lorent 2015; Ngamvithayapong-Yanai 2019; Shamanewadi 2020; the Americas: Chiang 2015; Africa: Tulloch 2015). For these community members, more immediate stresses may take priority over engaging with ACF, as explained by one community health worker in Cambodia:

"The places that we work, the family situation is bad: there is poverty, poor knowledge, too many children. When we ask them, they said, 'Oh, I don't care. I can't even find rice to fill a pot.'" (Lorent 2015).

One woman living with tuberculosis in Ethiopia explained that to secure tuberculosis care outside the community-based project, her family "would have to sell their cows" (Tulloch 2015).

Community members may also prioritize earning a living over tuberculosis services. The authors of one study from India described this dilemma:

"...when the family is dependent on a person's earnings, it is not feasible for that person to lose his earnings for the day. At times, patients might be the breadwinner of the family, and this compels them to continue working irrespective of their health conditions" (Chawla 2021).

Conversely, community members who fare better economically may feel less vulnerable to disease. Some viewed their social class, class-specific behaviours, and better nutrition as protective against tuberculosis and therefore refused to be screened, as one nurse in Peru affirmed:

"Middle-class people do not believe that their children can get tuberculosis. They say, 'How can my children get tuberculosis if they eat well?'" (Chiang 2015).

#### **Finding 1.3: Out-of-pocket costs for travel, treatment, and nutrition persist even in the context of community tuberculosis programmes. Care initiated in the community cannot always be completed in clinics (High confidence).**

In addition to existing financial challenges, ACF and contact tracing trigger out-of-pocket costs related to travel, diagnosis and treatment, and adequate nutrition (South-East Asia: Biermann 2021a; Chawla 2021; Lorent 2015; Shamanewadi 2020; Africa: Onazi 2020; Tulloch 2015) These costs constitute serious barriers to accessing tuberculosis services even in the context of community-based outreach. One woman living with tuberculosis in an ACF community in South India recounted her experience:

"I was told that the chest x-ray will be done free of cost, but when I went get chest x-ray done in a medical college, I had to pay for the



chest x-ray, and I had to spend Rs 120 for auto and also missed my daily wage money on that day" (Shamanewadi 2020).

Alongside costs for travel and tests, people with tuberculosis need money for better nutrition during treatment, as one woman living with tuberculosis in Ethiopia explained:

"The medicine alone makes you feel bad [side effects] unless you take food. They informed me of this, but I told them that I am not able to get enough food" (Tulloch 2015).

**Finding 1.4: Migrant and unstable populations, difficult geography, and environmental pollution further compromise some marginalized communities (High confidence).**

Food scarcity was just one feature of the material deprivation illustrated in the included studies. Difficult geography and migrant workers characterized the communities where ACF and contact tracing programmes operated. Community health workers described their places of work as "dangerous," "slums", or "hard to reach areas" requiring difficult travel on "bad roads" (the Americas: Chiang 2015; Africa: Onazi 2020).

Residents of marginalized settings were also forced to travel for work, making it hard for community health workers to find and monitor them (South-East Asia: Chawla 2021; Lorent 2015; Africa: Ayakaka 2017). One community health worker in Uganda explained:

"...you can never reach the [household] if [you are] directed without a phone. ...You cannot go and just start asking; some [patients] are not known in their communities" (Ayakaka 2017).

This also rang true for another community health worker in Cambodia:

"The majority of the people who live in the villages covered by my health centre are migrants from other provinces or other places, and don't have permanent homes" (Lorent 2015).

There are further challenges when migrant populations move into ACF areas and speak unfamiliar dialects or languages, and health workers report needing assistance to help communicate with these populations (Ayakaka 2017).

**Theme 2: People are afraid of diagnosis and its impact.**

**Synthesis statement:** Some community members find screening frightening. It exposes them to discrimination along distinct pathways (isolation from their families and wider community, lost employment and housing). HIV stigma compounds tuberculosis stigma and heightens vulnerability to discrimination along these same pathways. Consequently, community members may refuse to participate in screening, contact tracing, and treatment. In addition, people with tuberculosis reported their emotional turmoil upon diagnosis, as they anticipated intense treatment regimens and the prospect of living with a serious illness.

**Finding 2.1: Community members are afraid of the breakdown of their relationships, security, and ability to work due to stigma (High confidence).**

Tuberculosis is highly stigmatized in communities, so much so that any association with the disease, including being selected for screening, can impact relationships and status in the community. Being diagnosed further leads to breakdowns in multiple aspects

of a person's life, both material and emotional. People with tuberculosis spoke of being ostracized from their communities and the subject of ridicule and discrimination (Africa: Ayakaka 2017; Buregyeya 2022; De Santo 2023; Tulloch 2015; South-East Asia: Biermann 2021a; Biermann 2021b; Chawla 2021; Ngamvithayapong-Yanai 2019; Shamanewadi 2020; the Americas: Chiang 2015;). One man from Uganda described his fears:

"Even right now I am taking medicine but I did not tell people that I have it...because I fear that people will start isolating me and they will start talking about me and they will spread the information in the community that I have TB and people will discriminate me...Because of this, I did not disclose to my family members. None of my family members knows that I have TB, they might also discriminate me." (Buregyeya 2022).

Some women feared their husbands would become aggressive and possibly divorce them, leaving them homeless (Africa: Buregyeya 2022; South-East Asia: Chawla 2021). Similarly, landlords reportedly evict tenants on hearing the diagnosis (Chawla 2021). Stigma also impacts a person's livelihood; some people with tuberculosis are dismissed from their jobs, lose clients, or are ignored by their colleagues and managers (South-East Asia: Biermann 2021b; Chawla 2021; Ngamvithayapong-Yanai 2019).

Community members closely aligned their fear of the tuberculosis label with the possibility of being labelled with HIV, which further increased their anxiety around participating in ACF (Africa: Ayakaka 2017; De Santo 2023; Onazi 2020). One community health worker in Uganda explained:

"They are quite hostile. Like if I want to talk to them, they'll ask 'What I'm looking for?' that 'Am I praying for my generation to have TB?' We approached them well, but they are very hostile...They even call me 'Mama HIV' because they know that I talk and play with people who are losing weight. They discriminate a lot" (Onazi 2020).

In summary, the diagnosis of tuberculosis can have negative long-term (or permanent) impacts, so many people choose to hide their diagnosis and isolate themselves, which could impact their ability to access appropriate treatment.

**Finding 2.2: Community members avoid diagnosis to protect themselves from stigma (High confidence).**

During screening interventions, people may refuse to allow health workers entry to their homes or deny that they have any symptoms. Further, when diagnosed, people with tuberculosis may purposely give false contact information to avoid being followed up for treatment and to prevent contact tracing, which would alert close family members and friends (Africa: Ayakaka 2017; Buregyeya 2022; Onazi 2020; South-East Asia: Biermann 2021a; Biermann 2021b; Chawla 2021; Shamanewadi 2020). According to one study from Uganda:

"LHWs [lay health workers, another name for community health workers] also reported avoidant behaviors among contacts, including turning LHWs away after arrival at a home for a scheduled visit and providing misleading answers to LHWs questions about TB symptoms that hinder successful identification of symptomatic contacts. LHWs attributed this elusiveness to denial, stigma, and/or a fear of contracting TB" (Ayakaka 2017).

Some people prefer ACF services as they enable a private diagnosis in the persons' own home (Africa: [De Santo 2023](#); [Medina-Marino 2021](#)). However, the need for follow-up diagnoses in health facilities, together with other logistical aspects of the delivery, mean confidentiality is still lacking in many places. Community members expressed anxiety over the numerous screening methods that allowed them to be identified, including company vehicles used for door-to-door screening, queues in community health centres, community health workers who belong to the same community, and being asked to take sputum samples outside (Africa: [Ayakaka 2017](#); [Buregyeya 2022](#); [De Santo 2023](#); [Medina-Marino 2021](#); [Onazi 2020](#); South-East Asia: [Chawla 2021](#)).

One tuberculosis health visitor in Karnataka (India) indicated:

"Some people ask us not to wear ID and if someone asks us then we tell we are the guests. These 2 things they restrict. Sometimes if the patient lives on the 2nd floor, then the patient comes down to meet us. In such cases, we ask the patient to come to the hospital" ([Chawla 2021](#)).

Caregivers of children in Lesotho identified for preventive therapy through contact tracing reported being less afraid of stigma, as they were aware it is for prevention not cure:

"It does not bring stigma mostly because it prevents TB so yah I didn't mind at all" ([Hirsch-Moverman 2021](#)).

**Finding 2.3: Community members fear they may be unable to cope with illness and its treatment regimen (High confidence).**

In addition to the stigma attached to tuberculosis, being diagnosed with a serious illness is a frightening prospect. One woman in Ethiopia believed tuberculosis to be a death sentence:

"I was very depressed. I thought I was dying. Since I have children I was thinking of them" ([Tulloch 2015](#)).

It is important that communities receive appropriate information and support upon diagnosis. However, community members' reactions may also be attributable to factors other than insufficient education. In areas where tuberculosis burden is high, or areas with a prolonged exposure to disease, this fear may well be informed by indirect lived experience, caring for and witnessing others' decline. For example, one woman from Thailand explained that she chose not to participate in ACF due to the fear of diagnosis:

"My dad had TB when I was at elementary school. I did not have a chest X-ray at my school. I cannot get over if the result shows I have TB. I dare not...my dad had (TB). I just wait until I have symptoms. I'm afraid I can't cope" ([Ngamvithayapong-Yanai 2019](#)).

Community members in multiple settings expressed fear of the side effects of antitubercular drugs, and described the lengths they go to avoid treatment (South-East Asia: [Chawla 2021](#); [Lorent 2015](#)). One person living with tuberculosis in Cambodia described the dramatic side effects they experienced:

"When I took the drugs I felt pain in my extremities. My arms and feet felt like crabs' legs being broken until the drug was stopped. Then I felt better" ([Lorent 2015](#)).

In India, some people avoided mentioning their children during contact tracing, and a mother argued that she preferred "to keep

the child away from the patient" rather than submit the child to six months of medication ([Singh 2017](#)).

**Theme 3: Screening is undermined by weak health infrastructure.**

**Synthesis statement:** In many settings, a lack of resources results in weak services in competition with other disease control programmes. In this context of low investment, people face repeated tests and clinic visits, wasted time, and fraught social interaction with health providers. ACF can create expectations for follow-up health care that it cannot deliver. Finally, community education improves awareness of tuberculosis in some settings, but a lack of full information impacts community members, parents, and health workers, and sometimes leads to harm for children.

**Finding 3.1: Lack of investment has resulted in a weak and sparse tuberculosis infrastructure in competition with other disease campaigns (Moderate confidence).**

Community members in diverse settings described tuberculosis care as a skeleton service in competition with ongoing provision for other diseases (Africa: [Ayakaka 2017](#); [Buregyeya 2022](#); [Onazi 2020](#); South-East Asia: [Chawla 2021](#); the Americas: [Chiang 2015](#)). For example, in Ethiopia, programme staff reported a lack of basic infrastructure for processing diagnostic tests:

"Sometimes I've sent someone here to go to the clinic for test, but when he got there, there was no light to run the test...So if there could be a lab where there is a standby generator, they can always do the test. Then they will be happy to come for test" ([Onazi 2020](#)).

Few staff are responsible for providing all clinical care, including counselling. A health worker in Uganda described the limitations of her job:

"You want to pass on [information] but...we have limited staff...For the HIV people..., they have their counsellors..., but it is unfortunate that [in] TB we don't have specific counsellors..., so you find you are the one dispensing the TB medicine and you are also the one health-educating..., so [you] find there [are] many patients to talk to and therefore not enough time is spent on each patient" ([Ayakaka 2017](#)).

Alongside low investment in infrastructure and staff, we found evidence that tuberculosis programmes competed for resources with other public health priorities (the Americas: [Chiang 2015](#); South-East Asia: [Shamanewadi 2020](#)). One programme administrator in Peru described the issue:

"there is a lot of work and not just for TB...I ask for information from the health center, and the health center responds that the person in charge of TB has gone out to work on other campaigns... vaccines... dengue..." ([Chiang 2015](#)).

**Finding 3.2: Lack of investment makes follow-up care difficult. People face repeated tests and visits, wasted time, and fractious interactions with health providers (Moderate confidence).**

Lack of investment has led to difficult follow-up care across many settings. Community members in multiple settings reported repeated tests and visits, and experienced frustration and disappointment (Africa: [Ayakaka 2017](#); [Buregyeya 2022](#); [Emerson 2020](#); [Onazi 2020](#); South-East Asia: [Biermann 2021b](#); [Chawla 2021](#);

Lorent 2015; the Americas: Chiang 2015). In Peru, one mother reported:

"To date, the physician still has not examined my daughter, and... every time I go to speak with her, I am told that she does not have time, that she has too many patients to see, that [NTP nurses and nursing technicians] will see my daughter in the afternoon..." (Chiang 2015).

Care for children in Tanzania was similar. One grandmother reported:

"I decided to bring her here, although there are a lot of procedures, and it is time-consuming; that is why others give up. It was May. I remember I was going to court for my late daughter's will. But I also managed to attend clinics for my child. So from June we started coming here, until October when she was tested and started medication" (Emerson 2020).

Community members reported wasted time in Cambodia (Lorent 2015), and parents and health providers in Peru described how people were treated by the health system with "the slang term *pelotear*—which means 'to throw around like a ball'" (Chiang 2015).

As a result of this rushed care, some community members experienced fraught interactions with health staff (South-East Asia: Lorent 2015; Africa: Onazi 2020). One community health worker in Nigeria observed:

"Treatment centers are short-staffed... To attend to one patient takes about 30 minutes. This makes the work to be cumbersome for them and it makes them be irritable at times... Because of this that they are sometimes hostile to people" (Onazi 2020).

**Finding 3.3: People with tuberculosis or other conditions who attend screening programmes expect follow-up health care, which they may or may not receive (High confidence).**

In rural areas, screening provides engagement with health services that are otherwise unavailable. As a result, tuberculosis screening services bring hope for diagnosis and treatment amongst individuals sick with a range of diseases, not just tuberculosis. Researchers in Ethiopia recognized expectations as an unintended consequence of tuberculosis case finding programmes and expressed concern that most people identified in their programme were sick with conditions like asthma or chronic obstructive pulmonary disease (Tulloch 2015). One woman from the same study expressed her disappointment:

"I feel much sorrow. I gave them my sputum and they said I was negative but still I feel pain inside, I don't eat, I have become very thin, therefore I am not happy about the result" (Tulloch 2015).

For people diagnosed with tuberculosis, care initiated in the community via ACF programmes could not always be completed in clinics, for the very same reasons that case finding programmes moved out of clinics in the first place (i.e. to improve access to care for those with fewer resources and higher vulnerability; Lorent 2015). One person living with tuberculosis in Cambodia argued:

"They should provide drugs at home one time a week or a month because at the village, a lot of poor people are waiting for help because they are poor. They lack transportation to reach the health centre" (Lorent 2015).

**Finding 3.4: Community education improves awareness of tuberculosis in some settings, but lack of full information impacts community members, parents, and health workers, and sometimes leads to harm for children (High confidence).**

The evidence shows that community education improves awareness of tuberculosis in some settings (Africa: Buregyeya 2022; Emerson 2020; Hirsch-Moverman 2021; Tulloch 2015). At the same time, communities expressed frustration with the lack of information provided (Africa: Ayakaka 2017; Buregyeya 2022; Hirsch-Moverman 2021; Tulloch 2015; South-East Asia: Lorent 2015; Singh 2017). One man from Cambodia described his testing experience:

"They asked to take my sputum. I was wondering what are they taking it for? They asked for sputum but did not tell me what would happen to me. Then they told me that I was ok. They did not tell me whether I had small or big TB. They did not speak out" (Lorent 2015).

Occasionally, lack of appropriate information leads to harm. A mother living with tuberculosis expressed dismay that nobody had answered her questions:

"Neither he [DOT provider] nor madam [TB laboratory technician] told us this. I had even asked them how to protect my child from the infection because at that time he used to even drink my milk. But since they did not tell anything, I stopped breastfeeding the child" (Singh 2017).

A preschool worker in Thailand also illustrated critical information needs for parents:

"The best way is to have a doctor in a meeting with parents and explain to them about the need for TB screening in children who contract TB. Doctors should make parents understand TB and accept to live with children with TB. Parents should not shun children with TB and withdraw their children from school" (Ngamvithayapong-Yanai 2019).

Community health workers and tuberculosis staff also struggled with incomplete information regarding the screening and clinical care of children (Africa: Ndakidemi 2019; South-East Asia: Singh 2017; the Americas: Chiang 2015). Tuberculosis staff in Tanzania confirmed "It is not easy to recognize the symptoms. It is also difficult to get sputum from a child" (Ndakidemi 2019).

**Theme 4: Health workers are an undervalued but important part of ACF.**

**Synthesis statement:** ACF can feel difficult for health workers in the context of a poorly resourced health system and with people who may not wish to be identified. In addition, the evidence suggests health workers are poorly protected against tuberculosis and fear they or their families might become infected. However, they appear to be central to programme success, as the humanity they offer often acts as a driving force for retaining people with tuberculosis in care.

**Finding 4.1: Health workers are undervalued and take on difficult work (Moderate confidence).**

Competition for resources and lack of investment has led to an undervalued workforce in many settings around the world. Community health workers described difficult work that

sometimes felt meaningless or degrading (Africa: [Buregyeya 2022](#); [Onazi 2020](#); South-East Asia: [Lorent 2015](#)). One community health worker in Cambodia remarked:

"Yes, the first day I considered returning home... People were busy playing cards, saying 'yes, so why did you come here?' It was absolutely meaningless" ([Lorent 2015](#)).

In Nigeria, people agreed that tuberculosis work was most suited those who were willing to perform "mercy work" or "sacrificial work" for religious or personal reasons ([Onazi 2020](#)).

Health workers in Kenya also reported feeling unsafe when reaching out to particularly high-risk individuals:

"We risk our lives, remember we go to areas where people take drugs, those people take cocaine, ...some-one can even rape you, and even these home visits we do are very dangerous, ...you will enter there but you find a room smelling, someone maybe is smoking and the room is closed and there are no windows and you remember TB is air bone so we just survive by God's mercy" ([Buregyeya 2022](#)).

We found evidence that some health workers in Uganda try to reduce their risk of infection by limiting the amount of time they spend with people who have tuberculosis:

"It depends on how long you want to have a discussion with this patient in a closed room. I am not saying it is wrong to have discussions..., but you have to decrease the contact time with the patient, you have to take [only] the vital information" ([Ayakaka 2017](#)).

Unfortunately, this approach may reinforce the frustrations of the community regarding lack of information.

***Finding 4.2: Often the compassion of health workers and their ability to go above and beyond their job is what retains people with tuberculosis in appropriate care (Moderate confidence).***

For some individuals, the decision to access tuberculosis services is influenced by the interpersonal skills of the government and community health workers. Health workers described the compassion, time, and effort required to gain community trust (South-East Asia: [Biermann 2021a](#); [Biermann 2021b](#); [Lorent 2015](#); Africa: [De Santo 2023](#); [Buregyeya 2022](#)). The authors of one study from Nepal explained:

"Sometimes the community health workers would have lunch or tea with prospective ACF participants to "motivate them, befriend them (...) calm them, make them happy"" ([Biermann 2021a](#)).

The evidence suggests that health workers may also go above and beyond their job by visiting certain community members outside their working hours to ensure they are included, as illustrated by one male tuberculosis worker in Cambodia:

"Overall, construction workers never have free time during the day, so we spare our time to meet with them on Sunday at 4 or 5 pm, outside of work hours we go visit their house" ([Lorent 2015](#)).

This effort is welcomed by the community, who otherwise might not have engaged with ACF. One woman living with tuberculosis in Cambodia explained:

"Encouragement (by health workers) is not usual for the poor. But also for us poor, a respectful and courteous approach (by health workers) can do miracles" ([Lorent 2015](#)).

**Theme 5: Local leadership is necessary but not sufficient for ensuring appropriate programmes.**

**Synthesis statement:** Local leadership creates an intrinsic motivation for communities to value health services. However, local leadership cannot guarantee the success of ACF and contact tracing programmes. It is important to balance professional authority with local knowledge and rapport.

***Finding 5.1: Local leadership creates an intrinsic motivation for communities to value ACF and contact tracing (High confidence)***

Community members and health workers alike want tuberculosis programmes to follow local hierarchies of power to gain community acceptance (Africa: [Ayakaka 2017](#); [Buregyeya 2022](#); [Onazi 2020](#); South-East Asia: [Lorent 2015](#); [Shamanewadi 2020](#)). One community health worker in Uganda advised:

"Let's use the chairman [village leaders], let's use the village health teams; they are more paramount than any health worker" ([Ayakaka 2017](#)).

Similarly, one community linkage facilitator in Uganda stated:

"We had tried them ourselves and we had failed to get them. But when we went through their leader and the organization contacted them they came out and we got a good number of them so bringing these people [refugee leaders] on board is good" ([Buregyeya 2022](#)).

However, sometimes community leaders may expect payment for endorsing or enabling ACF activities, as explained by one community health worker in Nigeria:

"We went to the Baale [chief]... he was saying that "Madam, you can't come and tell us that you don't have something. You have to bring money." So we were trying to explain to them that nothing has come out from it- that we're just doing it by ourselves. But they didn't believe us... To them, it's as if we are just playing games- that the government has sponsored us and given us money that we refuse to give out" ([Onazi 2020](#)).

***Finding 5.2: ACF and contact tracing programmes need to balance local rapport with knowledge and professionalism (High confidence).***

On one hand, community members are sometimes more comfortable with familiar faces conducting screening. In India, a community member reported:

"I am very comfortable with ASHA [Accredited Social Health Activist] worker because I know her from before as she is from our area only" ([Shamanewadi 2020](#)).

One community member living with tuberculosis in Cambodia agreed that "volunteers in the village know their people", and this improved community involvement ([Lorent 2015](#)). However, community health workers known to the community can sometimes deter people from accessing treatment in the context of stigma.



Tuberculosis programmes that enlist community health workers must balance local connections with the knowledge and authority that medical professionals bring to communities. This is paramount to ensure that people can get answers to their questions and navigate health systems.

In Cambodia, community health workers noted the benefit of sending doctors into the community:

"When we said that we came from HOPE centre (SHCH), people knew that we lived in the same village as them and never attended medical college, so they did not have confidence in us. Then, next time when we went with the TB workers. People seemed to listen" (Lorent 2015).

In India, community health workers also wanted respect from doctors:

"We should not be scolded in front of the patients then they will not respect us. Next time when we go to their house, they feel we are juniors and won't respond" (Shamanewadi 2020).

### Key subgroup analysis

We conducted further analysis for important subgroups identified in the most recent WHO tuberculosis guidelines (WHO 2021). We were able to obtain data for children, migrants, refugees, and women in patriarchal societies. Findings often supported the general themes described above, and studies are referenced in the appropriate section. Below we describe additional findings that are likely to be specific to these populations.

#### Children

Stigma remains an important consequence of seeking tuberculosis services for children and parents (Chiang 2015). However, people view children being sick with tuberculosis as particularly distressing and so may be motivated to seek services when they perhaps may not have been willing for themselves (Hirsch-Moverman 2021). Caregivers are concerned about the amount and size of medication administered to small children, and may avoid tuberculosis screening to protect them from any harmful effects (Chawla 2021; Singh 2017). Diagnosis of tuberculosis in a child can be distressing as they may be taken out of school, abandoned, or removed from the family home (Hirsch-Moverman 2021; Ngamvithayapong-Yanai 2019). Finally, parents may have specific information needs: they may be unaware that children can get tuberculosis (Ndakidemi 2019), or may be asked to bring children to services without being told why (Hirsch-Moverman 2021).

Health workers described the diagnosis of children as particularly challenging due to the differences in symptom presentation and the difficulty of obtaining sputum samples (Chawla 2021; Ndakidemi 2019; Singh 2017). Health workers may also be wary of the potential consequences of chest X-ray in young children (Chiang 2015; Isangula 2023). In one study from Peru, health workers reported that childhood tuberculosis was difficult to diagnose, but no participants had attended childhood tuberculosis training "because sessions occurred so rarely" (Chiang 2015).

#### Refugees

Refugees may face additional discrimination: some reported feeling uncomfortable and unwelcome at health facilities

(Buregyeya 2022). Health workers may be uncomfortable visiting urban slums or refugee camps due to the lack of ventilation (increasing the risk of infection). In addition, refugees may be ashamed of health workers witnessing their living conditions (Buregyeya 2022). Language barriers can make accessing care difficult, as refugees may not understand the directions of health workers when receiving ACF, and may be afraid to attend health services for follow-up care (Buregyeya 2022). Obtaining a translator can cause further problems as there are fears of confidentiality breaches (Buregyeya 2022). Refugees may also avoid ACF as they have difficult legal situations, such as hosting fellow refugees that have crossed borders illegally (Buregyeya 2022).

#### Migrant populations

Migrant populations may be hard to reach as they are often not known by their neighbours and communities and may also lack a permanent address due to their frequent changes in location (Ayakaka 2017; Biermann 2021b; Lorent 2015). Migrant workers may also be unavailable during the week, meaning health workers need to visit them in the evening or on weekends (Lorent 2015).

#### Women in patriarchal societies

In some households, women are expected to seek permission or funds (or both) from their husbands to travel to the hospital for follow-up services. As a result, some women are unable to access appropriate diagnosis and treatment (Dey 2019; Mbuthia 2018; Shamanewadi 2020).

#### CERQual assessments

Based on the CERQual assessment, we graded 11 findings as high confidence and four findings as moderate confidence. [Summary of findings 1](#) shows a summary of the CERQual assessment, and [Table 3](#) presents the full assessment, including individual justifications.

## DISCUSSION

### Summary of findings

When asked about community-based tuberculosis programmes, community members from diverse settings described more than screening to capture the lived experience of a complex cascade of care for tuberculosis. That community members felt free to share their experiences in such detail attests to the quality of our included studies, where researchers applied methods to allow people to speak freely and conducted qualitative analyses to retain and convey the richness and particularity of the data. Community members almost never responded to questions about ACF and contact tracing with views of symptom screening. Rather, people described their experiences of the cascade of care and problems with follow-up or their concerns about discrimination. Whilst some of our findings do not strictly relate to ACF, it is important to acknowledge that the experiences people have, or anticipate, when accessing follow-up care and treatment impact their decision to participate in screening or not. Often, individuals cannot delineate these experiences of screening versus treatment. From the evidence, we identified five themes, listed in [Summary of findings 1](#).

### Agreements and disagreements with other studies

Our findings align with those of another Cochrane qualitative evidence synthesis, which evaluated rapid molecular testing for

tuberculosis drug resistance (Engel 2022). That review found that stigma and discriminatory attitudes at clinics prevented people from engaging with follow-up diagnosis and treatment, and that fear of treatment-associated side effects, long distances, and financial constraints further impeded retention in care pathways.

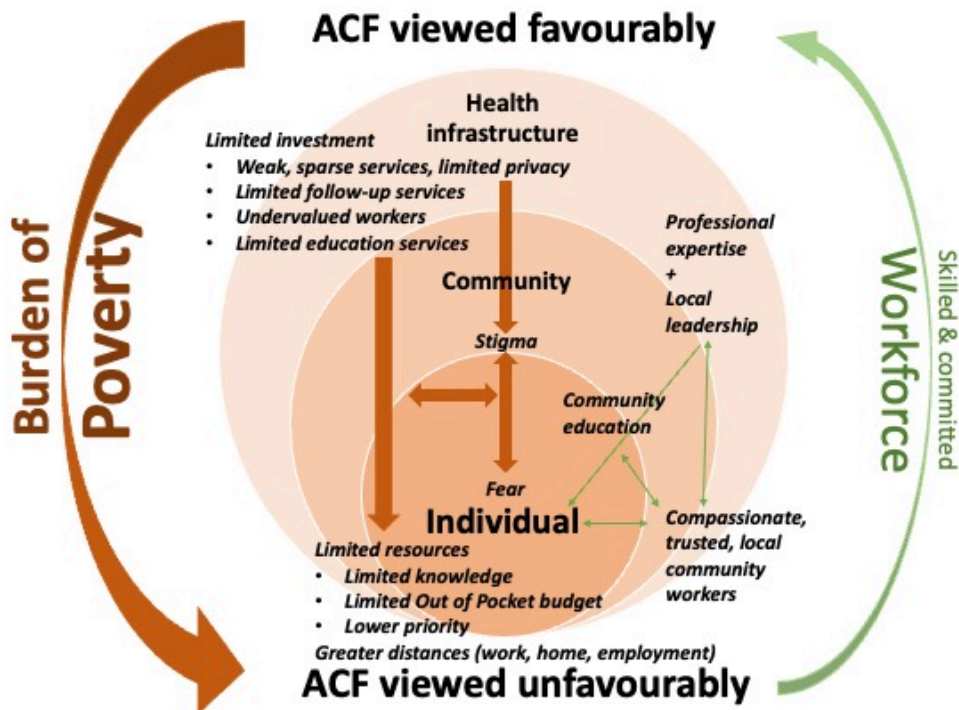
The rationale of ACF is to bring diagnosis to communities, thereby improving access for the most economically and geographically marginalized people. Evidence from the studies synthesized in this review demonstrates how successful this has been for many. However, other findings confirm widely reported barriers to tuberculosis passive case diagnosis (Bonadonna 2018; Dewi 2016; Dodor 2012; Leblanc 2016; Murray 2013). Despite the improved access offered by ACF activities, it is clear that without health system strengthening, ACF cannot overcome the substantial geographical, financial, and social barriers to diagnosis. Appropriate health system strengthening requires timeliness of service delivery, sufficient space in facilities to separate patients,

funding, staff time, and ability to deliver education (Zwama 2021). It also requires the integration of occupational health and safety to protect health workers from the risk of tuberculosis exposure (van der Westhuizen 2019; Zwama 2021). Further, a person-centred approach to health system strengthening focusses on supporting people to overcome the socioeconomic context that can limit their ability to engage with ACF, and their response to diagnosis and treatment (Zwama 2021).

**Conceptual model**

We have summarized how our findings interact in a conceptual model (Figure 2). The left of the model (in red) shows the burden of poverty, and mutually reinforcing stigma and fear, leading to unfavourable views of ACF. This is partially offset by a skilled and committed workforce (on the right-hand side) working to overcome the weak health infrastructure and challenging socioeconomic context.

**Figure 2. Conceptual model illustrating the burden of poverty in delivering effective active case finding (ACF), partially offset by a skilled and committed workforce.**



At the health infrastructure level, current ACF programmes operate as skeleton services, with inadequate staffing and resources. This results in weak, sparse services (Finding 3.1), limited follow-up services (Finding 3.2 and 3.3), undervalued and poorly protected workers (Finding 4.1), and limited education (Finding 3.4). All these aspects limit the effectiveness of ACF at both the community and individual level in the following ways.

- At the community level, stigma continues to be an important deterrent to seeking and engaging in care (Theme 2), and the limited privacy offered by under-resourced health services exacerbates this. It is important to ensure ACF activities are discrete, by minimising branding on health worker vehicles and

uniforms, providing private consultation rooms, and minimising queues in facilities.

- At the individual level, in the context of rushed and under-resourced services, information needs are often unmet (Finding 3.4). This lack of communication may lead to discrimination and fear upon diagnosis (Theme 2). Finally, ACF programmes target people experiencing material deprivation, and successful services need to be responsive to this context by recognising that some people may require further financial support and have competing health and economic priorities (Finding 1.2 and 1.3).

The above challenges are partially offset by compassionate, trusted local health workers. They are essential for lessening the fears and emotional turmoil people may face on diagnosis, and anticipating

socioeconomic barriers to diagnosis and treatment (Finding 4.2). Further local leadership may be necessary for communities to accept and engage with ACF (Finding 5.1), but this must be balanced with the professional expertise of community health workers (Finding 5.2).

### Overall completeness and applicability of the evidence

This review represents the experiences of people from a diverse range of LMICs, although the Americas and Eastern Mediterranean are under-represented. In addition, several South-East Asian countries with some of the highest tuberculosis rates globally – such as China, Bangladesh, and the Philippines – were not included. However, through CERQual assessments, we showed that most of our findings are applicable to a broad range of geographical and urban/rural contexts within LMICs.

Most studies explored experiences of contact tracing and door-to-door symptom-based screening. As a result, further research may be needed to assess the impact of alternative strategies such as workplace/community postscreening and seed-and-recruit models. Few studies provided information on the tuberculosis burden in their setting, so it is difficult to say whether findings are transferable to different endemicities.

The specific screening tools used in the ACF programme were unknown/unclear in many studies. This limits our understanding of how different screening tools affect the perception of ACF activities in the community. This is significant given that ACF programmes are increasingly conducted using point-of-care testing (e.g. point-of-care Xpert testing or portable digital chest X-ray in mobile vans) in community-/home-based settings, which may mitigate some concerns regarding access to the health facilities for follow-up testing after symptom screening.

Although we aimed to provide an understanding of how key populations differentially experience ACF, we found few and thin studies that explored the perspectives of refugees, migrants, children, or women from patriarchal societies. It is therefore very likely that the findings of this review provide an incomplete picture of the lived experience of such groups. Further, we found no evidence to describe the experience of miners or prisoners.

This review did not attempt to identify or analyse grey literature, which may have led to some bias in the review findings. Further, a single review author decided whether studies had 'thick' or 'thin' evidence, although a sample of around 30% was discussed with the senior author for quality assurance.

## AUTHORS' CONCLUSIONS

### Implications for future practice

Tuberculosis active case finding (ACF) and contact tracing bring diagnosis to those who may otherwise not receive it. This includes people who are well or without symptoms, and those who are sick but who have fewer resources and live further from health facilities. However, capturing these 'missing cases' may be insufficient without appropriate health system strengthening to retain individuals in care. People with a new diagnosis of tuberculosis must contend with a complex and unsustainable cascade of care, and this affects their perception of ACF and their decision to engage with it.

### Implications for future research

Further research is needed to:

- understand the views and experiences of people from low- and middle-income settings outside of Africa and South-East Asia, and in countries with high tuberculosis incidence including China, the Philippines, and Bangladesh;
- assess the impact of alternative strategies such as workplace screening and seed-and-recruit models;
- explore how key populations such as refugees, migrants, children, women, miners, and prisoners experience ACF programmes; and
- understand the perspectives of policymakers, technical officers, and national tuberculosis programme staff, since the review showed that lack of resources and staff training are amongst the barriers to successful ACF.

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### Editorial and peer-reviewer contributions

The following people conducted the editorial process for this article.

- Sign-off Editor (final editorial decision): Dr Anke Rohwer and Professor Gerry Davies (CIDG)
- Managing Editor (selected peer reviewers, collated peer-reviewer comments, provided editorial guidance to authors, edited the article): Deirdre Walshe, CIDG
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- Peer-reviewers (provided comments and recommended an editorial decision):
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  - Jo Platt, Central Editorial Information Specialist (search review)
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  - Yohanes Aditya Adhi Satria, General Practitioner, Indonesia (consumer peer review)



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**CHARACTERISTICS OF STUDIES**
**Characteristics of included studies** [ordered by study ID]

**Ajuda 2022**
**Study characteristics**

## Notes

**Aim:** to explore the implementation of active surveillance for TB where community-oriented primary care (COPC) had been successfully implemented to identify these factors.

**Independence of researchers:** YES; financial support for this study was provided by the National Research Foundation. Study authors work for independent institutions.

**Key themes:** "The factors influencing active surveillance for TB were directly related to the major players in the delivery of CBS. These factors interacted in a complex network influencing implementation of active surveillance for TB. Building effective relationships across stakeholder platforms by community health workers (CHWs) was directly influenced by the training, capacity building afforded these CHWs by the district health services; and acceptability of CBS. Each factor interplayed with others to influence active surveillance for TB."

**Location and date:** October–November 2017

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** mobile chest X-ray units

**Ajuda 2022** (Continued)

**Programme implementation:** National Department of Health programme

**Target population:** unclear

**Participants:** TB contacts; community health workers

**Data collection method:** in-depth interview (n = 19) and FGDs (n =13)

**Data analysis methods:** thematic analysis

**Available data:** thin; rich

**Akingbade 2023**

**Study characteristics**

Notes

**Aim:** to explore the experiences of community health workers

**Independence of researchers:** unclear, no information on funding, but researchers work for universities.

**Key themes:** "Four themes emerged which include: CTVs' activities, the need of the patient living with TB, success stories, and challenges faced by CTVs. CTBC activities by the CTVs include case finding, awareness rallies, community education. The needs of the patient living with TB include finances, love, attention and support. Challenges encountered by them include myths, poor family and governmental support."

**Location and date:** Oyo state, Nigeria. Unclear dates

**Setting:** unclear

**Type of screening:** household

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** assumed whole community

**Participants:** community health workers

**Data collection method:** FGDs (n = 10)

**Data analysis methods:** qualitative content analysis

**Available data:** thin; sparse

**Armstrong-Hough 2018a**

**Study characteristics**

Notes

**Aim:** to understand attitudes and experiences related to home sputum collection during TB contact investigation in Uganda. The national TB programme in Uganda initiated contact tracing in 2013.

**Independence of researchers:** YES; funding was provided by the NIH, Bethesda, MD, USA (R01AI104824; JLD), and the Nina Ireland Program in Lung Health at the University of California San Francisco, San Francisco, CA, USA (JLD). Study authors work for independent institutions.

**Armstrong-Hough 2018a** (Continued)

**Key themes:** "Contacts said support from the index patient and the convenience of the home visit facilitated collection. Missing containers and difficulty producing sputum spontaneously impeded collection. Women identified stigma as a barrier. LHWs emphasized difficulty in procuring sputum and discomfort pressing contacts to produce sputum"

**Location and date:** Kampala, Uganda; 2016–July 2017

**Setting:** urban

**Type of screening:** household; contact screening

**Diagnostic tools:** unclear

**Programme implementation:** national; Government (The Uganda National TB and Leprosy Programme (NTLP))

**Target population:** unclear

**Participants:** TB contacts; community health workers

**Data collection method:** in-depth interview (n = 19) and FGDs (n = 13)

**Data analysis methods:** grounded theory

**Available data:** thin

**Ayakaka 2017**

**Study characteristics**

Notes

**Aim:** to understand barriers and facilitators to TB contact investigation in Kampala, Uganda

**Independence of researchers:** YES; funding was provided by the US National Institute of Allergy and Infectious Diseases (NIH R01AI104824 to J. Lucian Davis), the Fogarty International Center (NIH D43TW009607 to J. Lucian Davis), and by the Nina Ireland Program in Lung Health at the University of California San Francisco (Innovative Grants Program Award to J. Lucian Davis). Study authors work for independent institutions.

**Key themes:** "Commonly noted barriers included stigma, limited knowledge about TB among contacts, insufficient time and space in clinics for counselling, mistrust of healthcenter staff among index patients and contacts, and high travel costs for LHWs and contacts. The most important facilitators identified were the personalized and enabling services provided by LHWs. We identified education, persuasion, enablement, modeling of health-positive behaviors, incentivization, and restructuring of the service environment as relevant intervention functions with potential to alleviate barriers to and enhance facilitators of TB contact investigation"

**Location and date:** Kampala, Uganda; February–November 2014

**Setting:** urban; high TB prevalence

**Type of screening:** household; contact tracing

**Diagnostic tools:** unclear

**Programme implementation:** Uganda National TB and Leprosy Programme conducts all TB control activities along with community partners.

**Target population:** unclear

**Participants:** TB contacts; community health workers and health centre staff

**Data collection method:** in-depth interview (n = 32) and FGDs (n = 86)

**Ayakaka 2017** *(Continued)*

**Data analysis methods:** thematic analysis and framework analysis

**Available data:** thick; rich

**Biermann 2021a**
**Study characteristics**

Notes

**Aim:** to identify the facilitators and barriers linked to the implementation of ACF within IMPACT TB, as well as how those facilitators and barriers have been or could be addressed.

**Independence of researchers:** YES; researchers funded by EU Horizon 2020-funded IMPACT-TB project. Study authors work for independent institutions.

**Key themes:** "(1) ACF addressed the social determinants of TB by providing timely access to free healthcare, (2) knowledge and awareness about TB among people with TB, communities and community health workers were the 'oil' in the ACF 'machine', (3) trust in community health workers was fundamental for implementing ACF, (4) community engagement and support had a powerful influence on ACF implementation and (5) improved working conditions and enhanced collaboration with key stakeholders could further facilitate ACF. These themes covered a variety of facilitators and barriers, which we divided into 22 categories cutting across five framework levels: innovation, individual professional, patient, social context and organizational context."

**Location and date:** Dhanusha, Mahottari, Chitwan and Makwanpur, Nepal; June 2019

**Setting:** high burden of TB and poverty; urban, semi-urban, and hard-to-reach areas

**Type of screening:** household; contact screening

**Screening tools:** oral symptom screening questionnaire

**Programme implementation:** Birat Nepal Medical Trust (BNMT), a national nongovernmental organization, implemented the IMPACT TB ACF model.

**Target population:** unclear

**Participants:** people with TB; community health workers

**Data collection method:** in-depth interview (n = 17)

**Data analysis methods:** thematic analysis

**Available data:** thick; rich

**Biermann 2021b**
**Study characteristics**

Notes

**Aim:** to explore the facilitators and barriers linked to IMPACT TB ACF implementation in 6 districts of Ho Chi Minh City.

**Independence of researchers:** YES; this work was supported by the EU-Horizon 2020-funded IMPACT-TB project (grant 733174). Study authors work for independent institutions.

**Key themes:** "(1) the studied ACF model used in Vietnam provided a conducive social and organizational context for ACF implementation with areas for improvement, including communication and awareness-raising, preparation and logistics, data systems and processes, and incentives; (2) employees and volunteers capitalized on their strengths to facilitate ACF implementation, e.g., experience,

### Biermann 2021b (Continued)

skills, and communication; and (3) employees and volunteers were in a position to address patient-level barriers to ACF implementation, e.g., stigma, discrimination, and mistrust"

**Location and date:** Ho Chi Minh City, Vietnam; October 2017–September 2019

**Setting:** urban

**Screening tools:** symptom screening; chest X-ray for close contacts

**Programme implementation:** Birat Nepal Medical Trust (BNMT), a national nongovernmental organization, implemented the IMPACT TB ACF model

**Target population:** high-risk groups: close contacts, neighbours, those living in slums or boarding homes

**Type of screening:** household; contact tracing

**Participants:** TB contacts; community health workers; programme leaders

**Data collection method:** semi-structured interview (n = 39)

**Data analysis methods:** thematic analysis

**Available data:** thick; rich

### Buregyeya 2022

#### Study characteristics

Notes

**Aim:** to explore the barriers to and facilitators for TB case finding and retention in care amongst urban slum refugees and suggestions on how to improve. This was to guide the development of interventions to improve TB case finding and retention in care amongst said population.

**Independence of researchers:** YES; funded by WHO; study authors work for independent organizations

**Key themes:** "Key barriers included; physical capability (availability of and easily accessible private facilities in the community with no capacity to diagnose and treat TB), psychological capability (lack of knowledge about TB among refugees), social opportunity (wide spread TB stigma and language barrier), physical opportunity (poor living conditions, mobility of refugees), reflective motivation (lack of facilitation for health workers), automatic motivation (discrimination and rejection of TB patients). Facilitators were; physical capability (availability of free TB services in the public health facilities), social opportunity (availability of translators). We identified education, incentivization, training, enablement, and restructuring of the service environment as relevant intervention functions with potential to address barriers to and enhance facilitators of TB case finding and retention among refugees in urban slums."

**Location and date:** Kisenyi slum in Kampala city, Kenya; December 2019–January 2020

**Setting:** urban slum; high TB burden; high proportion of refugees

**Type of screening:** community based; symptom screening and contact tracing

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** people with TB; community health workers; community leaders; implementation partner representatives

## Buregyeya 2022 (Continued)

**Data collection method:** in-depth interview (n = 30)

**Data analysis methods:** framework analysis

**Available data:** thick; rich

## Chawla 2021

### Study characteristics

Notes

**Aim:** to explore the challenges faced by healthcare providers in contact screening and chemoprophylaxis initiation implementation of the paediatric household contacts

**Independence of researchers:** NO; this research was funded by the Central TB Division (CTD), Ministry of Health and Family Welfare (MoHFW), National TB Elimination Programme (NTEP), Government of India (GoI). Study authors work for the district and state TB office.

**Key themes:** "stigma towards the disease, migrant patients with changing address, difficulty in sample collection, anxiety among parents due to long duration of the prophylactic treatment and adherence to IPT is not well documented, inadequate transportation from rural areas, and the ongoing COVID-19 pandemic."

**Location and date:** Karnataka, India; dates not stated

**Setting:** urban, high TB burden

**Type of screening:** household; contact tracing

**Screening tools:** unclear

**Programme implementation:** National TB Elimination programme (NTEP)

**Target population:** unclear

**Participants:** health workers and programme staff

**Data collection method:** interview (n = 64)

**Data analysis methods:** thematic analysis

**Available data:** thick; rich

## Chetty-Makkan 2021

### Study characteristics

Notes

**Aim:** to understand the role of outreach teams in delivering TB household contact tracing

**Independence of researchers:** YES; funded by Medical Research Council Newton Fund, South African Medical Research Council and the UK Medical Research Council. Study authors work for independent institutions.

**Key themes:** "Outreach teams contributed positively by working across health-related programmes, providing home-based care and assisting with tracing of persons lost to TB care. However, outreach teams had a limited focus on TB household contact tracing activities, likely due to the broad scope of their work and insufficient programmatic support. Outreach teams often confused TB household contact tracing activities with finding persons lost to TB care. The community also had some reservations on the role of outreach teams conducting TB household contact tracing activities."

### Chetty-Makkan 2021 *(Continued)*

**Location and date:** South Africa; May 2016–February 2017

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** unclear

**Programme implementation:** implemented by Ward-based Primary Healthcare Outreach Teams (WBPHCOTs), commonly referred to as 'outreach teams'

**Target population:** entire community

**Participants:** TB contacts and people with TB; community health workers and health staff

**Data collection method:** in-depth interview (n = 73) and FGDs (n = 52)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

### Chiang 2015

#### Study characteristics

Notes

**Aim:** to identify barriers to diagnosis of TB in children in Lima, Peru. At the time of this study, the National TB Programme in Peru operated out of neighbourhood primary health centres with designated TB staff. Community health worker volunteers assisted TB nurses in facilities and conducted contact tracing.

**Independence of researchers:** YES: main author of this study received funding from Harvard University (The Rockefeller Center for Latin American Studies).

**Key themes:** "Barriers to diagnosis of children have to do with stigma, local education about TB, out-of-pocket costs to families, and inadequate testing and health centre resources (including adequately trained staff). The inability of children to produce sputum is also noted as an important reason for problems with diagnosis."

**Location and date:** Lima, Peru, June–July 2012

**Setting:** high TB burden

**Screening tools:** unclear

**Programme implementation:** National TB programme runs neighbourhood-based primary health centres with designated providers

**Target population:** children

**Type of screening:** household; contact tracing

**Participants:** TB contacts; community health workers

**Data collection method:** in-depth interview (n = 19) and FGDs (n = 13)

**Data analysis methods:** content analysis

**Available data:** thick; sparse



## De Santo 2023

### Study characteristics

Notes

**Aim:** to explore the presence of TB stigma within communities across South Africa.

**Independence of researchers:** YES; funding is by the Medical Research Council Newton Fund, South African Medical Research Council and the UK Medical Research Council. Researchers work for independent institutions.

**Key themes:** "TB stigma is driven and facilitated by fear of disease coupled with an understanding of TB/HIV duality and manifests as anticipated and internalized stigma. Individuals are marked with TB stigma verbally through gossip and visually through symptomatic identification or when accessing care in either TB-specific areas in health clinics or through ward-based outreach teams. Individuals' unique understanding of stigma influences how they seek care."

**Location and date:** unclear

**Setting:** high TB prevalence, mixed urban-rural setting

**Type of screening:** household contact tracing

**Screening tools:** unclear

**Programme implementation:** South Africa's National Department of Health programme

**Target population:** contacts of people with recent diagnosis of TB

**Participants:** people with TB, TB contacts, community health workers, community care givers, ward-based outreach team members, primary healthcare outreach team members

**Data collection method:** in-depth interview and FGDs (total n = 94)

**Data analysis methods:** thematic analysis

**Available data:** thick; sparse

## Der 2022

### Study characteristics

Notes

**Aim:** to assess barriers to TB case finding from the perspective, experiences, and practices of health workers and to explore their suggestions for sustainable ways to improve TB case finding in health facilities in Ghana.

**Independence of researchers:** NO; some study authors work for national TB programme.

**Key themes:** "barriers identified included lack of TB diagnostic laboratories in rural health facilities and no standard referral system to the municipal hospital for further assessment and TB testing. In addition, missed opportunities for early diagnosis of TB were driven by suboptimal screening practices of HCWs whose application of the national standard operating procedures (SOP) for TB case detection was inconsistent. Further, infection prevention and control measures in health facilities were not implemented as recommended by the SOP. HCW-related barriers were mainly lack of training on case detection guidelines, fear of infection (exacerbated by lack of appropriate personal protective equipment [PPE]) and lack of motivation among HCWs for TB work. Solutions to these barriers suggested by HCWs included provision of at least one diagnostic facility in each sub-municipality, provision of transport subsidies to enable patients' travel for testing, training of newly-recruited staff on case detection guidelines, and provision of appropriate PPE."

**Location and date:** Volta region, Ghana; January 2019

**Setting:** rural; high TB burden

**Der 2022** (Continued)

**Type of screening:** outpatient symptom screening

**Screening tools:** symptom questionnaire

**Programme implementation:** National TB programme

**Target population:** outpatients of all health facilities

**Participants:** health workers

**Data collection method:** in-depth interview (n = 12) and clinic observations

**Data analysis methods:** framework analysis

**Available data:** thick; rich

**Dey 2019**

**Study characteristics**

Notes

**Aim:** to describe the "care cascade" of presumptive TB patients identified through ACF in Kolkata, India. This was a mixed-methods study with qualitative interviews and a quantitative cohort study. In India, TB surveillance involves ACF amongst targeted, high-risk groups. For this study, a designated TB community health worker (TOUCH agent) engaged the community and conducted ACF and community sensitization. Central questions in the interviews concerned challenges to house visits and further challenges when people are referred on to TB services at the health facility. Touch Agents are mainly women community volunteers with the ability to read and write in English; they receive monthly pay.

**Independence of researchers:** NO: researchers are associated with the USAID-funded TB Health Action Learning Initiative (THALI) project ([www.tbalert.org/what-we-do/our-work-in-india/tb-health-action-learning-initiative/](http://www.tbalert.org/what-we-do/our-work-in-india/tb-health-action-learning-initiative/))

**Key themes:** people hesitate to disclose TB symptoms due to stigma. There is general mistrust of the public health system. People cannot afford to travel and miss work to visit clinics. Women may be dependent upon men to travel to clinics.

**Location and date:** Kolkata India; July–December 2018

**Setting:** urban; high TB burden

**Type of screening:** household symptom-based screening; contact tracing of index cases

**Screening tools:** unclear

**Programme implementation:** national TB programme

**Target population:** marginalized and vulnerable groups

**Participants:** people with TB; community health workers

**Data collection method:** in-depth interview (n = 17)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

**Emerson 2019**

**Study characteristics**

## Emerson 2019 *(Continued)*

Notes

**Aim:** to identify missed opportunities in TB screening, diagnosis, and isoniazid preventive therapy, as well as HIV testing to enhance TB programme implementation.

**Independence of researchers:** NO; some study authors work for TB programme.

**Key themes:** "Most HCWs noted that in their experience, most caregivers do not refuse TB screening for their children. HCWs identified stigma and fear of TB diagnosis as reasons why some caregivers refuse TB screening for their children. HCWs reported a lack of community resources for home-based contact tracing."

**Location and date:** Tanzania; March–April 2016

**Setting:** urban; high TB burden

**Type of screening:** facility based; contact tracing

**Screening tools:** symptom questionnaire

**Programme implementation:** national TB and leprosy programme

**Target population:** children

**Participants:** health workers

**Data collection method:** in-depth interview (n = 41)

**Data analysis methods:** unclear

**Available data:** thin +; sparse

## Emerson 2020

### Study characteristics

Notes

**Aim:** to understand how children receive their TB diagnosis and the decision-making process around HIV testing.

**Independence of researchers:** YES: study authors were funded by a grant from the Centers for Disease Control (USA). They collaborated to recruit respondents with the Tanzania National TB programme.

**Key themes:** "Caregivers described a relatively seamless process for linking their child to HIV treatment, highlighting the success of TB/HIV integration efforts. The multiple clinic visits required prior to TB diagnosis suggests the need for additional training and sensitization of healthcare workers and better TB diagnostic tools."

**Location and date:** Tanzania; March 2016

**Setting:** rural; high TB burden

**Type of screening:** health facility based; contact screening

**Screening tools:** symptom questionnaire

**Programme implementation:** national TB and leprosy programme

**Target population:** children

**Participants:** caregivers of children with TB

**Data collection method:** in-depth interviews (n = 76)

**Data analysis methods:** content analysis

**Emerson 2020** (Continued)

**Available data:** thin; sparse

**Ereso 2020**

**Study characteristics**

Notes

**Aim:** to identify barriers for TB case finding in Ethiopia.

**Independence of researchers:** NO: this study is part of a larger evaluation of TB services in Ethiopia ([doi.org/10.1136/bmjgh-2017-000390](https://doi.org/10.1136/bmjgh-2017-000390)). However, the interviewer did not work with the directly observed therapy providers or programme managers.

**Key messages:** 1. Inadequate health infrastructure and resources (from clean water to professional staff) was a key barrier. "Low community mobilization"; difficult topography; laboratory staff turnover; poor collaboration with other sectors. 2. Case finding is problematic when access to diagnostic services is limited.

**Location and date:** Ethiopia; August 2016–January 2017

**Setting:** unclear

**Type of screening:** household and facility symptom screening

**Screening tools:** symptom questionnaire

**Programme implementation:** national TB programme. "Funds and other resources for the implementation of the TB control programme are the Ethiopian government, and global health agencies such as The Global Fund and The Center for Disease Control (CDC)"

**Target population:** unclear

**Participants:** people with TB, community health workers, directly observed therapy providers, programme managers

**Data collection method:** in-depth interview (n = 60)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

**Garg 2020**

**Study characteristics**

Notes

**Aim:** to quantify the prediagnostic loss to follow-up in an active case finding TB programme and identify the barriers and enablers in undergoing diagnostic evaluation.

**Independence of researchers:** NO; project was supported by the Stop TB Partnership's TB REACH initiative and was funded by the Government of Canada and the Bill & Melinda Gates Foundation. Study authors are programme staff.

**Key themes:** "the key enablers were CHW accompaniment and support. The major barriers identified were misinformation and stigma, deficient family and health provider support, transport challenges and poor services in the public health system."

**Location and date:** Samastipur district of Bihar, India; 2018

**Setting:** rural

**Garg 2020** (Continued)

**Type of screening:** home-based symptom screening

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** presumptive TB cases; community health workers

**Data collection method:** in-depth interview (n = 7) and FGDs (n = 28)

**Data analysis methods:** content analysis

**Available data:** thin; sparse

**Goroh 2023**

**Study characteristics**

Notes

**Aim:** "to explore the factors affecting the implementation of TB contact investigation and TPT among child contacts"

**Independence of researchers:** YES; funding was provided by Postgraduate Research Grant Aid Scheme of University Malaysia Sabah UMSGreat, but funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

**Key themes:** "Factors affecting TB contact investigation were addressed under system related factors (external factors, stakeholder collaboration, healthcare workers' and clients' concerns), clinic related factors (perceived performance, clinic schedule, and space), healthcare worker related factors (cooperation, commitment, knowledge, misconception, counselling and communication) and patient and contact related factors (cooperation and commitment). Factors affecting TB preventive treatment delivery were addressed under guardian related factors (cooperation, commitment, knowledge and misconception) and treatment related factors (child-friendly form and adverse effects)."

**Location and date:** Kota Kinabalu, Sabah, East Malaysia. January 2019–December 2020

**Setting:** high TB burden; unclear if rural or urban

**Type of screening:** home-based child contact tracing

**Screening tools:** chest X-ray

**Programme implementation:** unclear

**Target population:** children < 5 years in close contact with TB patient

**Participants:** parents or guardians of child TB contacts; health workers

**Data collection method:** semi-structured interview (n = 59)

**Data analysis methods:** grounded theory

**Available data:** thick; rich

**Hirsch-Moverman 2021**

**Study characteristics**



**Hirsch-Moverman 2021** (Continued)

Notes

**Aim:** "toevaluate the effectiveness and acceptability of a combination community-based intervention (CBI) versus standard of care (SOC) to identify child contacts of adult TB patients, screen them for TB, and provide eligible children with TPT."

**Independence of researchers:** NO; this work was funded by the National Institute of Allergy & Infectious Diseases of the NIH under award number 1K01AI104351. Some study authors work for national TB programme.

**Key themes:** people can be reluctant to name child contacts and health education helps to encourage participation. Most caregivers did not find TB screening at the health facility burdensome because they had been informed about its importance. Caregivers see the benefits of screening and do not report experiencing stigma.

**Location and date:** Berea District, Lesotho; 2018

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** symptom questionnaire

**Programme implementation:** community-based intervention delivered as part of an RCT

**Target population:** children

**Participants:** caregivers of people with TB; healthcare providers

**Data collection method:** in-depth interview (n = 48)

**Data analysis methods:** thematic analysis

**Available data:** thin +, sparse

**Isangula 2023**
**Study characteristics**

Notes

**Aim:** to explore the accounts of participants from Tanzania, Kenya, Uganda, and Ethiopia regarding the contribution and implementation of the EXIT-TB intervention and suggestions for scaling up.

**Independence of researchers:** YES; programme funder also funded the study, but stated they had no role in study conception, data collection, analysis, or write up (EXIT-TB project funded by the European and Developing Countries Clinical Trials partnership programme supported by the European Union (grant number CSA2016S-1608). Researchers work for independent institutions.

**Key themes:** "The attributes of TB case detection were: (i) free X-ray screening services; (ii) integrating TB case-finding activities in other clinics such as Reproductive and Child Health clinics (RCH), and diabetic clinics; (iii), engagement of CHWs, policymakers, and ministry level program managers; (iv) enhanced community awareness and linkage of clients; (v) cooperation between HCWs and CHWs, (vi) improved screening infrastructure, (vii) the adoption of the new simplified screening criteria and (viii) training of implementers."

**Location and date:** April 2019–January 2022

**Setting:** high TB incidence; mixed urban-rural

**Type of screening:** contact tracing of health facility attendees

**Screening tools:** symptom screening followed by chest X-ray; Gene X-pert in children who could not tolerate chest X-ray

### Isangula 2023 (Continued)

**Programme implementation:** EXIT-TB strategy is part of a multicountry cluster-RCT. The EXIT-TB package involves integrated TB case finding activities, implemented at the reproductive and child health clinics, diabetics and HIV clinics in addition to the outpatients' departments using systematic TB symptom screening at these service delivery points.

**Target population:** adults presenting to health facilities and child contacts

**Participants:** service providers, TB patients, policymakers, and stakeholders

**Data collection method:** in-depth interview (n = 79)

**Data analysis methods:** thematic analysis

**Available data:** thick; rich

### Kerrigan 2017

#### Study characteristics

Notes

**Aim:** to generate qualitative research that could inform development and implementation of 3 ACF strategies to be tested in a clinical trial (Kharitode) in South Africa. The 3 types of ACF were: clinic-, household- and incentive-based approaches (incentives to attend clinics for screening). Researchers explored the feasibility and acceptability of ACF.

**Independence of researchers:** YES: researchers conducting the qualitative work were associated with the clinical trial (Kharitode TB in South Africa). This trial was testing models for ACF in South Africa, funded by the NIH (USA).

**Key themes:** different community groups prefer different programmes. Some people prefer clinic-based care because follow-up is required anyway, and it eliminates neighbourhood gossip. Others prefer community TB care because it increases equity for the very poor or very ill. All TB screening costs people money and time, and people were receptive to receiving compensation. Anticipated stigma shapes responses to TB programmes; stigma may also be related to HIV. Local leadership networks can help ACF.

**Location and date:** South Africa; October 2015–January 2016

**Setting:** urban

**Type of screening:** clinic-based TB screening; household contact tracing and screening in the community

**Screening tools:** unclear

**Programme implementation:** clinic-, household- and incentive-based interventions as part of an RCT

**Target population:** unclear

**Participants:** people with TB, household contacts, clinic-based health staff

**Data collection method:** in-depth interview (n = 25) and FGDs (n = 27)

**Data analysis methods:** content analysis

**Available data:** thin; sparse

### Khaji 2021

#### Study characteristics

**Community views on active case finding for tuberculosis in low- and middle-income countries: a qualitative evidence synthesis (Review)**

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## Khaji 2021 (Continued)

### Notes

**Aim:** to evaluate the factors affecting motivations for engagement or non-engagement with the intervention by artisanal small-scale miners and female sex workers, to gain the perspectives of the community health workers and peer educators trained by the intervention, and to investigate wider community perspectives on the intervention.

**Independence of researchers:** NO; funded by Stop TB Partnership's TB REACH initiative, which implemented the programme. TB REACH is funded by Global Affairs Canada.

**Key themes:** "health-seeking behaviour was similar across both groups but that individuals in the non-engaged group were more reluctant to give sputum samples, often because they did not understand the purpose. CHWs feared contracting TB on the job, and many noted that mining areas were difficult to access without transportation. Community stakeholders provided various recommendations to increase engagement."

**Location and date:** Shinyanga and Mbogwe regions, Tanzania; December 2019–June 2020

**Setting:** rural; unknown TB prevalence

**Type of screening:** household/community; symptom screening

**Screening tools:** screening questionnaire

**Programme implementation:** "Service Health and Development for People Living Positively with HIV/AIDS, Kahama Branch (hereafter SHDEPHA+ Kahama) implemented an active case finding (ACF) intervention in the Shinyanga and Geita regions between July 2017 and June 2020 with support from the TB REACH initiative."

**Target population:** high-risk groups: artisanal small-scale miners and female sex workers

**Participants:** community health workers; health workers, mining site authorities

**Data collection method:** semi-structured interview (n = 41), in-depth interviews (n = 66)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

## Khan 2019

### Study characteristics

### Notes

**Aim:** to evaluate an incentive programme where lady health workers received payment for each referral diagnosed with TB. Research questions regarded reasons for joining and staying with the lady health worker programme, views on incentives and barriers and facilitators to community work.

**Independence of researchers:** NO; this study was conducted by researchers funded by Mercy Care, an NGO in Pakistan responsible for implementing the national TB programme.

**Key themes:** many women view their TB work as humanitarian and sometimes forms a part of a religious calling or vocation. Many women appreciate monetary pay or compensation in food provision or the provision of medical care.

**Location and date:** Pakistan; no date available

**Setting:** unclear

**Screening tools:** unclear

**Programme implementation:** national TB programme

**Target population:** unclear

**Khan 2019** *(Continued)*

**Type of screening:** household; symptom screening

**Participants:** community health workers, TB programme managers

**Data collection method:** in-depth interview (n = 32)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

**Lorent 2015**
**Study characteristics**

## Notes

**Aim:** to identify barriers and facilitators to active TB screening in Phnom Penh, Cambodia. This was a mixed-methods study with a questionnaire and in-depth interviews with TB patients and community health workers involved in ACF. Even with active diagnosis, many TB patients in Cambodia delay treatment initiation. This study explored perspectives of people living with TB to understand this delay or "failed linkage" of public health case finding to TB care systems. ACF was launched in 2012 involving door-to-door screening in Phnom Penh; ACF was embedded in the national TB programme.

**Independence of researchers:** YES; this study was partially funded by the WHO and conducted together with Sihanouk Hospital Centre of HOPE, Stop TB Partnership/TB REACH Initiative and the national TB services in Cambodia.

**Key themes:** ACF improved access to TB care services for older people, very ill people, and poor people. Familial pressure was viewed as important for compliance with treatment. The status of community health workers is complex, and the community itself is not always a stable entity (e.g. if community health workers are looking for migrant workers).

**Location and date:** Phnom Penh, Cambodia; September–October 2013

**Setting:** urban; high TB burden

**Type of screening:** household; symptom screening

**Screening tools:** unclear

**Programme implementation:** "Alongside the national TB programme, and with support from the Stop TB Partnership/TB REACH Initiative, the Sihanouk Hospital Center of HOPE launched a large scale ACF project in Phnom Penh in 2012."

**Target population:** vulnerable and poor communities of Phnom Penh

**Participants:** people with TB; community health workers; public health providers

**Data collection method:** in-depth interview (n = 21) and FGDs (n = 54)

**Data analysis methods:** thematic and framework analysis

**Available data:** thick; sparse

**Marangu 2017**
**Study characteristics**

## Notes

**Aim:** to understand TB contact investigation by describing the experiences of people with TB seeking care in Nairobi, Kenya. In this TB programme, contacts are required to present at a health facility rather than receiving home visits.

## Marangu 2017 (Continued)

**Independence of researchers:** yes; this study is part of an MD/PhD programme undertaken by the first study author. Study authors received funding from the NIH (USA) and Fogerty International Centre.

**Key themes:** contacts want to support the index TB patient. Community health workers fear infection and enact stigma. The care anticipated or received from health workers turns people off of the health-care system.

**Location and date:** Nairobi, Kenya; April 2015–July 2016

**Setting:** urban; high TB, MDR-TB, and HIV burden

**Type of screening:** facility-based TB contact screening, initiated by health worker asking index TB patient to bring contacts

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** TB contacts

**Data collection method:** in-depth interview (n = 52) and FGDs (N = 46)

**Data analysis methods:** grounded theory

**Available data:** thin; sparse

## McAllister 2017

### Study characteristics

#### Notes

**Aim:** "To evaluate the feasibility of two different screening interventions using CHWs in detecting active TB cases in communities in Bandung City, Indonesia."

**Independence of researchers:** YES; study authors work for independent organizations, funding unclear.

**Key themes:** benefits include improved access, increased knowledge of TB, and ability to identify other health conditions. Barriers included concerns over community health worker training or embarrassment. Provision of support for community health workers and status in community were identified as enablers.

**Location and date:** Bandung City, Indonesia, date unclear

**Setting:** urban; high TB burden

**Type of screening:** household symptom screening; contact tracing

**Screening tools:** symptom screening

**Programme implementation:** intervention as part of a feasibility trial

**Target population:** unclear

**Participants:** TB contacts; community health workers and health staff

**Data collection method:** FGDs (3 groups)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse



## Medina-Marino 2021

### Study characteristics

Notes

**Aim:** to investigate "the acceptability and perceived benefits of home-based TB testing using a portable GeneXpert-I instrument (GX-I) in an urban South African township."

**Independence of researchers:** NO; research assistants administering testing conducted interviews.

**Key themes:** "Home-based TB testing was considered convenient, helped to overcome apathy towards testing and mitigated barriers to clinic-based testing. Perceptions that home-based TB testing contributes to improved household and community health resulted in an emergent theme of alleviation of health insecurities. Operational concerns regarding inadvertent disclosure of one's diagnosis to household members and time spent in people's homes were identified."

**Location and date:** Eastern Cape Province, South Africa; July 2018–June 2019

**Setting:** urban

**Type of screening:** household; contact tracing

**Screening tools:** home-based TB testing using a GX-I instrument

**Programme implementation:** feasibility study

**Target population:** unclear

**Participants:** TB contacts; community health workers, implementing staff

**Data collection method:** in-depth interview (n = 30) and FGDs (2 groups)

**Data analysis methods:** constant comparison analysis

**Available data:** thick; sparse

## Monk 2018

### Study characteristics

Notes

**Aim:** to investigate community memory of an ACF intervention in Blantyre, Malawi (the RCT Corbett 2010). The study authors used a Health Beliefs Model to understand compliance with contact tracing and community screening programmes for TB. The ACF programme conducted 6-monthly screenings in intervention districts. Researchers conducted focus groups and interviews with community members and TB programme staff in districts that received the RCT intervention two years earlier and in districts that did not.

**Independence of researchers:** study authors conducting this qualitative research were involved in the RCT of ACF.

**Key themes:** researchers stated that "on-going community engagement" was important for ACF programme success. The also use the concept "sensitise" to describe TB engagement and education. Community members stressed the need for privacy and discretion and the links between TB and HIV. Community understanding of the risk of TB reference poverty and malnutrition ("eating dirt") and pollution

**Location and date:** Blantyre, Malawi; 2013– 2016

**Setting:** urban

**Type of screening:** household; symptom screening

**Screening tools:** unclear

**Monk 2018** (Continued)

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** people with TB; community members; TB officers

**Data collection method:** in-depth interview (n = 5) and FGDs (n = 118)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

**Moosazadeh 2018**

**Study characteristics**

Notes

**Aim:** "to understand the existing challenges in proper diagnosis of patients with tuberculosis in Iran indices."

**Independence of researchers:** YES; study authors work for independent organizations. No funding information.

**Key themes:** "Seventeen subthemes under Six themes regarding challenges of case finding were identified in present study: Policy making and strategies; Human resources issues; Resource availability; Nature of the method used for case finding; Coordination and communication and Community involvement. Conclusions: Prioritizing tuberculosis control program, providing special allowances for personnel working in this field, active case finding in patients with diabetes and HIV/AIDS, prisoners and homeless people, facilitating access to service-providing centers and making use of novel methods for patients education are among the items efficient on diagnosis of tubercular patients."

**Location and date:** Tehran, Iran; March 2011–September 2011

**Setting:** unclear

**Type of screening:** home-based; symptom screening

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** provincial authorities, providers and staff of TB control program

**Data collection method:** in-depth interview (n = 25)

**Data analysis methods:** framework analysis

**Available data:** thin; sparse

**Mwansa-Kambafwile 2013**

**Study characteristics**

Notes

**Aim:** "to evaluate the effectiveness of the paper slip method for TB contact tracing by determining the contact tracing rate, the case detection rate among contacts and the acceptability of this method to both TB patients and their contacts."

**Mwansa-Kambafwile 2013** (Continued)

**Independence of researchers:** YES; study authors work for independent organizations and funding by the USAID and the President's Emergency Plan for AIDS Relief

**Key themes:** people were worried about experiencing stigma from the people around them but thought that the slips were easy to understand and deliver.

**Location and date:** South Africa 2011–2012

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** unclear

**Programme implementation:** trial; evaluation of paper slip method of ACF

**Target population:** unclear

**Participants:** people with TB

**Data collection method:** FGDs (n = 6)

**Data analysis methods:** grounded theory

**Available data:** thin; sparse

**Ndakidemi 2019**

**Study characteristics**

Notes

**Aim:** to understand how to improve identification of TB in children, and challenges to HIV testing in children with TB.

**Language:** English or Kiswahili

**Independence of researchers:** YES; though researchers collaborated with the National TB programme, the research was funded by the US Centers for Disease Control and Prevention.

**Key themes:** staff sometimes struggle to recognize TB in children; community education regarding early treatment for TB and HIV is also critical. TB contact tracing is critical to prevent children from developing TB.

**Location and date:** Tanzania; March 2016

**Setting:** high TB burden

**Type of screening:** health facility based; child contact screening

**Screening tools:** unclear

**Programme implementation:** national TB programme

**Target population:** children

**Participants:** facility staff

**Data collection method:** in-depth interview (n = 41)

**Data analysis methods:** thematic analysis

**Available data:** thin +; sparse

## Ngamvithayapong-Yanai 2019

### Study characteristics

#### Notes

**Aim:** to explore non-household TB contact investigation in northern Thailand. The TB researchers intended to create national guidelines, including how to identify non-household contacts and manage barriers to contact investigation. Teachers spoke about their reluctance to have mobile chest X-ray during annual health check-ups. This is the aspect of the study that falls under community screening. Labour law in Thailand requires employers to test for 5 critical diseases before employing staff.

**Independence of researchers:** NO; this research was part of a project to improve and create national guidance for contact investigation, funded by the Thailand Health System Research Institute.

**Key themes:** TB itself as "communicable" is "culturally considered alarming and frightening" in Thailand. A TB diagnosis may lead to job loss or consequences for employers, and the healthcare system does not follow up contacts well. Chest X-ray in the workplace may be refused because people have to change their clothes. Study researchers introduced empathy or social responsibility to explain why some people with TB felt obligated to inform their colleagues of their status whilst others did not.

**Location and date:** northern Thailand, April–June 2017

**Setting:** high TB burden

**Type of screening:** community-based screening (workplace); contact tracing

**Screening tools:** unclear

**Programme implementation:** national TB programme

**Target population:** unclear

**Participants:** people with TB; community members

**Data collection method:** in-depth interview (n = 3) and FGDs (n = 44)

**Data analysis methods:** grounded theory

**Available data:** thick; rich

## Onazi 2020

### Study characteristics

#### Notes

**Aim:** to understand why ACF programs underperform in Nigeria. The study authors asked about the "felt consequences of structural constraints and hidden social costs of serving" as community health workers. Study authors conducted focus groups with community health workers and interviews with supervisors from community-based organizers and TB programme officers. There is no mention of TB contact tracing in the ACF described in this paper. This study had a quantitative arm that evaluated 4 models of community TB care (Adejumo 2016).

**Independence of researchers:** NO; researchers are associated with the Nigeria National Tuberculosis and Leprosy Control Programme and other NGOs. The study received funding from USAID via TB CARE.

**Key themes:** community health workers can be outsiders. 2 quotations from TB staff show they are "(laughing)" at the question of whether programs are embedded in communities. Local leaders sometimes question programme motives and want payment for access.

**Location and date:** Lagos, Oyo and Abia; Nigeria, January–December 2012

**Setting:** urban, semi-urban, and rural

**Onazi 2020** (Continued)

**Type of screening:** household; contact screening

**Screening tools:** unclear

**Programme implementation:** TB activities in the states were co-ordinated by the state TB control officers who are assisted at the local government area level by the local government area TB supervisors. Community-based TB care in Nigeria was implemented by national and international NGOs. The NGOs work through either the community-based organization or the state TB program.

**Target population:** unclear

**Participants:** community health workers, TB programme managers, state and local government supervisors

**Data collection method:** in-depth interview (n = 16) and FGDs (n = 115)

**Data analysis methods:** framework analysis

**Available data:** thick; rich

**Phyo 2020**
**Study characteristics**

Notes

**Aim:** "To explore the barriers in implementing contact investigation from the perspective of household contacts and health care providers."

**Independence of researchers:** NO; study authors work for national TB programme.

**Key themes:** "The key reasons for not reaching township TB centres included lack of knowledge and lack of risk perception owing to wrong beliefs among contacts, financial constraints related to loss of wages and transportation charges, and inconvenient clinic hours. The reasons for not being investigated included inability to produce sputum, health care providers being unaware of or not agreeing to the investigation protocol, fixed clinic days and times, and charges for investigation."

**Location and date:** Myanmar; January 2018–June 2019

**Setting:** mixed, mostly rural

**Type of screening:** household; contact tracing

**Screening tools:** Xpert MTB/RIF assay

**Programme implementation:** "The International Union Against Tuberculosis and Lung Disease (The Union), an international non-governmental organization, started implementing a community-based MDR-TB care project in selected townships of Myanmar."

**Target population:** contacts of people with MDR-TB

**Participants:** TB contacts; community health workers and project nurses

**Data collection method:** interview (n = 21)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse



## Roxas 2023

### Study characteristics

Notes

**Aim:** "to review the implementation workplace TB programmes in selected companies in a high TB burden region in Eastern Philippines."

**Independence of researchers:** YES; "this research was funded by Johnson & Johnson Philippines, Inc." Researchers work for independent institutions.

**Key themes:** "Results were presented under four themes in accordance with the components of the workplace TB policy: preventive strategies, medical management, data recording and reporting, and social policy. Various good practices, opportunities, and challenges in the implementation of the workplace TB program were identified. There is a need to strengthen the enforcement of policy across different components. Compliance with guidelines on preventive strategies and recording and reporting schemes needs to be intensified. Coordination across different levels and agencies may also be enhanced to allow more efficient implementation. Increased awareness of corporate decision-makers may improve company ownership of the program leading to improved implementation while increased awareness of employees on their rights and entitlements may likewise enhance compliance."

**Location and date:** October–November 2017

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** Chest X-ray

**Programme implementation:** Philippine Health System

**Target population:** office workers

**Participants:** TB contacts; community health workers

**Data collection method:** in-depth interview (n = 19) and FGDs (n = 13)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

## Salazar-Austin 2021

### Study characteristics

Notes

**Aim:** "to explore the nurses' and administrators' experiences with symptom-based screening, study implementation strategies, and ongoing challenges with child contact identification and linkage to facility-based care in order to inform wider roll out of symptom-based screening and develop future interventions to improve outcomes among child TB contacts in South Africa."

**Independence of researchers:** NO; authors work in TB services; funding is by the Harvard Medical School Richardson Fellowship and was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

**Key themes:** "Participants' had mixed opinions about symptom-based screening and high acceptability of the study implementation strategies. A key barrier to optimizing child contact screening and evaluation was the supervision and training of community health workers."

**Location and date:** South-Africa; December 2017–September 2018

**Setting:** unclear

**Type of screening:** facility based; contact tracing

**Salazar-Austin 2021** (Continued)

**Screening tools:** symptom questionnaire

**Programme implementation:** RCT

**Target population:** children

**Participants:** TB nurses and health care administrators

**Data collection method:** in-depth interview (n = 16)

**Data analysis methods:** thematic analysis

**Available data:** thin +; sparse

**Sathar 2020**

**Study characteristics**

Notes

**Aim:** "to describe experiences and preferences of household contacts (HHCs) for HHCT."

**Independence of researchers:** YES; study authors work for independent organizations and funding is by the Arum research institute.

**Key themes:** "The first main theme emphasized that HHCs appreciated the home visits. Participants preferred home visits because they had negative experiences at the clinic such as delayed waiting times and long queues. HHCs supported the screening of children for TB at home. Participants suggested that the research staff could expand their services by screening for diabetes and hypertension alongside TB screening. In the second main theme, there was a sense of responsibility from the HHCs towards accepting the diagnosis of PLTB and caring for them. A sub-theme that emerged was that as their knowledge on TB disease improved, they accepted the TB status of the PLTB empowering them to take care of the PLTB."

**Location and date:** Rustenburg, South Africa September 2013–March 2015

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** TB contacts

**Data collection method:** in-depth interview (n = 24)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

**Shamanewadi 2020**

**Study characteristics**

Notes

**Aim:** to explore enablers and challenges to the implementation of ACF for TB in India and explore "perceived solutions to improve the efficiency" of ACF.

**Shamanewadi 2020** (Continued)

**Independence of researchers:** YES; the interviewer was not involved in ACF programme implementation.

**Key themes:** staff require additional training to deliver ACF and improve access to TB diagnostics. Communities are "indifferent" to TB due to "stigma, lack of awareness...illiteracy, inability to convince patients for a sputum test, and delays in diagnostic tests."

**Location and date:** Bengaluru district, Karnataka, South India; July 2018

**Setting:** rural

**Type of screening:** household; symptom screening

**Screening tools:** symptom questionnaire

**Programme implementation:** national TB programme

**Target population:** high-risk group: people living in urban slums, mobile population and tribes, and people living in construction sites

**Participants:** healthcare providers delivering ACF; people presumed to have TB

**Data collection method:** in-depth interview (n = 17)

**Data analysis methods:** content analysis

**Available data:** thick; sparse

**Singh 2017**

**Study characteristics**

Notes

**Aim:** to explore reasons why people did not initiate isoniazid preventive therapy for child TB contacts.

**Independence of researchers:** YES; research was supported by the WHO.

**Key themes:** the National TB programme should educate parents, simplify screening procedures, and ensure the availability of child-friendly drugs if it wants to improve uptake of isoniazid preventive therapy amongst child TB contacts.

**Location and date:** India; January–March 2016

**Setting:** unclear

**Type of screening:** household; symptom-based and child contact screening

**Screening tools:** symptom questionnaire

**Programme implementation:** national TB programme

**Target population:** children

**Participants:** community health workers and parents of children with TB

**Data collection method:** in-depth interview (n = 25)

**Data analysis methods:** descriptive content analysis

**Available data:** thin +; sparse

## Tesfaye 2020

### Study characteristics

Notes

**Aim:** to explore "barriers and facilitators for household contact tracing of index TB cases".

**Independence of researchers:** YES; study authors work for independent organizations, and there was no specific funding for the study.

**Key themes:** "barriers and facilitators such as monitoring and supervision, training of health workers, logistics and infrastructure, waiting time and institutional readiness, referral, feedback and linkage, human resource, charge for some laboratory, transportation, budget, knowledge, commitment and motivation, workload, distance, social support, economic constrain, and stigma and discrimination for household contact tracing of index TB cases..."

**Location and date:** Anlemo district, Hadiya zone, Ethiopia; 12 March–9 April 2019

**Setting:** mixed

**Type of screening:** household; contact tracing

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** health extension workers, people with TB, household contacts of people with TB, health centre TB focal and district TB coordinator.

**Data collection method:** in-depth interview (n = 16)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

## Thu 2012

### Study characteristics

Notes

**Aim:** to assess workers' knowledge of TB, health seeking, and acceptability of screening in the workplace after being identified as a close contact of a TB index person. Questions also covered perceptions about losing your job if you have TB and the experiences of workers diagnosed with TB.

**Independence of researchers:** YES; his study was supported by the WHO. Though some researchers were associated with the national TB programme, this study was not part of a formal service evaluation.

**Key themes:** TB was uncommon (1%) and yearly screening was not a priority due to cost and the inconvenience (and presumably the low yield/ low perceived risk). Owners agreed they should pay for screening for exposed co-workers but this did not often happen in practice. Workers could not afford diagnostic follow up to screening (chest X-ray).

**Location and date:** Myanmar 2007

**Setting:** urban

**Type of screening:** community based (workplace)

**Screening tools:** unclear

**Programme implementation:** unclear

**Target population:** unclear

**Thu 2012** (Continued)

**Participants:** community business owners

**Data collection method:** in-depth interview (n = 27) and FGDs (n = 28)

**Data analysis methods:** thematic content analysis

**Available data:** thin; sparse

**Tulloch 2015**

**Study characteristics**

Notes

**Aim:** to explore community members' treatment seeking behaviour and their views on ACF in the community in rural Ethiopia. Health education workers delivered a community-based intervention package including advocacy, communication and social mobilization activities (TB education via radio or at religious and social gatherings), identifying symptomatic individuals, and screening (i.e. collecting sputum) in homes or at the health post. Health education workers also followed up positive smear results to deliver treatment, conduct contact tracing, and follow persons found to be smear negative with further investigation.

**Independence of researchers:** this qualitative study is associated with a randomized trial of a complex ACF intervention (Yassin 2013). Study authors conducting qualitative research to understand the acceptability of the trial intervention were also involved in design and conduct of the trial.

**Key themes:** screening creates an expectation of treatment that is not always met (most symptomatic people will have a negative test.) Screening provides access to a care pathway, improving health equity especially for women and the poor. Individuals were glad the TB services were free.

**Location and date:** Sidama zone, Southern Ethiopia, May 2011–February 2012

**Setting:** rural

**Type of screening:** household and health post; symptom screening

**Screening tools:** symptom questionnaire

**Programme implementation:** national TB programme

**Target population:** unclear

**Participants:** people with TB, community members

**Data collection method:** in-depth interview (n = 36)

**Data analysis methods:** thematic analysis

**Available data:** thick; sparse

**Tuot 2019**

**Study characteristics**

Notes

**Aim:** "to explore the acceptability of the active case finding with the seed-and-recruit model in detecting new TB cases and determine the characteristics of successful seeds."

**Independence of researchers:** YES; study authors work for independent organizations and the study was supported by Stop TB Partnership and the United Nations Office for Project 404 Services (UNOPS), Grant number STBP/TBREACH/GSA/W5-14.



**Tuot 2019** (Continued)

**Key themes:** "The seed-and-recruit active case finding model was generally well-received by the study participants. They saw the benefits of engaging TB survivors and utilizing their social network to find new TB cases in the community. The social embeddedness of the model within the local community was one of the major strengths. The success of the model also hinges on the integration with existing health facilities. Having an extensive social network, being motivated, and having good knowledge about TB were important characteristics of successful seeds. Study participants reported challenges in motivating the presumptive TB cases for screening, logistic capacities, and high workload during the implementation. However, there was a general consensus that the model ought to be expanded."

**Location and date:** Cambodia; 2017

**Setting:** mixed

**Type of screening:** seed-and-recruit model

**Screening tools:** unclear

**Programme implementation:** KHANA (a local NGO in Cambodia) has implemented active case finding with a seed-and-recruit model in 4 national priority provinces in Cambodia.

**Target population:** unclear

**Participants:** lay counsellors, TB programme officers and clinical staff, village health volunteer groups, seeds, field staff, community-based directly observed treatment volunteers, and people with TB.

**Data collection method:** in-depth interview (n = 56) and FGDs (n = 64)

**Data analysis methods:** content analysis

**Available data:** thin; sparse

**Vasiliiu 2022**
**Study characteristics**

## Notes

**Aim:** "to assess (1) recruitment capability of study sites, (2) acceptability of the intervention by beneficiaries and providers, and (3) adaptation, integration, and resources of the community intervention in the health system organization, using a feasibility framework proposed by Orsmond and Cohn."

**Independence of researchers:** YES; study authors work for independent organizations, the study is funded by Unitaaid, and the sponsor is Elizabeth Glaser Pediatric AIDS Foundation

**Key themes:** "Healthcare providers and patients found the intervention of child contact investigations and TB preventive treatment management in the household acceptable in both countries due to its benefits (competing priorities, transport cost) as compared to facility-based management. TB stigma was present, but not a barrier for the community intervention. Visit schedule and team conduct were identified as key facilitators for the intervention."

**Location and date:** Cameroon and Uganda; 2019

**Setting:** rural or semi-urban

**Type of screening:** facility based; contact tracing

**Screening tools:** unclear

**Programme implementation:** trial; "the CONTACT study (Community intervention for TB active contact tracing) as part of the CaP TB project (Catalyzing Pediatric Tuberculosis Innovations)"

**Target population:** children

**Vasilu 2022** (Continued)

**Participants:** people with TB patients with household child contacts; community health workers; community leaders, facility TB focal person

**Data collection method:** in-depth interview (n = 24) and FGDs (n = 75)

**Data analysis methods:** thematic analysis

**Available data:** thin; sparse

**White 2018**
**Study characteristics**

## Notes

**Aim:** "to determine the *feasibility* of digital fingerprinting as measured by the proportion of participants and households successfully identified via fingerprints at baseline and follow-up; to describe the reasons for not capturing fingerprints; and to ascertain the technology's *acceptability* in principle and *adoption* in practice among CHWs with experience using it."

**Independence of researchers:** NO; this mixed-methods study was conducted in the context of a household randomized trial of "Enhanced contact investigation"; the trial tested home sputum collection and text messaging for household contacts of index TB people.

**Key themes:** technological failure (failures to capture fingerprints digitally) undermined the authority of community health workers and the TB programme. Tech failure threatened the community's perception of community health workers as competent.

**Location and date:** Uganda; July 2016–July 2017

**Setting:** unclear

**Type of screening:** household; contact tracing

**Screening tools:** sputum sample

**Programme implementation:** unclear

**Target population:** unclear

**Participants:** CHWs

**Data collection method:** in-depth interview (n = 15)

**Data analysis methods:** framework analysis

**Available data:** thin; sparse

CBS: community-based services; CHW: community health worker; CTV: community tuberculosis volunteer; FGD: focus group discussion; HCW: healthcare worker; HHC: household contact; HHCT: household contact tracing; IPT: isoniazid preventive therapy; MDR-TB: multidrug-resistant tuberculosis; n = number of participants; NGO: nongovernmental organization; NIH: National Institutes of Health; RCT: randomized controlled trial; TB: tuberculosis; TPT: tuberculosis preventive therapy; USAID: United States Agency for International Development; WHO: World Health Organization.

**Characteristics of excluded studies** [ordered by study ID]

Study	Reason for exclusion
Abayneh 2020	Participants in this study were healthcare workers and they do not report on community perspectives.

Study	Reason for exclusion
Adejumo 2016	No qualitative data analysis.
Adjobimey 2022	ACF implemented into antenatal services.
André 2018	No qualitative data analysis.
Anochie 2011	No qualitative data analysis.
Armstrong-Hough 2018b	Study explores HIV testing not TB.
Ayles 2013	No qualitative data analysis.
Basir 2019	No qualitative data analysis.
Biermann 2020	Study explores ACF policy and does not include community perspectives.
Biermann 2021	Interviews with experts in the field (e.g. funders, NGOs, government institutions, international societies, think tanks, universities, and research institutions).
Bonadonna 2017	This qualitative study explored diagnostic delay amongst people self-presenting; no ACF.
Chabala 2017	No qualitative data analysis.
Corbett 2010	No qualitative data analysis.
Creswell 2014	No qualitative data analysis.
Datiko 2020	This study investigated diagnostic delay (e.g. self presenting after symptoms), not ACF.
Denegetu 2014	No qualitative data analysis.
Dewi 2016	Passive case detection; not ACF.
Dholakia 2016	No qualitative data analysis.
Dodor 2012	Passive case detection; not ACF.
Fox 2015	No qualitative data analysis.
Furlan 2014	Screening approaches not specific to ACF.
Gebregergs 2014	No qualitative data analysis.
Gele 2010	Explores barriers to TB care, does not include TB screening or ACF.
Goroh 2020	No qualitative data analysis.
Joshi 2018	Explores the implementation of Xpert, a diagnosis technique.
Kaboru 2013	This study collected qualitative data to evaluate the implementation of involving traditional health providers in TB referrals. No community views of the programme were sought.
Kumwenda 2017	Study explores ACF in antenatal services.
Lee 2019	No qualitative data analysis.

Study	Reason for exclusion
Mbuthia 2018	This qualitative study explored diagnostic delay; no screening or ACF.
Mohan 2022	No qualitative analysis.
Mundra 2019	No qualitative data analysis.
Murray 2013	Passive case detection; not ACF.
Møller 2011	This qualitative study explored diagnostic delay; no screening or ACF.
Nguyen 2012	No qualitative data analysis.
Ochom 2018	This study assessed the feasibility of adding home HIV testing to TB contact tracing.
Phetlhu 2018	This mixed-methods study assessed TB knowledge amongst facility-based nurses.
Phiri 2016	No qualitative data analysis.
Rekha 2013	No qualitative data analysis.
Schepisi 2016	No qualitative data analysis.
Shewade 2019	No qualitative data analysis.
Shriraam 2019	No qualitative data analysis.
Tlale 2016	This mixed-methods study collected qualitative data on the implementation of contact tracing from clinic-based health workers and programme coordinators only. Does not describe community views.
Uplekar 2013	No qualitative data analysis.
Vijayageetha 2019	This mixed methods study sought qualitative data from health professionals only in order to understand feasibility. No community views included.
Wingfield 2015	Study explores perceptions of cash transfers to incentivise TB diagnosis.
Yassin 2013	No qualitative data analysis.
Zafar Ullah 2012	This study applied mixed methods to evaluate the implementation of a public-private partnership to improve TB services. Qualitative data concern implementation.
Zhang 2011	No qualitative data analysis.
Zhang 2019	This study employed active case finding within existing services for older people. As such, it does not meet the exclusion criteria for community-wide approaches.
Zulu 2022	The intervention was systematic screening for TB in outpatient departments of primary health facilities.

ACF: active case finding; NGO: nongovernmental organization; TB: tuberculosis.

### Characteristics of studies awaiting classification *[ordered by study ID]*



**Table 2. Assessment of methodological limitations**

Author / year	Were steps taken to increase rigour in the sampling?	Were steps taken to increase rigour in the data collected?	Were steps taken to increase rigour in the analysis of the data?	Were the findings of the study grounded in/ supported by the data?	Please rate the findings of the study in terms of their breadth and depth.	Overall, what weight would you assign to this study in terms of the reliability/trustworthiness of its findings?	Overall, what weight would you assign to this study in terms of the usefulness of its findings for this review?
<a href="#">Ayakaka 2017</a>	3	3	3	3	3	High	High
<a href="#">Biermann 2021b</a>	3	2	2	3	2	High	High
<a href="#">Biermann 2021a</a>	2	3	3	3	2	High	High
<a href="#">Buregyeya 2022</a>	1	1	0	2	2	Low	Medium
<a href="#">Chawla 2021</a>	1	1	0	2	2	Low	Medium
<a href="#">Chiang 2015</a>	2	2	3	3	2	High	Medium
<a href="#">De Santo 2023</a>	3	2	2	3	3	High	High
<a href="#">Emerson 2020</a>	1	2	1	1	1	Medium	Low
<a href="#">Hirsch-Moverman 2021</a>	1	0	1	1	1	Low	Low
<a href="#">Isangula 2023</a>	3	2	2	3	2	High	High
<a href="#">Lorent 2015</a>	2	3	2	3	3	High	High
<a href="#">Marangu 2017</a>	2	2	2	1	2	Medium	Medium
<a href="#">Medina-Marino 2021</a>	3	2	2	3	2	High	High
<a href="#">Ndakidemi 2019</a>	2	2	2	2	1	Medium	Medium
<a href="#">Ngamvithayapong-Yanai 2019</a>	3	3	3	3	3	High	High
<a href="#">Onazi 2020</a>	2	3	3	3	3	High	High
<a href="#">Salazar-Austin 2021</a>	0	3	3	3	2	Medium	High
<a href="#">Shamanewadi 2020</a>	2	2	2	3	2	Medium	High



**Table 2. Assessment of methodological limitations** (Continued)

Singh 2017	2	2	2	2	2	Medium	Medium
Tulloch 2015	3	2	3	3	3	High	High

0: not at all, not stated, can't tell.

1: a few steps were taken.

2: several steps were taken.

3: a fairly thorough attempt was made.

**Table 3. CERQual assessments**

Theme	Subtheme	Studies contributing to review finding	Methodological limitations	Adequacy	Relevance	Coherence	CERQual assessment of confidence in the evidence
Theme 1: ACF improves access to diagnosis for many, but does little to help communities on the edge.	Finding 1.1: ACF improves access for people missed in previous case finding strategies and protects communities from transmission.	<a href="#">Ayakaka 2017</a> ; <a href="#">Emerson 2020</a> ; <a href="#">Hirsch-Moverman 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; 5/7 studies offer thick description	<b>Minor concerns:</b> Findings relevant to a variety of ACF approaches in both rural and urban Africa and South-East Asia	<b>No concerns:</b> Descriptive findings derived directly from studies; discordant views explained elsewhere in review	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
	Finding 1.2: Many communities suffer from material deprivation, and this hinders their ability to engage with ACF.	<a href="#">Chiang 2015</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a> ;	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; all studies offer thick description	<b>No concerns:</b> Findings relevant to a variety of ACF approaches in both rural and urban Africa, South-East Asia, and South America	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>High confidence:</b> Minor concerns regarding coherence; no concerns regarding methodological limitations, relevance, or adequacy
	Finding 1.3: Out-of-pocket costs for travel, treatment, and nutrition persist even in the context of community tuberculosis programmes. Care initiated in the community cannot always be completed in clinics.	<a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Onazi 2020</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; all studies offer thick description	<b>Minor concerns:</b> Findings relevant to a variety of ACF approaches in both rural and urban Africa and South-East Asia	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>High confidence:</b> Minor concerns regarding relevance and coherence; no concerns regarding methodological limitations and adequacy

**Table 3. CERQual assessments** (Continued)

	Finding 1.4: Migrant and unstable populations, difficult geography, and environmental pollution further compromise some marginalized communities.	<a href="#">Ayakaka 2017</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Onazi 2020</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>Minor concerns:</b> Based on a small number of studies; all studies offer thick description	<b>Minor concerns:</b> Findings relevant to a variety of ACF approaches in predominantly urban settings in Africa, South-East Asia, and South America	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored.	<b>High confidence:</b> Minor concerns regarding adequacy, relevance, and coherence; no concerns regarding methodological limitations
Theme 2: People are afraid of diagnosis and its impact.	Finding 2.1: Community members are afraid of the breakdown of their relationships, security, and ability to work due to stigma.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">De Santo 2023</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Onazi 2020</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Tulloch 2015</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; all offer thick description	<b>No concerns:</b> Findings relevant to a variety of ACF approaches in both rural and urban Africa, South America, and South-East Asia	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>High confidence:</b> minor concerns regarding coherence; no concerns regarding methodological limitations, adequacy, and relevance.
	Finding 2.2: Community members avoid diagnosis to protect themselves from stigma.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Chawla 2021</a> ; <a href="#">De Santo 2023</a> ; <a href="#">Hirsch-Moverman 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Medina-Marino 2021</a> ; <a href="#">Biermann 2021a</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Onazi 2020</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; 9/10 studies offer thick description	<b>Minor concerns:</b> Findings relevant to a variety of ACF approaches in predominantly urban settings in Africa, South-East Asia, and South America	<b>No concerns:</b> Descriptive findings derived directly from studies; discordant views explained	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
	Finding 2.3: Community members fear they may be unable to cope with illness and the treatment regimen.	<a href="#">Chawla 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Singh 2017</a> ; <a href="#">Tulloch 2015</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; 4/5 studies offer thick description	<b>Minor concerns:</b> Findings relevant to predominantly door-to-door screening approaches in both rural and urban Africa, and South-East Asia	<b>No concerns:</b> Descriptive findings derived directly from studies; alternate explanations for in-	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence

**Table 3. CERQual assessments** (Continued)

Theme 3: Screening is undermined by weak health infrastructure.	Finding 3.1: Lack of investment has resulted in a weak and sparse tuberculosis infrastructure in competition with other disease campaigns.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Onazi 2020</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; all studies offer thick description	<b>Some concerns:</b> Findings relevant to predominantly contact tracing approaches in predominantly urban settings in Africa, South-East Asia, and South America	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>Moderate confidence:</b> Some concerns regarding relevance; minor concerns regarding coherence; no concerns regarding methodological limitations and adequacy
	Finding 3.2: Lack of investment makes follow-up care difficult. People face repeated tests and visits, wasted time, and fractious interactions with health providers.	<a href="#">Ayakaka 2017</a> ; <a href="#">Biermann 2021b</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Chawla 2021</a> ; <a href="#">Chiang 2015</a> ; <a href="#">Emerson 2020</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Marangu 2017</a> ; <a href="#">Onazi 2020</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; all studies offer thick description	<b>Some concerns:</b> Findings relevant to predominantly contact-tracing approaches in both rural and urban Africa, South-East Asia, and South America	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>Moderate confidence:</b> Some concerns regarding relevance; minor concerns regarding coherence; no concerns regarding methodological limitations and adequacy
	Finding 3.3: People with tuberculosis or other conditions who attend screening programmes expect follow-up health care, which they may or may not receive.	<a href="#">Lorent 2015</a> ; <a href="#">Tulloch 2015</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>Minor concerns:</b> Based on 2 studies; both studies offer thick description	<b>Minor concerns:</b> Findings relevant to a variety of ACF approaches in both rural and urban Africa and South-East Asia	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>High confidence:</b> Minor concerns regarding adequacy, relevance, and coherence; no concerns regarding methodological limitations
	Finding 3.4: Community education improves awareness of tuberculosis in some settings, but lack of full information impacts community members, parents, and health workers, and sometimes leads to harm for children.	<a href="#">Ayakaka 2017</a> ; <a href="#">Buregyeya 2022</a> ; <a href="#">Emerson 2020</a> ; <a href="#">Hirsch-Moverman 2021</a> ; <a href="#">Lorent 2015</a> ; <a href="#">Marangu 2017</a> ; <a href="#">Ndakide-mi 2019</a> ; <a href="#">Ngamvithayapong-Yanai 2019</a> ; <a href="#">Shamanewadi 2020</a> ; <a href="#">Singh</a>	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; 9/11 studies offer thick description	<b>No concerns:</b> Findings relevant to a variety of ACF approaches in both rural and urban Africa, South-East Asia, and South America	<b>No concerns:</b> Descriptive findings derived directly from studies; discordant views explained	<b>High confidence:</b> No concerns regarding adequacy, relevance, coherence, or methodological limitations

Interpretive findings explored

**Table 3. CERQual assessments** (Continued)

		2017; Tulloch 2015					
Theme 4: Health workers are undervalued but important part of ACF	Finding 4.1: Health workers are undervalued and take on difficult work.	Ayakaka 2017; Buregyeya 2022; Lorent 2015; Onazi 2020	<b>No concerns:</b> Mostly based on high-quality studies	<b>No concerns:</b> Based on several studies; all studies offer thick description	<b>Some concerns:</b> Findings relevant to predominantly contact-tracing approaches in predominantly urban settings in Africa and South-East Asia	<b>Minor concerns:</b> Descriptive findings derived directly from studies; no discordant views identified or explored	<b>Moderate confidence:</b> Some concerns regarding relevance; minor concerns regarding coherence; no concerns regarding methodological limitations and adequacy
	Finding 4.2: Often the compassion of health workers and their ability to go above and beyond their job is what retains people with tuberculosis in appropriate care.	Biermann 2021a; Biermann 2021b; Buregyeya 2022; De Santo 2023; Lorent 2015	<b>No concerns:</b> Mostly based on high-quality studies	<b>Minor concerns:</b> Based on several studies; all studies offer thick description	<b>Some concerns:</b> Findings relevant to predominantly contact tracing approaches in mostly urban settings in Africa and South-East Asia	<b>Some concerns:</b> Alternative explanations for interesting findings not explored	<b>Moderate confidence:</b> Some concerns regarding relevance and coherence; minor concerns regarding adequacy; no concerns regarding methodological limitations
Theme 5: Local leadership is necessary but not sufficient for ensuring appropriate programmes.	Finding 5.1: Local leadership creates an intrinsic motivation for communities to value ACF and contact tracing.	Ayakaka 2017; Buregyeya 2022; Lorent 2015; Onazi 2020; Shamanewadi 2020	<b>No concerns:</b> Based on all high-quality studies	<b>No concerns:</b> Based on several studies; all studies offer thick description	<b>Minor concerns:</b> Findings are relevant to a variety of ACF approaches in urban and rural settings in Africa and South-East Asia	<b>No concerns:</b> Descriptive findings derived directly from studies; discordant views explained elsewhere in review	<b>High confidence:</b> Minor concerns regarding relevance; no concerns regarding methodological limitations, adequacy, and coherence
	Finding 5.2: ACF and contact tracing programmes need to balance local rapport with knowledge and professionalism.	Lorent 2015; Shamanewadi 2020	<b>No concerns:</b> Mostly based on high-quality studies	<b>Minor concerns:</b> Based on 2 studies; both studies offer thick description	<b>Minor concerns:</b> Findings relevant only to door-to-door ACF approaches in urban and rural settings in Africa and South-East Asia	<b>No concerns:</b> Discordant viewpoints described and explained	<b>High confidence:</b> Minor concerns regarding adequacy and relevance; no concerns regarding methodological limitations and coherence

ACF: active case finding

**Table 4. Description of studies included in thematic analysis**

Study	Reason for sampling	Study context	Type of active case finding
<a href="#">Ayakaka 2017</a>	Thick	Urban Uganda	Contact tracing
<a href="#">Biermann 2021a</a>	Thick	High TB burden, Nepal	Contact tracing
<a href="#">Biermann 2021b</a>	Thick	Urban Vietnam	Contact tracing
<a href="#">Buregyeya 2022</a>	Thick	High TB burden, urban Kenya	Unclear
<a href="#">Chawla 2021</a>	Thick	High TB burden, urban India	Contact tracing
<a href="#">Chiang 2015</a>	Thick	Peru	Contact tracing
<a href="#">De Santo 2023</a>	Thick	Urban and rural South Africa	Contact tracing
<a href="#">Emerson 2020</a>	Thin + (children)	Rural Tanzania; high TB burden	Contact tracing
<a href="#">Hirsch-Moverman 2021</a>	Thin + (children)	Lesotho	Contact tracing
<a href="#">Isangula 2023</a>	Thin + (children)	Tanzania, Kenya, Uganda, and Ethiopia	Contact tracing
<a href="#">Lorent 2015</a>	Thick	Urban Cambodia	Door to door
<a href="#">Marangu 2017</a>	Thick	Kenya	Contact tracing
<a href="#">Medina-Marino 2021</a>	Thick	Urban South Africa	Contact tracing
<a href="#">Ndakidemi 2019</a>	Thin + (children)	Tanzania	Contact tracing
<a href="#">Ngamvithayapong-Yanai 2019</a>	Thick	Thailand	Workplace screening and contact tracing
<a href="#">Onazi 2020</a>	Thick	Mixed settings Nigeria	Contact tracing
<a href="#">Salazar-Austin 2021</a>	Thick	South Africa	Contact tracing
<a href="#">Shamanewadi 2020</a>	Thick	Rural India	Door to door
<a href="#">Singh 2017</a>	Thin + (children)	India	Door to door and contact tracing
<a href="#">Tulloch 2015</a>	Thick	Rural Ethiopia	Door to door and community screening

TB: tuberculosis.

## APPENDICES

### Appendix 1. Search strategies

#### PubMed (MEDLINE)

Search	Query
#1	Search tuberculosis Field: Title/Abstract
#2	Search "Tuberculosis"[Mesh]
#3	Search (#1) OR #2
#4	Search "case finding" or ACF or ICF Field: Title/Abstract
#5	Search "Contact Tracing"[Mesh]
#6	Search "Mass Screening"[Mesh]
#7	Search "contact screening" or "contact tracing" or "contact investigation" Field: Title/Abstract
#8	Search (#7) OR #6 OR #5 OR #4
#9	Search (#3) AND #8
#10	Search ((focus group [MeSH Terms]) OR "interviews as topic"[MeSH Terms]) OR social stigma [MeSH Terms] OR "Surveys and Questionnaires"[Mesh]
#11	Search belief* OR attitude* OR opinion* OR views OR interview* OR survey* or perception* OR perspective*
#12	Search (#11) OR #10
#13	Search (#9) AND #12 Filters: Publication date from 2010/01/01

## Embase

Search Strategy:

1 tuberculosis.mp. or tuberculosis/

2 contact tracing.mp. or contact examination/

3 ("contact screening" or "contact investigation").mp.

4 exp case finding/

5 ("case finding" or ACF or ICF).mp.

6 2 or 3 or 4 or 5

7 1 and 6

8 focus group.mp.

9 Diagnostic Interview Schedule/ or telephone interview/ or interview\*.mp. or interview/

10 social stigma.mp. or social stigma/

11 questionnaire.mp. or questionnaire/

12 8 or 9 or 10 or 11



13 7 and 12

14 (belief\* or attitude\* or opinion\* or views or interview\* or survey\* or perception\* or perspective\*).mp.

15 7 and 14

16 13 or 15

17 limit 16 to yr="2010 -Current"

### CINAHL and PsycInfo (EBSCOhost)

#	Query
S11	S7 AND S10
S10	S8 OR S9
S9	TX belief* OR attitude* OR opinion* OR views or perception* OR perspective*
S8	TX focus group OR TX interview* OR TX ( survey or questionnaire ) OR TX social stigma
S7	S1 AND S5
S6	S1 AND S5
S5	S2 OR S3 OR S4
S4	TX case finding OR TX ( ACF or ICF )
S3	TX contact investigation OR TX contact screening
S2	TX contact tracing
S1	TI ( tuberculosis or tb ) OR AB ( tuberculosis or tb ) OR MH tuberculosis

### Database: LILACS

Search on: tuberculosis or TB [Words] and "case finding" or "contact tracing" or "contact screening" [Words] and interview or survey or opinion\$ or perception\$ [Words]

### Web of Science

# 4	#2 AND #1  <b>Refined by:PUBLICATION YEARS:</b> ( 2023 OR 2022 OR 2021 OR 2020 OR 2010 OR 2019 OR 2018 OR 2017 OR 2016 OR 2015 OR 2014 OR 2013 OR 2012 OR 2011 )  Indexes=SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH Timespan=All years
# 3	#2 AND #1  Indexes=SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH Timespan=All years

(Continued)

# 2 **TOPIC:** ("focus group\*" or interview\* or "social stigma" or survey\* or questionnaire\*) **ORTOPIC:** (belief\* OR attitude\* OR opinion\* OR views OR interview\* OR survey\* or perception\* OR perspective\*)

Indexes=SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH Timespan=All years

# 1 **TOPIC:** (tuberculosis OR TB) **ANDTOPIC:** ("contact tracing" or "contact screening" or "contact investigation" or "case finding")

Indexes=SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH Timespan=All years

### Global Index Medicus ([www.globalindexmedicus.net/](http://www.globalindexmedicus.net/))

Search

(tw:(tuberculosis)) AND (tw:(contact tracing)) AND (tw:(interview or survey or opinion\*))

### WHAT'S NEW

Date	Event	Description
28 March 2024	Amended	Minor amendment to include Vittoria Lutje, CIDG Information Specialist, in the Acknowledgements section

### HISTORY

Protocol first published: Issue 3, 2021

Review first published: Issue 3, 2024

### CONTRIBUTIONS OF AUTHORS

MT screened studies, performed quality appraisal, conducted thematic analyses, and wrote up findings.

NM screened studies, performed quality appraisal, conducted thematic analyses, and commented on the final version of the review.

SvW screened studies, performed quality appraisal, commented on findings in wider team discussions, and commented on the final version of review.

SO commented on findings in wider team discussions and commented on the final version of review.

All review authors approved the final version of the review.

### DECLARATIONS OF INTEREST

MT is a CIDG Research Assistant and was not involved in the editorial processing or decision-making for this article. She has no known conflicts of interest.

NM was a CIDG staff member and was not involved in the editorial processing or decision-making for this article. She has no known conflicts of interest.

SSvW has no known conflicts of interest.

SO is a CIDG Editor and was not otherwise involved in the editorial process or decision-making for this article. She has no known conflicts of interest.

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## DIFFERENCES BETWEEN PROTOCOL AND REVIEW

There were minor changes between protocol and review ([Medley 2021](#)). For study characteristics, we chose not to extract information on study language as all included studies were published in English. Further, no studies reported on consent and confidentiality in programmes, so we chose not to present this domain in the [Characteristics of included studies](#) table.

The protocol for this review aimed to sample for and perform key subgroup analysis on children and refugees. For the full review we decided to expand this to all key populations of interest in the 2021 WHO tuberculosis guidelines. This includes: homeless communities, communities in remote or isolated areas, indigenous populations, migrants, refugees, internally displaced persons, and other vulnerable or marginalized groups with limited access to health care, including children, people with disabilities, and women in patriarchal societies ([WHO 2021](#)).