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Patient-Facing Workforce Requirements for Tuberculosis (TB) Programs: A Mixed Methods Systematic Review Protocol. Update of previous study from a scoping review to a mixed methods systematic review

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ADMINISTRATIVE INFORMATION

Support - Nil.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 October 2025 and was last updated on 22 December 2025.

INTRODUCTION

Review question / Objective The objective of this review is to synthesize existing literature that examines the patient-facing workforce required to provide care for patients with tuberculosis (TB) in line with the TB cascades/ continuum of care.

Rationale Current literature recognises the importance of human resources for health (HRH) in TB care pathways, (15-17) however, there is a lack of comprehensive synthesis of the existing evidence around the specific nature and types of workforce needs in TB programs relative to the population needs. A preliminary search was conducted in August 2025 with the Medline (Ovid) database and there were only studies which focus on one specific aspects of TB care, ie TB infection workforce (14, 18) or a single type of health care professional (19, 20). Overall, these individual studies form a fragmented picture of the TB workforce required. Subsequently, health services are unable to adequately assess and request the appropriate skill mix of professionals required.

This gap in evidence is particularly important in the context of the WHO End TB Strategy which outlines the goal for TB elimination by 2050. However, considering the current increasing incidence of TB, there is a disconnect between these targets and present reality. This review aims to help bridge that gap by providing an understanding of current research on frontline health workforce for TB care.

Condition being studied Tuberculosis (TB) is a communicable disease caused by the bacteria Mycobacterium tuberculosis. It is estimated to have infected about one quarter of the global population and remains a leading cause of death if untreated.(1) Once infected with TB, the bacteria can lie dormant in the body and approximately 10%-20% of people can progress to develop active TB disease where they become unwell and can spread the infection to other people. (2)

Mycobacterium tuberculosis is a slow-growing bacteria which requires a prolonged course of therapy with multiple antibiotics taken daily for several months with many side effects. The dormant state, known as TB infection (or Latent TB), requires a shorter (minimum three months) course of antibiotics to prevent the chance of future development of TB disease. (3) When TB disease occurs, patients require a longer duration of multiple antibiotics to achieve cure. Adherence to the correct duration of treatment is essential for the prevention of transmission and emergence of drug-resistant TB from missed doses. Multi-drug resistant TB results in more burden to the patient and the health system with even longer treatment duration and more significant side effects and higher mortality. (4, 5) These lengthy treatment regimens necessitates a multidisciplinary workforce to support and address not only the variety of issues a patient may face during their therapy, but also to ensure adherence to prevent transmission to others and the development of resistance. (6)

Patient facing workforce roles in the management of tuberculosis refer to healthcare workers who interact directly with patients to complete their TB management. The key patient facing roles include medical officers; nurses; outreach/community health workers and allied health staff such as radiographers/radiologists and pharmacists. This workforce provides clinical expertise with the diagnosis of treatment of TB and also supports patients to address the psychosocial and cultural barriers that may hinder access to care or treatment completion. (7, 8). These frontline worker roles are reflective of the direct/essential needs in TB healthcare. (9) Reviewing all roles throughout treatment journey is important as depending on the program site, some clinical roles are task shifted to different key workers. Ie adequately trained community health workers may be utilised for detection and screening outside the formal clinic/ hospital setting. (10)

The World Health Organisation (WHO) End TB Strategy provides a blueprint for the reduction of TB worldwide. The WHO recognises that central to this strategy is an integrated, capable and adequately resourced health workforce to deliver and provide functioning TB programs.(11) The WHO acknowledges that effective service provision relies on the availability of these qualified health personnel to manage many aspects of the TB treatment journey.

TB incidences vary across the world with the majority cases occurring in low and middle-income countries. As a result, workforce skills and TB program structures differ across regions, impacted by the disease burden and resource availabilities. To address these variations, the WHO has set a standard of care from evidence based research which provides consistency in treatment and diagnosis for each person, irrespective of resourcing or location. (12) A core concept in the management of TB globally is the TB cascade of care (also referred to as a continuum of care). This framework has been developed to understand and quantify the potential areas of the treatment journey that patients may drop out of therapy, rendering them at risk of reinfection/serious complications. (13, 14) Broadly, the TB cascade of care steps include identification of individuals with TB symptoms; diagnosis and testing; initiation of treatment; retention in care; completion of therapy and monitoring for relapse.

METHODS

Search strategy A comprehensive literature search was conducted in MEDLINE, Embase, Emcare, CINAHL and Web of Science to identify studies on workforce requirements for TB programs. The search combined subject headings and free-text terms broadly related to tuberculosis, health workforce, staffing and health care teams. The full search strategy will be reported in an appendix.

Participant or population Studies that examine patient-facing health workers engaging in TB management. This includes, but is not limited to the following rolesPhysicians/Doctors; Nurses; Community Health Workers; Pharmacists; Radiographers/Radiologists.

Intervention Phenomenon of interest:Studies that examine workforce requirements for TB services such as staffing models or workforce planning approaches or workload or competencies or training or identification of workforce gaps.

Comparator Context:Studies that examine TB service delivery or staffing within the TB continuum/cascade of care. The cascade of care being the identification of individuals with TB disease/TB infection; diagnosis/testing; initiation of treatment; retention in care; completion of therapy; monitoring for relapse.

Study designs to be included This mixed methods systematic review will include a broad range of sources including quantitative, qualitative

and mixed-methods studies. Mixed methods studies will only be considered if the data from the quantitative or qualitative parts can be extracted.

Eligibility criteria EXCLUSION CRITERIA:Studies not in English; Studies published before 1980 as this was the period when multiple drug regimens started to be used, in line with current standards of care. Exclude studies that are reviews; protocols; commentaries.

Information sources The search strategy will aim to identify published and unpublished studies. An initial limited search of MEDLINE (OVID) and CINAHL was undertaken to identify articles on the topic. Further index terms used in the articles in the initial search were used to develop the full search strategy. Databases to be searched will include CINAHL; MEDLINE (OVID); Embase; Emcare and Web of Science. The reference list of all studies selected for critical appraisal will be screened for further studies.

Main outcome(s) The primary outcome of the review is to identify and synthesise and critically appraise exisiting evidence on patient-facing workforce requirements of tuberculosis programs. The review aims to determine the type, number, skill mix, workforce planning and training required to sustain an TB service throughout the TB cascade of care.

Quality assessment / Risk of bias analysis Assessment of Methodological quality: Quantitative papers and the quantitative component of mixed methods papers, qualitative papers and the qualitative component of mixed methods papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion.
Authors of the papers will be contacted if there are missing or additional data requiring clarification if needed. Disagreements that arise between the two reviewers will be resolved through discussion or with a third reviewer. Results will be reported in narrative format and in a table.
All studies, regardless of the results of their methodological quality will undergo data extraction and synthesis if possible.

Strategy of data synthesis Data extraction:
Quantitative and qualitative data will be extracted from studies included in the review by two independent reviewers. The data extracted will include specific details about the population, study methods; phenomena of interest and context relevant to the review question. Quantitative data will be composed of data-based outcomes of descriptive and/or inferential statistical tests. Qualitative data will be composed of themes or subthemes and will be assigned a level of credibility.
Disagreements arising between reviewers will be resolved through discussion or with a third reviewer.
Data transformation:
Quantitative data will be converted into qualitative format. This will involve transformation into textual descriptions or narrative interpretation of the quantitative results in a way that answers the review questions.
Data Synthesis and integration:
This review will follow a convergent integrated approach according to the JBI methodology for mixed methods systematic reviews using JBI SUMARI. (21) This will involve assembling the qualitised data with the qualitative data. Assembled data are categorised and pooler together based on similarity in meaning to produce a set of integrated findings in the form of line of action statements.

Subgroup analysis Subgroup analyses will be done to explore heterogeneity in patient-facing workforce. Subgroups will be defined a priori based on known workforce skill mix and requirements along the cascade of care. Analysis will be stratified by the type of professional; stage of care cascade; training requirements; workforce modelling and health care setting.

Sensitivity analysis Sensitivity analyses will be done to examine the review findings and to assess methodological decisions on estimates of patient-facing workforce requirements for TB programs. This will be done in accordance with JBI methodological guidance and appropriate JBI appraisal instruments.

Language restriction English only.

Country(ies) involved Australia.

Keywords health workforce; patient care team; tuberculosis.

Contributions of each author
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