Clinical Journal for Medicine, Health and Pharmacy, Vol. 2, No, 4, December 2024
ISSN: 3049-1282

A Systematic Review and Meta-Analysis of Tuberculosis Patients: Perspectives of Pharmacists Towards Sustainability

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Received: 03/September/2024; Revised: 07/October/2024; Accepted: 04/November/2024; Published: 20/December/2024

Abstract

In resource-constrained environments, national Tuberculosis (TB) control programs heavily rely on foreign funding, jeopardizing program viability. An acknowledged necessity exists for formulating recommendations about the sustainable programming of existing TB control activities. This study aimed to investigate public pharmacists' views on the sustainability of TB control strategies at the leading medical level. Utilizing interpretative epistemology, comprehensive online conversations were performed with ten healthcare pharmacists experienced in resource planning for the TB control strategy. Thematic content evaluation was used as the analytical strategy for the textual material. Three topics were inductively extracted from the thematic review: community participation, participation of stakeholders, and optimal utilization of the Primary Healthcare (PHC) network. Community engagement was a crucial factor in maintaining TB control measures. This was ascribed to the characteristics of the illness and the prevailing health-seeking behavior. Stakeholder participation was linked to financing agreements among public and private entities and deemed crucial for integrating new projects into the established framework. Adequate primary healthcare infrastructure is essential for maintaining present TB control activities at the primary healthcare level. Creating a conducive working atmosphere through legislation, optimizing the use of existing assets, broadening the network of suppliers, implementing inclusive preparation, enhancing investment in research, and promoting affordable screening are essential for continuing TB control programs.

Keywords: Tuberculosis, Meta-Analysis, Pharmacist, Sustainability.

1 INTRODUCTION

The bacterium Mycobacterium induces tuberculosis (TB) (Natarajan et al., 2020). The germs often target the lungs. However, other bodily regions can also be susceptible. Symptoms encompass a cough persisting for over three weeks, fever accompanied by chills, nocturnal sweats, diminished appetite, fatigue, and, in severe instances, hemoptysis with thoracic discomfort. TB disseminates throughout the air when an individual diagnosed with pulmonary TB wheezes, coughs, or speaks (Nguyen-Ho et al., 2021).

TB is a significant contributor to global morbidity and death. TB ranks among the ten leading causes of mortality globally. Approximately 10 million individuals were impacted by TB in 2018. Pakistan ranks 5th globally in TB incidence, accounting for 6% of all recorded TB cases worldwide (Abdullah et al., 2022). Other nations with a heavy burden include the Philippines, Indonesia, China, Ghana, Nigeria, and South Africa. Sixty percent of the global reported cases occurred in the six nations above. Seventeen additional Sustainable Developmental Goals (SDGs) were ratified at the United Nations Conference (Pizzi et al., 2020).

The sustainability of healthcare initiatives has recently garnered attention from numerous stakeholders, including scientists, sponsors, and community members, emphasizing the need to comprehend the contextual conditions in which treatments are situated (Sherman et al., 2020). Evidence indicates that the sustainability of health promotion efforts can only be attained with a robust emphasis on Primary Healthcare (PHC) (Gizaw et al., 2022).

Given the growing global focus on maintaining the viability of health programs, program directors in the TB control programs have acknowledged the necessity of cultivating recognition and direction for sustainable development and have urged the authorities to adopt a long-term strategy. This study examines healthcare pharmacists' viewpoints on the sustainability of TB control strategies in primary healthcare settings (Miller & Goodman, 2020). The results of this research will inform policy and organizational choices to enhance sustainable TB initiatives at the primary healthcare level.

The SDG establish an objective to eradicate TB by 2035. TB is regarded as a stigma that impacts familial and social ties, leading to detrimental well-being and economic consequences. Individuals afflicted with TB and their families encounter adverse perceptions and a feeling of scrutiny. Following the Alma Ata statement in 1978, international initiatives to enhance access to primary healthcare commenced. In 2001, TB was designated a public health crisis, leading to the National Treatment Programme (NTP), which included a broader Directly Observation Treatment Short-Course (DOTS) program (Daneshi et al., 2022). Despite integrating TB treatments into the district-level medical structure, the private market is perceived as the main entry point for most customers. TB is both treatable and preventable. The detection and initiation of therapy are crucial for the elimination of TB. An undiagnosed and mistreated individual poses a risk of transmitting the illness to other healthy people. Numerous research from many nations indicated inadequate Knowledge, Mentality, and Practice concerning TB. This review examines the Knowledge, Attitudes, and Practices (KAP) about TB among medical pharmacists and ordinary people (Lee et al., 2021).

2 LITERATURE RESEARCH

The study used the Preferred Reported Items for Systematic Studies and Meta-Analyses (PRISMA) standards (Parums, 2021). The literature review was conducted in March and April 2021 to examine every study available online till April 2021 that illustrates knowledge, attitudes, and behaviors regarding TB. PubMed, UpToDate, Cochrane Libraries, and Google Scholar were utilized to locate

pertinent material. The research was examined using Boolean operations to combine keywords to identify relevant publications. Figure 1 shows the workflow of the literature research process.

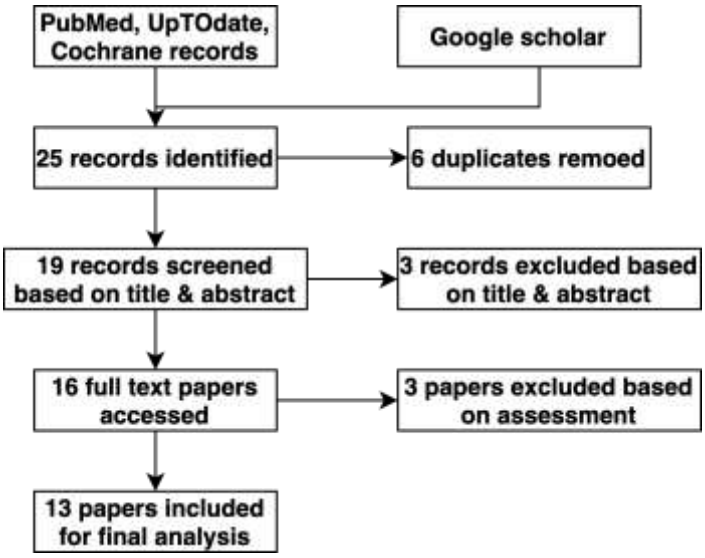

Figure 1: Workflow of the Review Process

2.1 Selection of Studies

The acceptability of articles was assessed in two phases. The initial phase entailed the identification and examination of titles and descriptions. A comprehensive assessment was performed in the second phase to identify papers that met the qualification and inclusion requirements.

2.2 Criteria for Inclusion

All research on Knowledge, Attitude, or Behavior about TB done in any province, environment, or populace was chosen until 2020.

2.3 Criteria for Exclusion

Publications needing originality or failing to address understanding, mindset, awareness, and practices of TB were excluded.

2.4 Data Extraction

The findings were collected and categorized into the following themes that arose from the gathering: understanding of TB, perceptions, practices, and TB discrimination.

2.5 Evaluation of Quality

The included research was evaluated for quality using the Newcastle-Ottawa Scale method. Information abstraction and evaluation were conducted for each trial.

2.6 Results

A total of 25 recordings were located and evaluated based on their titles. Six investigations were identified as duplicates and were removed. Six publications were excluded due to their irrelevance to

the assessment, as determined by a comprehensive analysis of the description and text. 13 items were ultimately incorporated. The KAP studies on TB were all cross-sectional and utilized a standard survey for data gathering. The predominant sampling technique employed was convenience sampling.

Eleven investigations were undertaken in the provinces of Punjab and Sindh. Both research projects included people from Khyber Pakhtunkhwa. Among them, seven investigations were done on the entire population, one research involved both the public and TB participants, two focused on TB recipients, one targeted private pharmacists, one included the general public with healthcare providers, and one examined pharmaceutical trainees. The following topics were derived from these studies:

Theme 1: Understanding of TB

The survey examining pharmacists' expertise found that two-thirds of independent pharmacists responded accurately, but one-third lacked adequate details about the symptoms. 60% of healthcare interns miscalculated the incidence of TB cases. While 95% of medical trainees accurately identified the spreading of pulmonary TB, only 57% adequately understood the World Health Organisation (WHO)-recommended DOTS therapy (Mirzayev et al., 2021).

In the public, 88% of the participants were familiar with or had heard of TB, but knowledge of TB was 40%. In a separate survey, 97% of participants indicated awareness of TB, although 7% were knowledgeable about its symptoms. Among university graduates, 79% have a strong understanding of TB. Merely 40% saw TB as an infectious illness. In a poll, 30% were aware of Multidrug-resistant TB. Regarding the cure, 50% and 45% concur that TB is both treatable and preventive. Individuals with high education and income levels had enough knowledge about TB.

Theme 2: Public Perceptions and Discontinuation of Treatment Plans

Among TB clients, 12% did not perceive TB as a preventable illness, whereas 46% believed that infected food and equipment were the origins of TB spread. Concerning the cessation of TB treatment, 60% of the general populace said that therapy should be discontinued upon symptom resolution, whereas 20% of rural residents and 15% of urban residents deemed the finishing of treatment to be significant.

Theme 3: Pharmacists' Training and Detection of TB

Only 15% of private pharmacists advocated sputum microscopy for diagnosing pulmonary TB, while the remaining 85% suggested various tests, including chest X-ray and tuberculin testing. Studies performed a study revealing that 60% of TB patients sought medical attention after experiencing illness (Subbaraman et al., 2020). Only 7% received an early diagnosis of TB.

Theme 4: Prioritization of Treatment Choice in the General Community

85% of participants from the general public chose therapies from allopathic pharmacists, while 15% selected herbal and homeopathic treatments (Wolf et al., 2022).

Theme 5: Follow-up Strategies of Private Pharmacists

The research observed in their survey that 88% of private Pharmacists in rural regions need to do follow-up sputum microscopes (Eldooma et al., 2023). They depend on clinical enhancement and radiographic resolution. Private Pharmacists estimated that 65% of their clients exhibited noncompliance with the treatment.

Theme 6: Data Sources Diverse perspectives

Electronic media is the primary data source, with 62% citing television and 44% identifying medical pharmacists as their information resource.In a separate study, 58% of participants indicated that pharmacists are the primary source of knowledge. Research showed that 42% of the participants identified a family member or acquaintance as an origin of the data, 39% cited television, 3% referenced pharmacists, and just 1% acknowledged female pharmacists as an origin of data.

Theme 7: TB as a Stigma

35% of the general public believes TB impacts their social and personal lives (Wouters et al., 2020). Another study revealed that 70% of individuals conceal their TB status due to fear of repercussions.

3 MATERIALS AND METHODS

3.1 Study Design

The study employed an interpretive methodology, recognizing the truth is socially produced within a contextual framework through naturalistic dialogue. The research used a qualitative exploration methodology, which enabled us to investigate medical pharmacists' perspectives on the sustainability of the TB control program.

3.2 Sampling and Eligibility Criteria

Objective sampling attracted healthcare specialists from different groups, including governmental entities (national and regional TB control programs) and nonprofit associations. Objective sampling was considered suitable for the study since it aims to provide a comprehensive knowledge of information-rich instances.

Individuals who satisfied the above eligibility criteria were asked to participate in the study: Possessing over five years of professional expertise, either past or present, in the field of TB control and public healthcare management; currently employed or presently working at the national or province levels; capable of participating in Skype-based assessments (Nikouline et al., 2020). The requirements for exclusion were a lack of involvement in TB programs and the absence of Skype usage.

3.3 Recruitment

Email requests were dispatched to individuals who satisfied the inclusion requirements. A request for an awareness document was sent, and notified permission was obtained over email. A Skype

conversation was arranged with those who participated at a time and location of their preference. Of the nineteen potential subjects recruited for the research, ten healthcare pharmacists engaged in lengthy conversations. Although some eligible individuals failed to respond to multiple invitations, two declined to participate in the study due to their professional obligations. Ten comprehensive interviews were performed.

3.4 Data Collection

An in-depth, semi-structured subject was performed utilizing an interview guideline (that is accessible upon demand), which was created from pertinent sources. Essential inquiries are enumerated here.

- What is the significance of primary medical care for TB control within the framework of the SDG?
- What is your definition of SDG, and why is it significant in contemporary society?
- What is your assessment of the SDG of the TB control system?
- What sustainability problems does national TB control encounter, and how can they be addressed?
- In your perspective, what are one or more essential components necessary for sustainability, depending on the conversation?

Skype conversations were performed from October 2020 to May 20204. The conversations were conducted in audiovisual codecs with respondent agreement, lasting from thirty to forty-five minutes.

3.5 Analytical Approach

A thematic approach was utilized to examine the transcripts of interviews. This entailed an analysis of textual material and a recognition of emergent themes or concepts pertinent to the research field.

3.6 Ethical Considerations

Ethical approval for the project was obtained from the International Investigation Force evaluation board and the College of Liverpool's ethical oversight commission. Respondents were permitted to resign from the research without providing why. They were guaranteed the security and integrity of their information. Pertinent information was anonymized. No financial remuneration was provided to respondents.

3.7 Results

3.7.1 Conceptions of Sustainability

The subject matter analysis encompassed conversations with ten pharmacists with expertise in organizing resources within the TB program. The examination of textual data revealed three overarching themes concerning the comprehension of the ongoing viability of TB control activities at

the primary healthcare level. Participants endeavored to dismantle the notion of ecological sustainability according to their interpretations.

Most of those polled perceived sustainability as prolonging finances until TB is eradicated. Nevertheless, an alternate interpretation of sustainability was developed to preserve current regulatory measures. Based on respondents' interpretations of sustainability, this was organized around three themes: an effective primary healthcare system, outreach to the community, and involvement of stakeholders.

3.7.2 Efficient PHC System

The investigated region has a comprehensive primary medical system underpinning the healthcare framework. The significance of the PHC framework was acknowledged in the SDG by emphasizing PHC services and considering approaches outside vertical programs.

An effective PHC sector is developed through two subthemes: the importance of the PHC sector and the enhancement of the medical care sector. The PHC network is the initial tier of medical care and includes governmental and commercial institutions. Most responders acknowledged the PHC system's crucial importance, asserting that viability in the TB prevention strategy can only be attained with further enhancement.

3.7.3 PHC System Strengthening

Many responders highlighted the importance of changes to establish and execute pertinent rules. Enhancing the capabilities of healthcare workers and strengthening referral connections across healthcare institutions was acknowledged as a critical element for finding unreported TB cases and maintaining control initiatives. The majority of responders placed significant emphasis on technologies for health system improvement.

3.7.4 Engagement in Community Activities

The analyzed data framed community engagement in TB control programs through two subthemes: health-seeking behavior and medical donations.

3.7.5 Health-Seeking Behavior

Low educational attainment, inadequate health knowledge, and the stigma surrounding TB contribute to the emergence of detrimental health-seeking behaviors. Due to the discrimination of TB, enhancing understanding of the disease is seen as crucial for fostering demand for therapy. Several participants indicated that the existing programming needs more genuine engagement from community people.

3.7.6 Contributions to Medicine

The expense of TB care is a significant determinant in the availability and desirability of TB care and preventative programs. Published research progressively endorses social security plans and

policies, with a few participants expressing dissenting opinions. Many participants expressed that residents display irresponsible behavior by failing to recognize the accessibility of complimentary services. They endorsed the concept of a modest payment from the public for medical expenses. TB is widespread among those with poor socioeconomic positions and little educational attainment. It is essential to enhance awareness to generate demand for TB care and preventive services.

3.7.7 Engagement of Stakeholders

The strategy to eradicate TB necessitates efforts extending beyond the medical minister. It underscores that the National Policy Plan must be formulated and executed in close liaison with all interested parties. Upon identifying stakeholders, it is essential to delineate their duties, responsibilities, and finance structures by the purpose of the initiatives.

3.7.8 Characteristics and Formalization of Interventions

Sustainability pertains to the internalization of newly adopted initiatives, which relies on the degree of common comprehension of sustainability among different parties involved. Most participants identified the authorities of Pakistan, or the National TB Prevention System, as a primary stakeholder. The participation of additional officials, including those in financial services, economic organizing, and growth, was equally significant. Additional nongovernmental players highlighted were community-based groups, religious organizations, associations of pharmacists, and international and international funders, indicating an integrated approach to development and execution. Almost all participants said the government's effort must be augmented, and funding for the TB control effort should be prioritized.

3.7.8 Financial Provisions

The lack of sufficient domestic finance and systemic inefficiencies render reliance on donors a possible constraint for the sustainability of the TB control effort. The execution of the National Strategy Plan encountered difficulties due to disagreements among public and private implementing entities. This deprived the initiative of the potential for partners to enhance one another. Politicizing the financing process and donors advocating for their funding mechanisms were identified as possible impediments to the execution of the National Strategy Framework.

Due to this condition, a limited number of those polled endorsed the concept of role allocation among national and regional parties (public and private) to facilitate the release of pooled funds according to their functions, enhancing resource efficiency.

4 LIMITATIONS

The study was conducted in a singular location and did not apply to urban regions of the country or rural areas of other regions where cultural disparities exist. The conversations were restricted to a small cohort of individuals, none of whom had personal experience with TB; hence, the research needed comprehensive insights into the opinions of healthcare hurdles or the particular obstacles to TB care.

A further constraint is the need for comprehensive baseline demographic factors for statistical information collection. The informal survey aims to qualitatively assess women's overall awareness of TB and their access to treatment. Even with the broad impact of links in society through referrals, the prevalent snowball sampling approach employed in the present research needs to be more balanced toward recruiting individuals with robust interactions or social ties. The data-gathering approach introduces group prejudice when one of the applicant's perspectives influences others, a phenomenon frequently observed in small-group discussions. The information collector used much effort to maintain an open dialogue and urged participants to provide honest comments.

5 CONCLUSION

There is a distinct necessity for increased investment in maintaining the TB control program in the primary healthcare sector. More than monetary resources alone will be necessary to attain sustainability. In addition to creating a supportive working atmosphere through legislation and rules, it is also essential to utilize current assets and extend the ecosystem of pharmacists at the primary healthcare level. Considering these considerations, inclusive design involving diverse government officials and groups, enhanced investment in studies, cost-effective evaluation, and evidence-based creativity are essential for the initiative's sustainability. In the future, there should be an enhanced emphasis on creativity and study to inform pertinent funding and leadership decisions to optimize the initiative's effectiveness at the PHC level.

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