Original article

BARRIERS TO TUBERCULOSIS PROGRAM IN NEPAL DURING COVID-19 PANDEMIC: HEALTH SERVICE PROVIDERS' PERSPECTIVES

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ABSTRACT

Introduction: Tuberculosis remains a major health program in Nepal. The current COVID-19 pandemic has led to a change in prioritization which has affected many aspects including the functioning of tuberculosis control programs. The study aims d to assess the challenges due to COVID-19 pandemic on the management of tuberculosis.

Methodology: We employed a qualitative study design to determine health service providers' perspectives on barriers to Tb programs during the COVID-19 pandemic. A total of 21 health office and 21 municipality offices were selected, three each in seven provinces of Nepal. A total of 57 key informant interviews were conducted with the health coordinators at the local level and health service providers (TB focal person and health office in charge) at the province level. Using inductive coding, a thematic analysis approach was used for data analysis.

Results: Five themes and eight sub-themes emerged from the analysis. Health service delivery was hampered by shortage of human resources, strict restrictions on mobility during the lockdown, and challenges in managing TB and COVID-19 simultaneously. The health series providers experienced an increased workload, filed-based to less focus on regular TB programs including disruption in reporting, recording, field-based activities, and training programs, and disruption in logistic management, impacting the quality of care, Leadership and governance issues were evident in hampered regular schedules of monitoring, supervision, and poor communication among government tiers.

Conclusion: Implementation of TB programs was challenging due to the COVID-19 pandamic. The preparedness for such circumstances needs to be done considering the perspectives of the health service providers.

Keywords: Tuberculosis, Covid-19, Impact, Nepal, Health Proverder' Perspectives, Qualitative study

INTRODUCTION

Tuberculosis (TB) is one of the major public health problems causing around 70,000 deaths annually[1].

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Nepal has been very successful in implementing the Directly Observed Treatment Short-courses (DOTS) program and the cure rate of TB has improved dramatically after the adoption of the STOP TB program. Nepal National TB program has been successful in meeting the global targets of the millennium development goals[2], and is embarking on an ambitious journey to address the targets of the END TB strategy which aims to end the

global TB epidemic by 2035 and eliminate TB by 2050[3].

But there seems to be a barrier to the achievement of the Nepal National TB program due to the COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus (SARS-CoV-2). Similar to TB, it is predominantly a respiratory illness and the symptoms can range from asymptomatic, common cold to more severe disease including pneumonia and acute respiratory distress syndrome[4,5.] The mode of human-to-human transmission is via droplet infections which are either inhaled or enter the body by touching infected surfaces. All aspects of healthcare delivery including programs to control diseases like Tuberculosis were adversely affected during the COVID-19 pandemic.

Reports from other countries have clearly depicted the adverse role of the COVID-19 pandemic in the management of TB patients due to various factors like prioritization of services, availability of drugs, the possibility of increased disease transmission or disease susceptibility among TB patients, and the problems caused by co-morbidity7-10. The behaviors of TB patients seeking medical care were also all affected by COVID-19 epidemic [11-13]. The economic impact of this global pandemic has been particularly harmful to the most marginalized, and impoverished communities, leading to an increase in poverty and malnutrition, both of which are major risk factors that predispose to TB in rural and urban communities[7]. A modelling analysis by the STOP TB partnership estimated that the global TB incidence and deaths in 2021 would increase significantly implying a setback of at least 5 to 8 years in the fight against TB, due to the COVID-19 pandemic[9].

In this study, we aim to determine the barriers to usage of TB services during COVID-19 pandemic by using a structured questionnaire. This study will provide valuable information to the policy makers about the effects of COVID-19 pandemic on diseases like TB and can act as a model to assess the situation of other infectious diseases (like HIV) and non-infectious diseases (Diabetes, Chronic Kidney diseases etc.).

METHODOLOGY

Study design: We employed a qualitative study design and applied a thematic analysis method to investigate the service providers' perspective on barriers to the usage of Tuberculosis services during the COVID-19 lockdown. We conducted key informant interviews (KII) with health authorities and service providers involved in the Tuberculosis program at the local and provincial levels.

Study setting: The study covered all seven provinces of Nepal for comprehensive representation. Study sites were chosen to provide insights into geographic and administrative diversity. Initially, three districts per province were selected based on the criteria including: 1. District-level high TB notification rates in FY2075/76, and 2. District-level cumulative incidence of COVID-19 infection rates in FY2076/77. Based on these two criteria, the average three highest rank districts were purposively selected from each province. Similarly, corresponding municipalities and health offices were then deliberately chosen in alignment with district selection. The study comprised 21 municipal offices and 21 health offices with representation from each province (3 each). These offices actively contribute to TB healthcare planning and provision within their regions.

Sampling

Study population: A total of 57 Key Informant interviews (KII) were conducted to get an in-depth understanding of barriers to the Tuberculosis program during the COVID-19 pandemic. Interviews included municipal health coordinators (n=21), health office personnel including TB focal person (n= 20), and the health office in charge (n=18)

Data collection technique:

We conducted semi-structured KIIs with the study participants under KII guidelines. National Tuberculosis Management Guidelines 2019[1], Nepal was referred to develop the KII guide. The Principal Investigator BMK designed the study and RMK prepared interview guidelines for KII with support from research team RK and SS respectively.

The protocol of the study was reviewed and approved by the Institutional Review Committee

of the Kathmandu University School of Medical Sciences (IRC KUSMS Approval No 66-2021) and the Nepal Health Research Council (Ref. No. 2939). After in-detailed orientation on data collection techniques and tools, research assistants experienced and trained in conducting qualitative interviews interviewed the participants guided by open-ended questions. The interviewees were pre-informed about the study via phone. Interviewees not available for the interviews were re-approached and requested phone interviews. However, those participants who were not available for both in-person and phone interviews were excluded from the study. A total of six participants refused to participate in the study. Written informed consent was obtained from all participants in the study. The interviews were recorded only after obtaining consent from the participants. We used the iterative process by discussing each interview shortly after it was completed and making suggestions for future interviews, with subsequent interviews probing more deeply into themes emerging in earlier interviews. The interview was conducted in the Nepali language, lasted about 30- 50 minutes, and was audio-recorded. The interviews were conducted in Nepali language in a close setting ensuring the confidentiality of the interviewees. To maintain the confidentiality of the data, we stored data in a passport-protected computer limiting access to the research team.

Data management and analysis:

All interviews were independently read and transcribed by experienced research assistants and de-identified the audio-taped interviews verbatim into the Nepali language. Accuracy checks were done by comparing transcripts with audio files. RMS prepared codebooks under different themes, categories, and codes using both inductive and deductive approaches. First, a codebook was developed deductively based on the interview guides, anticipated responses, and previous literature. Second, all transcripts were coded independently by coders (AA, AD, and SM) using Google documents and Google sheets. To ensure consistency and accuracy in the coding process, the main theme that emerged was discussed with researchers (RMS, AA, AD, and SM) and then was refined, re-read, coded and recoded to the thematic framework designed. Thematic analysis was conducted using Microsoft Excel (Microsoft Office, 2018) and WHO system building blocks guided the reporting of this study.

RESULTS

We identified five themes and eight sub themes for the study findings.

Theme 1: Health service delivery: Health Service Providers (HSPs) uniformly conveyed that the COVID-19 pandemic had an adverse impact on health system service delivery on the National Tuberculosis program.

Sub-theme 1.1 Service Availability

According to multiple HSPs, numerous health facilities were ill-prepared to manage the pandemic, which was reflected in their inability to provide TB services and other routine health provisions during the COVID-19 pandemic. The HSPs highlighted that they faced challenges in conducting regular TB routine examinations, including sputum collection and laboratory tests. As noted by several HSPs, routine examinations, including follow-ups and laboratory services, were undersupplied. As a matter of fact, some HSPs reported there was a paucity of laboratory examinations during the pandemic. Similarly, managing COVID and TB simultaneously was a major challenge for HSPs, in the way that it affected their capacity to execute both essential and routine government healthcare initiatives to address these coexisting issues at the time of the COVID pandemic. It felt quite demanding to Coordinate COVID management and TB care.

“Amidst the COVID period, activities like sputum collection and the regular dispensation of medications remained ongoing. Nonetheless, the collection of swab samples posed difficulties since direct contact with individuals was constrained by the pandemic.” Health Office Chief-21

“Patients for whom sputum is gathered must undergo follow-up appointments during the second and fifth months; otherwise, this lapse could impact the final result. However, this protocol was disrupted.” Health Coordinator -6

“Relatives displaying symptoms of TB, detected through contact tracing, were requested to notify the DOTs center. The process of sputum collection

was disrupted due to the inability to carry it out in a customary manner, as experienced on regular days." Health Coordinator-9

1.2 Quality care

The HSPs revealed that a significant proportion of DOTS centers had to close their operations during the COVID period. This closure subsequently led to a reduction in the notification rates of cases and the identification of new cases. HSPs also described that the limited face-to-face interactions with patients resulted in non-adherence to DOTS treatment, primarily driven by patients' concern regarding potential COVID transmission during visits to healthcare facilities. Some HSPs did note that despite the pandemic, certain DOTS centers managed to sustain their routine services, although patient footfall markedly decreased.

HSPs underscored the necessity of prioritizing responses to the COVID crisis above other programs. Additionally, a subset of HSPs indicated that the shift in focus toward COVID management led to the neglect of follow-up procedures for TB cases.

"The primary challenge was finding the cases followed by the limited adherence to DOTS medicine among the patients." Health Office Chief-16

"During the COVID-19 pandemic, we had difficulty in finding the TB cases in the hospital as OPD services were closed in most of the health facilities." Health Coordinator-1

"Prioritizing COVID took precedence over other initiatives, consequently disrupting the seamless execution of routine government programs, including those related to tuberculosis in Nepal." Health Coordinator-2

1.3 Access and coverage:

Unanimously, all key informants pinpointed the COVID-19 pandemic as a significant impediment to accessing TB care, primarily attributing to lockdowns, insufficient or unavailable transportation, and mobility limitations. These factors collectively obstructed the effective management of TB cases, encompassing vital components such as contact tracing, case follow-up, laboratory diagnosis, and the facilitation of microscopic camps.

"The lockdown measures and restrictions posed a significant challenge in terms of accessing transportation to reach the DOTS centers." TB Focal Person -1

"During the early stages, we educate TB patients about regular examinations, but the limitations on movement imposed by the COVID-19 pandemic hindered the process of collecting sputum samples." Health Office Chief-5

Theme 2. Health Workforce

2.1 Availability and workload of human resources:

The majority of HSPs highlighted that there were insufficient human resources to provide TB services during the COVID-19 pandemic. This shortage of human resources primarily impacted contract tracing, sputum collection, and laboratory diagnosis at DOTS centers. Additionally, the local government was inadequately staffed for the management of TB cases. The pandemic resulted in an overburdened, exhausted, and strained health workforce as mentioned by several HSP. They also mention the fear of transmission while working in an environment of the unprecedented COVID-19 pandemic.

"We have limited human resources and above that available trained professionals were occupied for COVID case management which caused trouble in providing routine health services." Health Office Chief- 1

"The regular staff of the lab was deployed for COVID-related duties." Health Coordinator-7

"During COVID, TB focal human resources shifted their responsibilities and duties to handle the COVID emergency, and some HR were also affected by this virus. "TB Focal Person -1

"During the COVID period, HR from the Laboratory was assigned to the CICT to investigate COVID cases. As a result, we experienced a shortage of HRs for the examination of sputum for tuberculosis cases." TB Focal Person -9

2.2 Training and capacity:

Most of the HSPs mentioned that the absence of standard guidelines and training mechanisms

made it arduous to manage and treat TB patients during COVID. Besides, conducting capacity-building training was difficult, as most of the HSPs reported that the treatment guidelines including the drug intake schedule of TB cases were not reviewed during the time of COVID.

"Regular training programs are carried out as usual however there is no specific training for TB case management at the time of COVID" Health Coordinator-2

The majority of TB training sessions could not be conducted during the COVID period, and numerous TB programs were stopped. Health Office Chief -20

3. Health Information Systems

Some healthcare providers stated the failure to record and report regular TB programs during the COVID-19 pandemic. Some of them further mentioned there was irregular and improper case recording and reporting stating a lack of trained HSP as a major reason for poor recording and reporting. In contrast, there were few of them who stated that the reporting and recording were carried out in the usual manner without any disturbance.

"Regular monthly reporting is hugely disturbed as the trained professionals have been occupied with COVID cases and new untrained persons are not aware of the reporting mechanism including TB cards and registers." TB Focal Person -1

"Reporting and recording are going as planned and no errors are observed." Health Office Chief- 1

"Recording and reporting remained uninterrupted however, there were delays in the reporting process." Health Office Chief -2

"During the early stages of the COVID pandemic in the months of Shrawan and Bhadra experienced more disruptions in recording and reporting. Consistency in reporting was lacking in the initial phase of the COVID outbreak." TB Focal Person -5

4. Logistics

4.1 Inadequate medical supplies:

Most of the key informants identified inadequate medicines and equipment as a major challenge to the delivery of TB services during COVID. Some HSPs from DOTS centers shared that a shortage of medicine was a regular event during the COVID period. In some instances, one of the HSP also mentioned that there was not enough medicine in stock to supply either. Consequently, they were unable to provide the medicine for a month to the local government and DOTS centers.

"TB-related health service delivery from the DOTs centers was continued during the COVID period as usual. However, often there was a shortage of child HR medicines." Health Office Chief-5

"The medicine stocks were not maintained timely. At times, TB medicines were out of stock as regular supply was not made from the central level" Health Office Chief- 20

4.2 Irregularity in the Logistics

The HSPs outlined challenges encountered in the management and distribution of logistical resources. A contributing factor to the insufficient provision of medical supplies and equipment at the local level was the delayed procurement process at the National TB Center. They elaborated that resources, including equipment and laboratory facilities intended for tuberculosis (TB) cases and other medical services, were redirected for the management of COVID cases. A health coordinator disclosed that the scarcity of equipment hindered their ability to deliver services, perform routine examinations, collect sputum samples, and conduct various laboratory tests for TB during the COVID-19 period. Similarly, there was a lack of an adequate quantity of chemical reagents and other necessary resources essential for conducting microscopic TB tests, which impeded the lab's functionality. Moreover, the facility initially designated for accommodating TB patients was repurposed to house individuals diagnosed with COVID-19.

"Lack of resources was prominent during COVID as existing TB-related health centers were used for COVID treatment and management. Reduced capacity compelled us to provide service from a single room and old buildings." Health Office Chief-5

"The instruments and chemicals needed for microscopic tests were not provided by the central restricts us to make examinations like X-rays for

the symptomatic patients having negative sputum tests in microscopic camps." Health Coordinator-6

"Medicine procurement at the central level experiences delays, leading to untimely provision of medication to lower-level TB centers. Challenges also arise in reporting local stock information to the central government, which informs the procurement process. This situation ultimately impacts patients, disrupting their regular access to medication." Health Coordinator -4

5. Leadership and governance

5.1 Inadequate Monitoring and Supervision

Key informants mentioned that HSPs were allocated for COVID-19 case management for a long period of time, which directly affected the conduct of regular monitoring and supervision. Few of the key informants revealed that monitoring from the local level of the government on regular MDR TB was poor. Since stringent measures as such limited mobility taken by the government to control COVID also aggravated the situation for Health office staff and Health Coordinators to conduct supervision and monitoring at their respective centers. Unfortunately, an adequate budget for monitoring and supervision was not allocated, as stated by HSPs the available budget was utilized for the COVID case management.

"COVID caused some effects on the monitoring and supervision as transportation was severely affected and we were not able to visit the health centers." Health Coordinator- 17

"Due to the COVID pandemic, we faced challenges in effectively supervising and monitoring on TB program. Our primary focus was on managing and addressing COVID cases. however, we conduct review meetings to ensure the ongoing TB medication for follow-up cases." Health Coordinator -7

"There was a lack and interruption of supervision from higher authorities. HSPs were mostly allocated for the management and handling of COVID cases" Health Coordinator -1

5.2 Communication and coordination:

Most of the key informants reported that the lack of a functional system for clear communication among the different tiers of government made monitoring and supervision even more challenging. HSP reported that coordination at the municipality level was poor which directly affected the information exchange, budget regulation, and training from top tiers of government. They further added this recent change in the structure of government into federalism has been arising issues in the retention and training of staff which has resulted in disoriented coordination.

"The limited budget has restricted our efforts, and owing to this coordination has also been affected. Planned activities also couldn't get done. The failure to meet the required level of preparedness and lack of communication among tiers of government is prominent." Health Coordinator-2

"We experienced misunderstanding among the local, provincial, and central governments during the coordination process but it did not result in obstruction of services." TB Focal Person-21

DISCUSSION

This qualitative study describes evidence regarding barriers to the implementation of TB services during the time of the COVID-19 pandemic. Our study generates ideas on the basis of WHO's health system building blocks: service delivery, health workforce/human resources, health information, medical supplies, and leadership and governance. Health service providers indicated that the primary challenge emerged within the realm of TB service delivery within healthcare facilities. The advent of COVID-19 led to a notable decline in the utilization of TB services, particularly in terms of laboratory-based diagnosis. The effective usage of TB services and programs was hampered due to strict restriction measures, including lockdown which aimed at curbing the transmission of COVID-19 cases. Additional obstacles encompassed the shortage of human resources, disruptions in TB reporting and recording, and a deficiency in monitoring and supervision mechanisms.

The participants' perspectives revealed a perception of the health system's lack of readiness to effectively address a healthcare crisis of the magnitude of the COVID-19 pandemic. The onset of COVID-19 cases subsequently prompted a reallocation of priorities within the health system. The entirety of attention and resources became

directed towards managing the exigencies of the COVID-19 pandemic, consequently casting a shadow over the tuberculosis program, including a reduction in the case notification rate of TB during the time of COVID-19[10]. This finding is comparable to the previous study reported from India which reported a significant drop in the diagnosed cases of TB during COVID-19[7]. The reasons for the decrease in newly diagnosed TB cases were quoted as the closure of the outpatient departments (OPDs) in hospitals, poor access to treatment, refusal by the hospitals, and difficulty to reach the DOTS center due to restrictions in transportation [11]. In addition to these, insufficient human resources, disturbance in regular monthly reporting, and inadequate laboratory supplies were also mentioned in our study which might have led to decreased case notification of TB.

Our findings also suggest that there was a shortage of human resources to provide TB services during the COVID-19 pandemic. The COVID-19 pandemic has directly hampered regular health programs including the TB program, as both human and economic health resources have been reallocated for COVID-19 pandemic management[12]. It has been highly prioritized across the world, causing disruption in the diagnosis and treatment of several health conditions and canceling many outpatient activities and elective procedures[13]. A similar study from Nkereuwem et al. found staffing issues with healthcare workers (HCWs) in their settings[14]. Due to the adverse effects of the lockdown and HCWs being drafted to work on COVID-19-related projects, there were staff shortages in TB services. Some HCWs were unwilling to go to work for fear of getting COVID-19 because they lacked the proper personal protective equipment (PPE)[7]. This shortage of human resources primarily impacted contract tracing, sputum collection, and laboratory diagnosis at DOTS centers. The task shifting to COVID-19 indicated the provider of TB services' lack of human resources and excessive workload[18]. Furthermore, insufficient human resources might have led to a decrease in case notification, closure of the OPDs, poor access to treatment, and poor recording and reporting in TB service during the COVID-19 pandemic.

We found out that a shortage of stock medicine was reported by many participants, and health service authorities were unable to provide the medicine for a month to the local government and DOTS center due to the shortage of medicine at the central level. There has been a concern about outdated anti-TB medications and a lack of available medication. These could be the result of inadequate drug planning, procurement, and monitoring[19]. In addition to these, poor access to treatment, an increase in cases of MDR, and lack of follow-up of cases

From the current studies, HSP reported that coordination at the municipality level was poor which directly affected the information exchange, budget regulation and training from top tiers of government. A study in Indonesia Identifying barriers amongst TB service providers highlights the problem caused due to inadequate coordination among the stakeholders. The study revealed that participants reported having trouble communicating with stakeholders involved in TB management in order to manage TB cases in accordance with national recommendations[15]. Poor coordination could result in failure to meet the planned activities, disruption in services, under reporting.

As the employees were now under the control of the local government during federalization, the local government had the chance to identify and mobilize the human resource at their Palika. Similarly to this, the authorities in smaller administrative units were more familiar with one another, which made the process of identification simpler[20]. In contrast to this, from our current study respondents stated that change in the structure of government into federalism has been arising issues in the retention and training of staff which has resulted in disoriented coordination.

A few of the key informants revealed that monitoring from the local level of the government on regular MDR TB was poor. Monitoring, evaluating, and surveillance are important tasks that have been influenced by the COVID-19 epidemic[21]. Healthcare professionals were under additional strain as a result of general work process disruptions and changes in the private sector[21]. In addition to these, stringent measures such as limited mobility taken by the government to control COVID also aggravated the situation for Health office staff and Health Coordinators to conduct supervision and monitoring at their respective centers.

LIMITATION

The study has a few limitations. Firstly, the participants were asked questions based on their previous experience during the COVID-19 pandemic. This could lead to the possibility of recall bias in the study. However, it was minimized through appropriate structuring of the questionnaire and extensive training of the interviewers. Secondly, the participants could have been cautious during interviews and possibly tried to portray good or bad practices causing social desirable bias which was minimized by carefully choosing appropriate words and keeping it anonymous.

CONCLUSION

The study highlights the impacts of COVID-19 pandemic on the National Tuberculosis Program, affecting service delivery, quality of care, workforce, information systems, logistics and leadership. The findings showed government priority shifted towards COVID-19 considering the majority of the health providers were mobilized for the COVID-19 pandemic management. This strain on the disruptions of regular TB programs including training, reporting and recordings, quarterly meetings, and microscopy camps at the community level. Although logistics was not a challenge during COVID-19 pandemic, health providers experienced delayed procurement and resource allocations. Within the realm of leadership and governance, the reassignment of health workers for extended periods to manage the pandemic led to decreased monitoring and supervision of the TB program. Communication lapses compounded these issues, impacting coordination efforts at various tiers of government. Preparedness plan should be prioritized for regular TB programs with targeted interventions, resource allocators and adaptive strategies, and effective communication to continue TB services during an emergency.

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CONFLICT OF INTEREST

None

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