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# Factors that shape the integration of HIV and TB services in Zomba District, Malawi

Alex F. Maseko<sup>1,2\*</sup>, Adam Silumbwe<sup>2</sup>, Patricia Maritim<sup>2</sup>, Margarate N. Munakampe<sup>2</sup>, Griphin Baxter Chirambo<sup>4</sup>, Choolwe Jacobs<sup>3</sup> and Joseph M. Zulu<sup>2</sup>

## Abstract

**Background** The co-occurrence of HIV and tuberculosis (TB) presents significant challenges for effective healthcare delivery and patient outcomes. Integrating HIV and TB services has been recognised as a key strategy to optimise care and improve health outcomes. However, the factors that shape the optimal integration of these services remain unclear in many settings. This study aimed to explore the factors that influence the integration of HIV and TB services.

**Methods** A purposive sampling technique was used to select study participants from 3 selected health facilities in Zomba, Malawi. This study used an exploratory qualitative case study and was performed from February to March 2024. A total ( $n=31$ ) of semistructured interviews were conducted. Healthcare providers ( $n=12$ ), program coordinators ( $n=4$ ), and recipients of care ( $n=15$ ) involved in the delivery of HIV and TB services were purposefully included. Thematic analysis using the Atun framework, which groups factors shaping integration around the problem, intervention, adoption system, health system characteristics and broad context, was employed.

**Results** Increased workload among health workers and side effects among patients were reported barriers given the nature of the problem. The benefits of integrating HIV/TB services and compatibility with one's job shaped HIV/TB integration. The adoption system-related factors included the role of volunteers and nongovernmental organisations. Health system characteristics facilitating HIV/TB integration included strong positive relationships among stakeholders, the provision of incentives and the availability of demand-generating activities. Structural challenges, a lack of financial support and shortages of commodities and supplies were health system-related barriers. Broad contextual factors facilitating HIV/TB integration included strong political will, whereas barriers included the impact of religious, sociocultural and economic factors, including the impact of natural disasters and the COVID-19 pandemic.

**Conclusion** The effective integration of HIV and TB services is contingent upon addressing systemic and contextual barriers while leveraging facilitating factors. Enhancing health worker capacity, ensuring consistent supply chains, and fostering strong stakeholder relationships are vital steps. Additionally, comprehensive strategies that address these multifaceted issues are key to achieving successful integration and better health outcomes.

**Keywords** Integration, Barriers, Facilitators, Recipients of care, HIV, TB, One-stop shop

\*Correspondence:

Alex F. Maseko

alexfmaseko@gmail.com

Full list of author information is available at the end of the article



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## Introduction

The interaction between human immunodeficiency virus (HIV) and tuberculosis (TB) hastens the progression of the disease [1]. In 2023, it was estimated that 39.0 million individuals had HIV, of which 25.6 million were in the WHO African Region [1]. The same year, approximately 10.0 million cases of TB were reported, with 6.7% of them having HIV, most of whom were from sub-Saharan Africa [1]. Furthermore, it was estimated that 214,000 individuals living with HIV died from TB-related causes in 2020 [2]. In 2021, TB was the 13th leading cause of death globally and the second most deadly infectious disease after COVID-19 [3]. In the WHO African Region, where the burden of HIV-associated TB is highest, 85% of TB patients have documented positive HIV test results [3]. In 2020, 88% of TB patients known to be living with HIV were on ART, and 1.5 million people died from TB in 2020 (including 214 000 people with HIV) [3].

Traditionally, national AIDS and TB control programs function separately, with distinct service delivery structures and little coordination between the HIV and TB services of individual patients [4]. To improve the diagnosis, treatment, and outcomes of patients with both diseases, the WHO developed a framework of strategic collaborative activities to be performed as part of the health sector response to control HIV infection-related TB [1]. Early in the HIV epidemic, services were provided in vertical programs through disease-specific funding [5]. However, segregated service provision is thought to result in patients needing to visit different facilities for their different health problems or needs or having to visit the same facility on different days of the week [6]. In response, policy makers globally committed to the “integration” of health services in the early 2000s, focusing initially on the integration of HIV and contraceptive services [2].

In Ghana, the deficiency of TB and HIV service integration resulted in an increase in the cost of care for patients and added inconveniences, as multiple visits were necessary to access care [7]. The barriers to integrating HIV and TB services encompass structural challenges, such as fragmented healthcare systems, separate funding streams, and inadequate resources, which obstruct seamless integration [8, 9]. Furthermore, stigma and discrimination, both within healthcare settings and in communities, may function as barriers, deterring individuals from seeking dual services [10]. In comparison, facilitators comprise supportive policy frameworks, robust health systems, and a cooperative approach among healthcare providers, which promote the effective combination of HIV and TB services [9, 10].

Although various barriers to and facilitators of integrating HIV and TB services have been documented,

studies from Malawi and other African countries have shown that there is limited understanding of the obstacles to and facilitators of integrating HIV and TB services [11–13]. In our research, we utilise Atun et al.’s concept of the scope, structure, and pace of adoption and ultimate assimilation of health interventions into the essential functions of a healthcare system, which encompass, inter alia, governance, financing, planning, service delivery, monitoring and evaluation (M&E), and demand generation [14]. Despite the integration of HIV and TB services, these programs still face significant obstacles for both healthcare providers and patients in Malawi [15].

However, there is a scarcity of information in the literature concerning the barriers and facilitators that shape the integration of HIV and TB integrated care delivery within Malawi’s healthcare landscape. Successful integration hinges on addressing these barriers and leveraging facilitators to provide comprehensive care for individuals affected by both HIV and TB [16]. Patients are an essential part of HIV and TB service integration and thus play a crucial role as key stakeholders in the care continuum. Thus, it is crucial to understand their perspectives on the challenges surrounding HIV and TB integration. Against this backdrop, this study aimed to explore the factors that shape the integration of HIV and TB services in Zomba District, southern Malawi.

## Methods

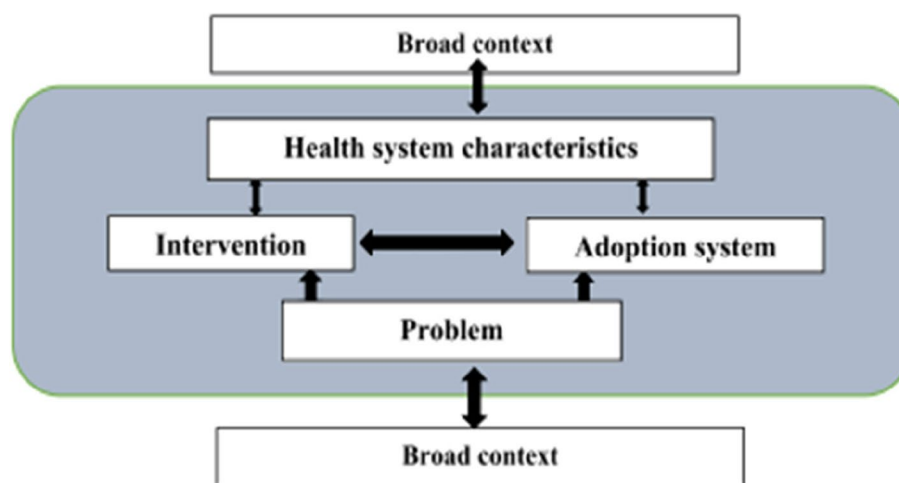
### Theoretical framework

The integration framework by Atun was adopted to help shape the objectives of the study and presentation of the findings on the basis of the selected domains, namely, the problem, adoption system, health system characteristics and broad context (Fig. 1) [14]. This framework postulates that the adoption and diffusion of new health interventions and the extent to which they are integrated into critical health system functions are influenced by the nature of the problem being addressed, the intervention, the adoption system, the health system characteristics, and the broad context [14]. The framework allowed us to explore how attributes of the problem, adoption system, health system characteristics and broad contextual factors such as changes in the political environment or natural disasters shape the seamless integration of HIV and TB services. This framework has been applied to understand the factors shaping the successful integration of TB and other services [17–19].

### Research design

#### Study design

The study employed an exploratory qualitative case study design [20]. This is an empirical approach that investigates contemporary phenomena within a real-life



**Fig. 1** Conceptual framework for analysing targeted health interventions in health systems [17]

context, where the boundaries between phenomena and context are not clearly evident and in which multiple sources of evidence are used [21]. Case studies provide a deep holistic view of the research problem and may facilitate the description, understanding and explanation of a research problem or situation [22]. In this study, a case was defined as the process of integrated HIV and TB service delivery.

### Study setting

The study was conducted in Zomba District, a city in the southern region of Malawi. Findings from the 2022 Malawi Population-based HIV Impact Assessment revealed that Zomba is one of the districts highly affected by HIV/AIDS and other comorbidities, including TB, with an HIV prevalence of 14.2% [23]. Zomba is one of the districts with the highest TB burden in Malawi, and notification rates were estimated at 150 per 100,000 in 2015 [24]. HIV/TB is managed by TB clinics, except at Zomba Central Hospital, where there is an integrated HIV/TB clinic. ART commences within 2 weeks if ART is naïve to first-line regimens. After discharge, HIV/TB patients are seen monthly at Zomba Central Hospital for clinical review and drug refills unless they live nearer a peripheral health facility in which case they will be referred for HIV/TB care [24]. This study took place at three selected health facilities: Saint Luke's Mission Hospital, Matawale Health Centre and Zomba Central Hospital. These facilities have the highest HIV and TB prevalence within the district according to the district health TB office.

### Participant selection and recruitment approach

The purposive sampling technique was used to select participants who helped meet the objectives of the study via a face-to-face interview approach [25]. The sample included a total of 31 participants who consented to participate in the study upon being approached via a face-to-face interview. Five HIV/TB patients and five health care workers, including nurses, doctors and clinicians, in each of the health facilities (Matawale, Saint Luke's Mission Hospital and Zomba Central Hospital) were interviewed (Table 1). Additionally, one district program coordinator was included in the study. The rationale

**Table 1** IDI and KII participants

Data collection/Participants	Number of Interviews
<b>Key informant interviews</b>	
Health facility	2
Health facility 2	2
Health facility 3	3
<b>Total KII</b>	<b>7</b>
<b>In-depth interviews</b>	
Health facility 1	
Patients receiving HIV/TB care	5
Health workers working at HIV/TB unit	3
Health facility 2	
Patients receiving HIV/TB care	5
Health workers working at HIV/TB unit	3
Health facility 3	
Patients receiving HIV/TB care	5
Health workers working at HIV/TB unit	3
<b>Total number of interviews</b>	<b>31</b>

behind this was to gather comprehensive and diverse perspectives on the integration process. The sample size of the study was influenced by theoretical saturation, which refers to the point in data collection when no new information or themes are observed in the data [26]. None of the approached participants refused to take part in the study, and there were neither drop-outs nor repeated interviews. The challenges in participant recruitment were experienced among key informants, such as program coordinators, who were hard to hold.

### Data collection

Data was collected from February to March 2024 via in-depth interviews (IDIs) and key-informant interviews (KIIs) (Table 1), which were steered by interview guides developed by the researcher via a digital audio recorder (additional file). AFM assistants and trained research assistants who were nurses by profession were responsible for data collection. At the time of data collection, AFM possessed a bachelor's degree in nursing and midwifery. AFM was trained in qualitative data collection and had prior experience in conducting qualitative interviews. In this study, there was no previously established relationship between the collected data and the research participants. The research participants were informed that the purpose of the data collection was to explore the factors that shape the integration of HIV and TB services as part of the requirement for the award of a Master of Public Health. The study participants were also informed that the investigator was interested in the topic because of its relevance in promoting public health. Prior to data collection, the data collection tool was piloted in one of the health facilities that was not part of the selected health facilities. In addition, field notes were taken to capture nonverbals and other important data. On average, one interview took approximately 30–40 min for both the key informants and the in-depth interviews. All the interviews, which were conducted in the local language, were translated to English and transcribed verbatim. After data collection, few interviews conducted among key informants were returned for commenting, and some corrections were made on the basis of the feedback.

### Data analysis

We used thematic analysis to analyse the data manually [27] and the approach described by Zulu [17]. Thematic analysis facilitates identification and making sense of common themes in participants' discussions of the research topic [28]. Coding was performed by the first author, with constant discussion with all coauthors. In that context, all the authors were involved in the data coding process, but the first author provided a description of the coding tree. First, the first author

familiarised himself with the data through field note reports and reading the verbatim transcriptions. Second, initial codes were identified by the first author, who carefully read through the first four transcripts and manually labelled portions of the text. Initial codes were then discussed in the full author group among JMZ, AS, PM, CJ, GC and MNM. During the coding process, there were some discrepancies in the organisation of the emerging themes in line with the framework that arose among the author groups, which were resolved through rereading of the interview transcripts and settling for those that resonated well with the data. A coding structure comprising thematic definitions and meanings was developed manually, as no software was used for data analysis. Once the transcripts were coded, the third phase involved the construction of themes, patterns and relationships within the coded data.

This involved reviewing the initial codes, collapsing, realigning, and clustering them into major and sub-themes. The data analysis approach was twofold: the main themes under the Atun framework were used, and some of the main themes under the thematic areas relating to the Atun framework for integration emerged from the data, as shown in Table 2. The study participants did not provide feedback on the findings following the data analysis.

### Ethical approval and consent to participate

Ethical clearance was sought from the University of Zambia Biomedical Research Ethics Committee (REF. No. 3434–2022). Permission was also sought from the National Health Research Authority, Zambia (NHRA). Further ethical approval was obtained from the Mzuzu University Research Ethics Committee (MZUNIREC) (Ref No: MZUNIREC/DOR/23/29). Before data collection, written approval was also sought from the director of health and social services under Zomba District for data collection. During data collection, both signed and verbal informed consent were obtained from the participants. All the participants were deidentified to guarantee confidentiality. Additionally, all methods were carried out in accordance with relevant guidelines and regulations.

### Results

The themes have been organised around the selected constructs of Atun's framework on the integration of health interventions into health systems, namely, the nature of the problem, the intervention, health system characteristics and the broader context [14] (Table 2).

**Table 2** Coding framework

Domain/construct	Major themes	Subthemes
Nature of the problem	Experiences of HIV and TB patients	<ul style="list-style-type: none"> <li>• Increased workload for health workers</li> <li>• Side effects and burden of HIV and TB drugs</li> <li>• High failure rates of adherence to TB/HIV drugs</li> </ul>
HIV/TB Interventions	Relative advantage of intergration Compatibility of services integration	<ul style="list-style-type: none"> <li>• Benefits of integrating HIV/TB services</li> <li>• Compatibility with one's job</li> </ul>
Adoption System	Role of stakeholders in services integration	<ul style="list-style-type: none"> <li>• Role of volunteers and NGOs</li> <li>• Supportive hospital management and leadership</li> <li>• Poor attitude of health care workers</li> </ul>
Health Systems Characteristics	Support and coordination among stakeholders Availability of supplies and resources	<ul style="list-style-type: none"> <li>• Strong relationship among stakeholders (i.e., volunteers, NGOs and health workers)</li> <li>• Availability of medical technologies</li> <li>• Provision of incentives (trainings, capacity building)</li> <li>• Availability of monitoring and evaluation of services</li> <li>• Availability of demand generating activities (i.e., campaign awareness)</li> <li>• Structural challenges</li> <li>• Lack of financial support</li> <li>• Shortage of commodities and supplies</li> <li>• Shortage of health care workers affecting staff motivation</li> </ul>
Broad Contextual Factors	Impact of broad context issues, i.e., political will, pandemics and natural disasters	<ul style="list-style-type: none"> <li>• Availability of political will</li> <li>• Impact of religious, sociocultural and economic factors</li> <li>• Effects of pandemics such as covid-19 and natural disasters like cyclone Freddy</li> </ul>

## Factors shaping the integration of HIV and TB services

### Nature of the problem

*Increased workload among health care workers due to HIV and TB comorbidities* Health care workers reported that the comorbidities of HIV and TB imposed a significant burden on healthcare systems, leading to heightened demands on already stretched healthcare staff. This increased workload not only strained resources but also affected the quality of care provided to patients suffering from HIV and TB coinfections.

For example, some healthcare workers said that providing HIV and TB services took much of their time that they would spend a lot of time on a patient with a single problem.

*"...Yes, the combination of HIV and TB infections is truly a problem. For us healthcare workers, it means we need to spend much of our time on a single patient and that increases our workload..." [ID1#7\_Healthcare worker]*

*Side effects and pill burden associated with taking both HIV and TB drugs* Most recipients highlighted that both HIV and TB are public health problems that act as

barriers to the effective delivery of HIV- and TB-integrated care. One important issue is that HIV and TB drugs have side effects of their own, and taking these drugs at once means doubling the burden. For example, in some cases, some recipients of care reported that having these two conditions was problematic/was something they struggled with and compromised adherence to some extent.

*"...Challenges might be there, like most of these conditions are all big conditions. HIV drugs have many side effects, as does TB treatment, so you can't be so sure which one is bringing more problems..." [KII#11\_Healthcare worker]*

However, some patients living with both TB and HIV believe that taking HIV and TB drugs is not a burden. According to them, HIV and TB infections cannot pose serious threats if the drugs are adhered to and if there is no denial of one's condition.

*"...Mmm I think HIV is not a big problem, especially when you are open to treatment. For those who are in denial, it is a big problem..." [ID1#02\_Recipient of care]*

**High failure rates of adherence to TB/HIV drugs** Most of the recipients of care experienced challenges with drug adherence or compliance due to HIV and TB coinfections. However, it was interesting to find different opinions with respect to the impact of HIV and TB infections on adherence and drug compliance. On the one hand, some participants felt that having both HIV and TB infections may easily lead to death, especially when there is poor drug compliance and associated treatment complications.

*“...Mmm HIV and TB infections are big problems because they are all fatal and even the treatment itself is very involving which can easily kill...”*  
[IDI#05\_Recipient of care]

On the other hand, some recipients of care reported that HIV and TB conditions were no longer major problems, citing good drug adherence as one of the contributing factors. According to them, if one is adhering to the medications, there could be no serious issues with having both HIV and TB infections.

*“...I think HIV as a disease it was dangerous and a problem long ago when there was no treatment but now with the treatment it is no longer a problem...”*  
[IDI#04\_Recipient of care]

## Intervention

**Relative advantage of integrating HIV/TB services** Health care workers, programme coordinators and HIV/TB care recipients agreed that providing and receiving HIV- and TB-integrated services was beneficial. The greatest benefit that came out strongly was that providing and receiving HIV + TB integrated care saves costs and other resources, such as time. Most participants reported that when receiving fragmented or vertical care, they spend much of their time at the hospital and spend more money on transportation costs.

*“...Yes, one stop shopping helps because the patient access all the services at once. This method saves time, and the patient benefits from a multidisciplinary approach. At first, we used to have a lot of loss to follow-up because we used to refer patients.”*  
[KII#02\_Healthcare worker]

Apart from time savings and costs, the majority of health care workers also reported that the integration of HIV and TB services helped prevent loss to follow-up during the course of treatment, as most of the recipients of care for both HIV and TB were being managed at one contact under one department. Additionally, health care

workers believed that providing integrated services had a synergistic effect on managing these infections together.

*“...Yes, there are advantages; first, we are able to identify cases earlier for timely treatment and eventually prevent complications. Slim chances for defaulting because we synchronise the dates for TB and HIV...”* [KII#09\_Healthcare worker]

Additionally, among people living with HIV and TB comorbidities, the provision of integrated service delivery offered them an opportunity to receive quality care under one roof, reducing the need for multiple clinic visits. According to the recipients of care, the integration fostered a more coordinated and efficient healthcare experience, allowing for better management of both conditions concurrently, leading to patient satisfaction.

*“...The advantage of receiving integrated care is that the infections can be easily managed because you are taking the medications at once...”* [IDI#08\_Recipient of care]

**Compatibility with professional roles** Most health-care workers agreed that the integration of HIV and TB services is compatible with the nature of their job. This was the case because their professional training offered both HIV and TB training. The other reason provided was that when they are receiving in-service training for new guidelines for either of these services, there is always a combined approach to training. Additionally, other health care workers alluded to the fact that integrating these two services offered a number of opportunities when providing care to patients living with HIV and TB infections. For example, most health care workers reported that integrating these services was convenient with their service provision.

*“...Yes, my job is compatible with the integration because I do things at once, am helping these clients at once...”* [KII#13\_Healthcare worker]

## Adoption system

**Role of volunteers and nongovernmental organisations** The role of volunteers and nongovernmental organisations was reported to facilitate the integration of HIV and TB services among both key informants and recipients of care. For example, in some hospitals, the presence of certain nongovernmental organisations championed the provision of HIV/TB integrated services through the provision of training and capacity building. It was also reported that some NGOs were taking a front



role in supporting HIV/TB integrated care because of their project goals and objectives.

This support was in the form of training and provided incentives to health care workers, community-based volunteers and actual patients in which multidrug-resistant TB was involved.

*“...For the TB program, we have volunteers for sputum collection and the sensitisation of communities. We also have partners responsible for transporting samples. DAPP works with community TB, PARADISO with expert clients on lung rehabilitation, and we receive support from USAID, the World Bank, the Global Fund, and EGPAF for TB screening among prisoners...” [KII#06\_District TB officer]*

Among patients living with TB and HIV, nongovernmental organisations were very instrumental in community outreach and the provision of foodstuffs, including cooking oil and soya bean flour. This encouraged them to utilise HIV/TB integrated services more.

*“...Mmm yes, there are some organisations who move around the communities disseminating information about HIV and TB. They also give food stuffs like oil, especially to those with multidrug resistance...” [IDI#11\_Recipient of Care]*

**Supportive hospital management and leadership** The participants defined supportive hospital management and leadership in the form of positive support for HIV/TB integrated care and good relationships with their supervisors and hospital management team. Most health care workers emphasised that when there is supportive management and leadership from hospital management, workers are always motivated, which fosters the relationship between the technical staff and those in managerial positions. Some healthcare workers reported that support from the hospital management team needed assistance or supplies for HIV/TB integrated service delivery.

*“...Some of the facilitators include good relationships between the staff for TB and HIV. That includes the management as well, and they are responsible for providing support...” [KII#02\_Healthcare worker]*

**Negative attitudes of health care workers** A negative attitude of health care workers towards patients living with HIV and TB comorbidities was cited as one of the common barriers to the effective utilisation of HIV- and TB-integrated services.

Most HIV/TB care recipients reported that the negative attitudes of health care workers made it difficult for them to receive care at one-stop shops. The most cited examples of negative attitudes by health care workers were a lack of good customer care services towards the recipients of care, reporting late for work, leaving the patients waiting and, in some instances, chatting on the phone when patients or recipients of care await the services.

*“...Augh, I think health care workers’ conduct also affects them as barriers. In addition, there are delays before one access to care. Some of them are busy with their phones and chat with their friends leaving the patients waiting...” [IDI#11\_Recipient of care]*

### Health system characteristics

**Strong relationships among stakeholders** Strong and positive relationships among stakeholders such as volunteers, nongovernmental organisations and health care workers were found to facilitate the integration of HIV and TB services. Most of the health care workers reported that they had strong and positive relationships with other implementing partners, including NGOs and community-based organisations. The same was reported from the program coordinators and the program officers, who illustrated the positive working environment they had with their various implementing partners within the district. According to the participants, this positive relationship significantly increased the likelihood of successful integrated service delivery for TB and HIV services by fostering a collaborative and supportive working environment.

*“Our relationship is very good, and I can add that it is very excellent because there is good communication. For example, in the TB department, we have a hierarchy that needs to be followed and a channel of command that is observed...” [KII#05\_Healthcare worker]*

Moreover, some participants noted that the relationships between the implementing partners and the coordinators were initially not strong. However, it was reported that the relationship and strong coordination improved with time. Among the respondents, improvement in the working relationship was attributed to ongoing meetings as one of the strategies used to clarify their different roles. Interestingly, the understanding of the different roles that partners play in HIV/TB service integration had contributed to this drastic shift in the relationships

among program coordinators and implementing partners in some instances.

*"...At first, the relationship was not easy working with the coordinator because we were new. You could tell that they were not comfortable and they wanted to tell us what to do yet as an organisation and implementing partners we have our own goals and targets. That was with the coordinator but with the staff in general, the relationship is super. However, thus far so good..." [IDI#02\_Healthcare worker]*

**Availability of medical technologies** Most of the participants stated that medical technologies made screening, diagnosis and timely treatment easier. Some participants reported X-ray viewers and other diagnostic tools for TB, such as urine-rum, as one of the technologies that are readily available in facilities and improve service delivery. In some instances, technological advancements, such as the use of computers instead of paper-based filing systems, have helped keep records through the digitalisation of patients' data, which has helped in the continuation of care. Conversely, it was interesting to observe mixed thoughts over the use of technological innovations in HIV- and TB-integrated care. For example, other participants believed that medical technologies had some negative implications, as they required expertise through training.

*"...Yeah, technology has also affected halfway, why am I saying like that because some haven't been trained and they don't know how to operate some of the machines. On the other hand, there are others who are good at it, and it works well for them..." [KII#08\_Healthcare worker]*

**Availability of incentives** The availability of incentives was cited as one of the crucial facilitators of the integration of HIV and TB services among health care workers at different levels. These incentives were both monetary and nonmonetary. In monetary form, although most participants were not given direct cash for providing HIV and TB integrated care, the provision of training was seen as one of the incentives and motivators among the service providers. Indeed, most of the participants agreed that they had been trained in HIV and TB integration. The availability of incentives, whether monetary or not, gave them motivation and enthusiasm to carry out their duties well. Notably, most health care workers expressed satisfaction with the support they received from their supervisors and hospital managers in general.

*"...Yes, they do provide some incentives because there are many trainings and refresher courses as well..." [KII#11\_Healthcare worker]*

However, some healthcare workers reported that they lacked specialised training in the provision of HIV- and TB-integrated service delivery. This lack of training made it difficult to provide comprehensive and personalised care to people living with HIV and TB comorbidities. Furthermore, healthcare workers said that the absence of specialised training programs on the latest protocols and guidelines for integrated care contributed to inconsistent and suboptimal patient management.

*"...No, not yet. I haven't been trained; at first, they said that they would start with nurses and clinicians. By the time they were about to train us program officers, they had run out of money..." [KII#16\_TB program offline]*

**Availability of monitoring and evaluation of HIV and TB services** Most participants reported that there was comprehensive monitoring and evaluation of HIV and TB integrated programs monthly and quarterly in some instances. In some facilities, there is a designated monitoring and evaluation team whose role is to quickly track program indicators such as the TB case notification rate, TB treatment outcomes and TB/HIV coinfection rate. Additionally, the study participants said that the presence of implementation partners in some facilities also helped ensure that there was proper monitoring and evaluation of HIV- and TB-integrated services, as they were strict in reaching their project targets.

*"...Yes, there is enough monitoring and evaluation. We evaluate programs on a quarterly basis, and some programs are monitored monthly..." [KII#05\_Healthcare worker]*

**Availability of demand-generating activities** The availability of demand-generating activities was cited as one of the facilitators of the integration of HIV and TB services. Most participants highlighted that community mobilisation and campaign awareness were being performed in the communities to both sensitise people and mobilise them to come for integrated HIV and TB services at health care facilities.

*"...Yeah, we go in the communities to educate people, and we work with community-based volunteers to motivate communities. In so doing, some people come for screening. We also have a mobile van that helps in screening TBs via chest X-ray within the communities..." [KII#10\_Program coordinator]*

**Lack of financial support** Most of the participants, including health care workers and program coordinators, reported that there was a lack of financial support in running one-stop shops, which affected the operations



of these two services, including training and integrated program supervision. On the one hand, a few health care workers felt that the financial support provided towards the integration of HIV and TB services was sufficient and that both the government and other implementing partners ensured that these programs received enough financial support.

*"...Yeah, with the help from Lighthouse, which is one of the implementing partners, I would say yes, we do receive enough financial support..." [KII#16\_Health-care worker]*

On the other hand, many participants reported that they could not go ahead and implement some of the programs they had, including training and supervision of the programs both at their various health facilities and within the communities due to lack of funds. Other participants believed that some support programs, such as the provision of foodstuffs to patients, such as nutritional supplements, had stopped, all because of a lack of funding.

*"...Mmmh, I think in terms of financial support, not much. Other than technical support. Because if it was enough, we were supposed to have training and conduct projects such as QI projects, which require money." [KII#05\_Healthcare workers]*

**Shortage of commodities and supplies** Most of the participants highlighted that they experienced stock outs on essential drugs for both HIV and TB management. For example, healthcare workers reported that they would run for months without essential drugs and supplies needed for TB/HIV service delivery. Some recipients of care also reported concerns and disappointment that coming to the hospital only to be told that some drugs were not available.

*"...Aaaaah on that one, I would say lack of enough hospitals and shortage of drugs would be some barriers towards receiving integrated care. For example, sometimes you come here and wait for so long only to be told that some medications are out of stock, which is truly sad..." [IDI#15\_Recipient of care]*

**Shortage of health care workers affects staff motivation** A shortage of health care workers, as one of the health system characteristics posing a barrier to the integration of HIV and TB services, was reported by health care workers, programme coordinators and recipients of care. Most health care workers reported that there was a shortage of health care workers at one-stop shops, leading to increased workload and low motivation. Most healthcare workers said that the provision of integrated HIV and TB care meant doubling the amount of work

that required more manpower; however, that was not the case. Similarly, recipients of care felt that a shortage of health care workers negatively affected service delivery, leading to longer waiting times and poor satisfaction with the integrated care they were receiving.

*"...No, we are not enough. We need more nurses. For example, in the ART department, we are very few, which affects the delivery of services. Sometimes it makes us to take someone to work here who is not qualified to do that because we are stretched..." [KII#03\_Healthcare worker]*

**Structural challenges of HIV and TB integrated services** The majority of the respondents among healthcare workers reported that the integration of HIV and TB services was performed after the health facility structures had already been established. As such, most participants felt that the improvised space was not conducive to providing services citing issues of privacy, among other inconveniences. For example, other participants reported that in some facilities, the HIV and TB departments were improvised by using plywood to create different rooms for both HIV and TB services, making the working space too small to manage all the patients at once and causing congestion.

*The setting up is a bit complex, like you need structures because most facilities did not think of integration at the beginning. In addition, human resource allocation and reporting..." [KII#15\_Program coordinator]*

In some instances, it was also reported that HIV and TB services were neither integrated nor provided under one department at the same time. For example, one TB coordinator highlighted that some facilities were not TB registration sites, meaning that TB services were not provided during HIV management.

*"...Infrastructure is one of the barriers to the integration of these 2 services. Geographical location of some facilities is another challenge as well because not all the facilities are TB registration sites..." [KII#06\_District TB officer]*

### Broad contextual factors

**Availability of political will** Both health care workers and HIV/TB care recipients agreed that there was enough political support for the integration of HIV and TB services. According to the respondents, this was evident by the availability of essential drugs in some facilities

and the provision of training in both the management of HIV and TB and the supervision of the programs.

*"...Yes, there is enough political will. Because we have seen that HIV and AIDS have received special attention and that there are also trainings that are provided..." [KII#02\_Healthcare worker]*

However, it was reported that, among other factors, changes in the political environment had a substantial effect on service delivery. For example, some participants believed that when there are changes in the political regime, there is a shift in government attention, as some governments might not prioritise healthcare delivery.

*"...Yes, I think changes in the political regime affect integrated service delivery a lot. When there is a shift in power, such as late, there are usually challenges with stocks. For example, we had problems with cotrimoxazole..." [IDI#04\_Healthcare worker]*

#### Effects of pandemics and natural disasters

**Healthcare workers' related issues** Most health care workers reported that COVID-19 had disrupted treatment care and caused confusion in screening and diagnostic criteria, as these conditions had similar clinical presentations. It was also reported that patients were living in fear and could not visit the hospital to avoid either receiving the COVID-19 vaccine or contracting the virus.

*"...Yes, pandemics such as COVID-19 affected how these services are provided. During the COVID-19 pandemic, many missed appointments and defaulters occurred because people were afraid that they would be given a mandatory vaccine. There was also compromise to the provision of services, I remember receiving a communication from the national TB office that we should be giving drugs for 6 months or so and this led to missed opportunity for assessment..." [KII#12\_Healthcare worker]*

Psychological impact has also been described as one of the impacts of natural disasters such as Cyclone Freddy. Health care workers reported that some patients were mentally affected after all their belongings, including health passport books and essential medical supplies, were lost. Others reported that the destruction of roads and other infrastructures made it impossible for clients to access the services or the providers to reach out to those affected.

*"...Cyclone Freddy has negatively affected integrated service provision because some roads are impassable, making it hard for clients to move to health facilities to access the services. Some clients who had their drugs at home have their drugs washed away owing to heavy rains leading to treatment interruption..." [KII#06\_Healthcare worker]*

Nevertheless, constraining resources such as health care workers was reported as another impact of both natural disasters and pandemics. Some health care workers reported that the occurrence of these pandemics and natural disasters meant that some health care workers, such as nurses and clinicians, were allocated to the camps where the affected people were. This led to human resource constraints, as they put pressure on the few resources available.

*"...Yes, natural disasters can have an impact. Because it also places constraints on health workers, some have been pulled out to help those affected. Equally, it has also affected treatment because some have lost their medications and interrupted the treatment..." [KII#15\_Healthcare worker, program coordinator]*

**Patient-related issues** Among recipients of care, pandemics such as the COVID-19 pandemic had resulted in many restrictions on movement and ways of life. Some people living with HIV and TB also reported that they were afraid to visit clinics because every case of cough was presumed to be COVID-19, which led to misdiagnosis and stigma within communities. In some instances, there was fear of coming to the hospital because they could easily be infected as well. Additionally, natural disasters reportedly affect the accessibility of integrated services through the destruction of road networks.

*"...Cyclone Freddy has affected the services because some people are in camps and others are unable to come due to damaged roads. On the other hand, COVID-19 made it difficult because people were afraid and there were some restrictions..." [IDI#06\_Recipient of care]*

**Impact of religious, sociocultural and economic factors** Most participants stated that some religious institutions prohibited their members from going to the hospital and seeking medical care. Others retaliated that some religious beliefs tell infected members to stop the treatment, telling them that they have been cured. The study further established that this raised serious concerns among healthcare workers, as this implied that some patients had treatment interruptions, which could lead to

poor treatment outcomes such as treatment failure and, in some cases, death due to treatment complications. Similar perceptions were also noted among the recipients of care, who reported that some religious beliefs negatively affect treatment adherence by causing interruptions and discontinuation of treatment.

*“...Some religious institutions they tell people to stop taking the medications which would cause treatment interruptions...” [IDI#08\_Recipient of care]*

Sociocultural factors were also reported to affect the utilisation of integrated HIV and TB services among patients. Most participants highlighted that some cultural beliefs encourage people to seek help from traditional healers, which might lead to delays in accessing medical care. The study participants also highlighted the delay in decision making in seeking care due to underlying cultural factors.

It was reported that in some communities, people still believe that culturally, men are supposed to make decisions regarding seeking care, which would compromise timely utilisation of HIV/TB integrated care. In some cases, it has also been reported that some people living with TB have difficulty believing the TB diagnosis, especially when it affects other organs of the body other than the lungs. In such cases, some patients felt that it was more mysterious and supernatural than a medical condition that required the hospital for medical attention and intervention.

*“Yeah, more especially cultural. You know that TB can affect every organ of the body. Some come to the hospital a bit late because they have swelling of the back and they go to herbalists. They don't even understand how TB can affect their back yet it is very possible...” [KII#12\_Healthcare worker]*

Additionally, economic factors such as lack of transportation among patients to come to the hospital were also reported as barriers to accessing HIV- and TB-integrated services among the recipients of care. Some participants also reported that other clients failed to show up on their appointment date because they were busy looking for money and trying to make ends meet.

*“...Economic factors do affect utilisation of these services by clients. For example, some might fail to come due to transportation. Others fail to come when they are due because they are busy looking for money to support their families...” [KII#07\_Healthcare worker]*

## Discussion

This study sought to explore the factors that shape the integration of HIV and TB services. The findings of our study suggest that strong and positive relationships among stakeholders; incentivisation, including training, monitoring and evaluation of programs; demand-generating activities; and the presence of political will, are key facilitators of the integration of HIV and TB services. However, this study revealed key barriers to the integration of HIV and TB services, including infrastructural challenges, shortages of commodities and staffing, pandemics such as COVID-19, and natural disasters such as Cyclone Freddy.

Strong relationships among stakeholders involved in healthcare delivery, including healthcare workers, volunteers, nongovernmental organisations, and program coordinators, triggered integration in several ways. Collaboration enhances open communication, mutual respect, and coordination within the healthcare team, creating a supportive and conducive environment for providing integrated care. Other studies have shown that limited coordination could undermine integrated service delivery. A study conducted in South Africa revealed that a lack of coordination and power conflicts among stakeholders and program managers negatively affected the service provision of HIV- and TB-integrated care [29]. In other studies, a lack of leadership in coordinating and supervising TB/HIV activities was cited as a barrier to the integration of HIV and TB services [30, 31].

We noted that incentives and training opportunities for healthcare workers played a vital role in facilitating the integration of HIV and TB services. Continuous training has been reported to support integration by enhancing health workers' skills and knowledge, hence allowing them to manage both HIV and TB cases effectively. These findings echo those of a systematic review focusing on health system facilitators and barriers to the integration of HIV and chronic disease services, which revealed that the provision of incentives and other capacity building underpinned all aspects of service delivery and health system governance [32]. Several other studies have also reported staff training in managing comorbidities effectively, with integrated care services as a facilitator [33–35].

Monitoring and evaluation of the program, including planning, played a crucial role in facilitating the integration of these programs. This finding is consistent with study findings in Uganda, which showed that poor planning, coordination and poor leadership affected the integration of HIV and TB services [30]. Others have argued that a key reason for the poor quality of routine health system data is that so many data are collected [36]. Another notable finding of our study was the presence

of political will and support from the government, which was a crucial factor in facilitating the integration of HIV and TB services. A supportive political environment ensures the allocation of resources, funding, and policy frameworks necessary for successful integration. This finding was in agreement with a number of studies that reported the influence of strong political will in facilitating HIV and TB integration [37, 38]. In another study conducted in Zambia by Zulu et al. [17], it was observed that district managers were encouraged by the political will of the government to ensure that all facilities had infrastructure, HCWs, commodities and equipment to provide TB screening services despite financial constraints. However, shortages of commodities and supplies, as well as the scarcity of healthcare workers, have emerged as critical barriers. These issues not only affect the delivery of integrated care but also impact patient satisfaction and overall healthcare system efficiency. A study in South Africa revealed that eighty percent of clinics experienced a stock-out of ART drugs during the review period, whereas 30% of clinics reported a TB medication stock-out [39]. Their study further revealed that all clinics highlighted stock-outs of sputum containers and N95 masks, compromising TB screening and infection control. Additionally, these findings are consistent with those of other studies conducted in Ghana and South Africa, which revealed the impact of staff shortages on service provision [40, 41]. Good staffing also prevents staff from burn out, as there is a good patient-to-health worker ratio [11].

The study also revealed that pandemics and natural disasters have notable impacts on access to and utilisation of integrated services. The COVID-19 pandemic has led to disruptions in treatment care, screening, and diagnosis due to similar clinical presentations between COVID-19 and other conditions. Patients' fear of infection led to missed appointments and treatment interruptions. Similarly, our study revealed that natural disasters such as Cyclone Freddy affected the uptake of services due to psychological distress and physical barriers such as impassable roads. Health care workers reported challenges in reaching affected patients and maintaining continuity of care. These findings were consistent with findings in Zambia, where it was reported that the COVID-19 pandemic was one of the factors constraining integration [17]. However, their study focused mainly on the integration of TB screening in outpatient departments of urban primary healthcare facilities in Zambia.

To address the transferability [42] (external validity) of our study findings, a number of strategies were put in place. First, we ensured that our sample was representative of diverse populations across the key population affected by HIV and TB integration. We then employed

purposive sampling [25] and included participants in different health facilities with information power to capture differences between various levels of healthcare facilities and a range of demographic groups. Additionally, we provided a comprehensive description of the socio-cultural and health system contexts of the study to allow for better applicability of our findings and ensure that our findings could be applied to broader contexts beyond the initial study area.

### Study limitations and strengths

One notable strength of this study lies in its use of a multiple-perspective approach with data from healthcare workers, program coordinators and people living with HIV and TB coinfections who are critical stakeholders in the HIV and TB care cascade. Using a qualitative inquiry, we uncovered a rich description of the integration process by triangulating the data from multiple sources. However, our study was without limitations. This study was carried out a few weeks after southern Malawi was hit by cyclone Freddy, which affected the turn-up of patients. Therefore, those who were heavily affected and unable to visit the clinic could not share more insights into the impact of natural disasters when accessing TB/HIV care. Additionally, the views observed in the study cannot be generalised to other settings because of the qualitative nature of our study. However, diligence was taken by the researchers to ensure that the results were transferable and reliable.

### Conclusion

This study has shed light on the barriers to and facilitators of the integration of HIV and TB services. In summary, TB and HIV services are integrated in most of the facilities in Zomba, although some facilities still provide these services vertically. The findings of this study revealed several key factors that influence the successful implementation of integrated approaches. On the one hand, facilitators included collaborative partnerships among stakeholders, effective coordination among healthcare providers, and the perceived benefits of receiving integrated care and political will. On the other hand, barriers such as shortages of healthcare workers and medical supplies, economic challenges, cultural beliefs and the impact of pandemics and natural disasters have been outlined. These results emphasise the need for concerted efforts to address the identified barriers and leverage the facilitators to not only enhance the integration of HIV and TB services in the Malawian context but also ensure the sustainability of integrated HIV/TB care. To enhance the seamless integration of HIV and TB services, we recommend that policy makers incorporate the integration of HIV

and TB services into the initial design and planning stages of healthcare infrastructure development. These programs include integrated recording and reporting tools as an integral part of their framework. Additionally, future research should focus on employing mixed methods and uncover the interplay of both health systems and patient-related factors that affect the integration of HIV and TB services among those living with TB from the HIV side and vice versa in health facilities that do not offer integrated services.

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12913-025-12367-8>.

Supplementary Material 1.

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## Authors' contributions

AFM conceived the research question and designed the study. AFM, AS, PM, CJ, GC and JMZ oversaw the investigation and research methodology. AFM was responsible for data acquisition, management and analysis. JMZ oversaw project administration. AFM, PM and AS wrote the original draft of this manuscript. All the authors reviewed and edited the manuscript and approved the final version.

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## Data availability

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

## Declarations

### Ethics approval and consent to participate

The University of Zambia Biomedical Research Ethics Committee (UNZA-BREC) was responsible for providing ethical approval for this study (REF. No. 3434–2022). Another ethical approval was obtained from the Mzuzu University Research Ethics Committee (MZUNIREC) (Ref No: MZUNIREC/DOR/23/29). Before data collection, written approval was also sought from the director of health and social services under Zomba District for data collection. Signed informed consent was obtained from all participants. All the participants were deidentified to guarantee confidentiality. All methods were carried out in accordance with relevant guidelines and regulations.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

## Author details

<sup>1</sup>Kamuzu Central Hospital, Lilongwe, Malawi. <sup>2</sup>Department of Health Policy and Management, School of Public Health, University of Zambia, Lusaka, Zambia. <sup>3</sup>Department of Epidemiology and Biostatistics, School of Public Health, University of Zambia, Lusaka, Zambia. <sup>4</sup>Department of Nursing and Midwifery, Mzuzu University, Mzuzu, Malawi.

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