

## Key Stakeholders' Perspectives on Implementation and Scale-up of Telehealth in HIV Care in Harare, Zimbabwe

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### Abstract

*The World Health Organisation recommends telehealth as an alternative to help reach remote or underserved areas. Telehealth adoption is therefore key to ending the HIV pandemic. Successful implementation and scale-up of telehealth heavily rely on stakeholders' involvement. This study explored key stakeholders' perspectives on the implementation and scale-up of telehealth in HIV care in Harare. In-depth interviews were conducted with professionals within the Ministry of Health and Childcare and its partners, between May and August 2023. Fourteen purposively selected stakeholders were interviewed. Thematic approach to analysis with a coding framework guided by Consolidated Framework for Implementation Research was adopted. Key stakeholders perceived telehealth as a potentially effective intervention, which can improve health delivery. Key stakeholders cited the following challenges for implementation and scale-up of telehealth in HIV care: poor internet and mobile network; financial challenges; and unavailability of policies. Key stakeholders suggested the following strategies to the successful implementation and scale-up: multi-sectoral collaboration for reliable and affordable mobile and internet connectivity; policy formulation, donors' engagement; and recruitment of competent staff. The study findings showed the confidence of key stakeholders in Harare to effectively sustain telehealth in HIV intervention. Despite its promising potential, significant hurdles to telehealth implementation exist and should be addressed to realise the full potential. Further research incorporating telehealth end-users is recommended, to fully understand challenges and hence inform policy.*

**Keywords:** HIV; Key Stakeholders; Telehealth; Utilisation.

### Introduction

Worldwide, increased use of technology has improved the availability of telehealth services resulting in tremendous transformation of healthcare delivery [1]. Access to healthcare remains a challenge in developing countries such as Zimbabwe due to shortage of healthcare workers and limited healthcare facilities [2, 3]. Telehealth holds immense potential to benefit remote or underserved communities. The World Health Organisation (WHO) therefore drafted a Global Strategy on Digital Health for promoting

healthy lives and wellbeing, which provides a pivotal framework aimed at harnessing the potential of technology [4].

Telehealth involves the use of information and telecommunication techniques, such as telephone and video conferencing, to provide health services and medical consultation at a distance [5]. By leveraging digital technologies to bridge geographical gaps and improve access to medical expertise, telehealth expands the reach of healthcare services to remote and underserved areas.

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Before telehealth implementation or scale-up, decision-makers and healthcare workers must understand the benefits, risks and challenges associated with the service. Studies have indicated that telehealth is convenient and beneficial to both healthcare providers and patients, compared to conventional methods of service delivery [6, 7, 8, 9, 10]. Further studies found that telehealth is effective [11, 12, 13], cost-effective [14, 15], and offers flexibility as patients can receive care in their homes and communities [7, 16, 17]. Telehealth has been reported to improve patient outcome and enable better resource allocation and management. However, telehealth has been associated with risks such as privacy and data security. Furthermore, challenges such as connectivity and financial sustainability have also been associated with telehealth [18].

Telehealth is a valuable tool in HIV care and can be leveraged to increase access to HIV prevention and care [19]. People living with HIV (PLHIV) often reported stigma and discrimination at healthcare facilities which can be combated by telehealth interventions in HIV care [20]. Telehealth services have been reported to have positive effects on adherence to antiretroviral therapy (ART) among PLHIV [21, 18, 22].

Resource limited African countries remain the most severely affected with HIV. Zimbabwe has an adult HIV prevalence rate of 12.9% [23], one of the highest in the African region. The HIV situation in the country is compounded by limited healthcare facilities especially in rural areas. However, telehealth research in Zimbabwe is lagging, despite calls by the WHO.

The input of key stakeholders in the implementation of policies in healthcare delivery is crucial. Studies have demonstrated that informed strategies ensure successful program implementation and scale-up [24, 25]. This study therefore sought to explore the perspectives of key stakeholders on telehealth implementation and scale-up in Harare, Zimbabwe.

## **Materials and Methods**

### **Study Design**

In this qualitative study, a thematic analysis approach was adopted to explore key stakeholders' perspectives on telehealth in HIV care. This study was part of a large study in which nurses (n = 152), doctors (n = 64), laboratory staff (n = 128) and pharmacy staff (n = 51) were interviewed to understand their attitude, awareness, and acceptability of telehealth in HIV care. The methods and results in this study are presented according to the consolidated criteria for reporting qualitative research [26].

### **Study Setting**

The study was conducted in Harare, the capital city of Zimbabwe. Harare has the largest healthcare facilities in the country, and key headquarters for most institutions including the Ministry of Health and Childcare. The city of Harare has an adult HIV prevalence rate of 11.5%, one of the highest in the country [23].

### **Population and Sampling**

In this study, 14 purposively selected key stakeholders were interviewed. Key stakeholders were defined as professionals working within the Ministry of Health and Childcare and its partners, involved in HIV services or telehealth at managerial or policy making level.

### **Data Collection Instruments and Procedure**

In-depth interviews were conducted to collect qualitative data from the key stakeholders. Trained researchers conducted the interviews guided by a semi-structured interview guide containing open-ended questions. The questions from the semi-structured interview guide were based on literature review and survey results for a study under consideration for publication. Interviews were conducted in English over the phone and via zoom, between 20 May 2023 and 2 August 2023. The interviews continued until

saturation was reached, when no additional information was emerging from the interviewees [27].

## Data Analysis

The interviews were audio-recorded and transcribed verbatim in Microsoft Word. The transcribed transcripts were uploaded into NVivo version 14 software for analysis. The framework-based thematic analysis was performed following these steps: familiarization; identifying a thematic framework; indexing; charting; and mapping and interpretation [28]. First, the authors familiarized themselves with the data on the transcripts. Second, authors identified key themes embedded in the transcript through coding responses into categories. The categories were then grouped into nodes, which were then grouped into similar concepts reflected by the participants on telehealth implementation and scale-up. Finally, mapping and interpretation of the themes and sub-themes was done.

## Ethics

This study was ethically reviewed and approved by two institutional review boards: the Joint Research Ethics Committee for University of Zimbabwe Faculty of Medicine and Health Sciences and Parirenyatwa Group Hospitals (JREC) (approval number: JREC 123/2023); and Sally Mugabe Central Hospital Ethics Committee (approval number: SMCHEC090123/06).

## Results

In total, 14 key stakeholders in HIV programs in Harare were interviewed. All 14 key stakeholders were well-aware of telehealth and perceived telehealth as an effective initiative with the potential to improve HIV services delivery and accessibility in underserved communities. The characteristics of study participants are outlined in Table 1.

**Table 1.** Demographic Characteristics of Participants

Name	Age	Gender	Education level	Years of work experience	Years of work experience in HIV response	Role
John*	36	Male	Postgraduate	11	5	Program manager, policy maker
Jane*	45	Female	Doctorate	19	11	Program manager, policy maker
Simon*	30	Male	Undergraduate	5	2	Laboratory specialist, policy maker
Dorcas*	33	Female	Undergraduate	6	4	Healthcare provider, management
Peter*	40	Male	Postgraduate	15	7	Program coordinator, policy maker
Paul*	43	Male	Postgraduate	17	10	Public health logistician, policy maker
Mark*	38	Male	Postgraduate	13	9	SIE manager, policy maker

Tabitha*	45	Female	Postgraduate	19	12	Healthcare provider, management
Howard*	37	Male	Doctorate	12	5	Program manager, policy maker
Moses*	41	Male	Postgraduate	16	8	Laboratory mentor, policy maker
Joshua*	40	Male	Postgraduate	12	10	Chief pharmacist, management
Brenda*	36	Female	Postgraduate	12	4	Program officer, public health professional
Luke*	49	Male	Postgraduate	22	9	University lecturer, Informatics advisor
James*	56	Male	Postgraduate	30	17	Director of Health Informatics

\*Pseudonyms

## SIE: Strategic Information and Evaluation

Three main themes emerged from the interviews: Telehealth is a valuable tool in HIV

care; challenges hindering effective telehealth implementation and scale up; and strategies to ensure effective telehealth implementation and scale-up. The main themes and related sub-themes are presented in Table 2.

**Table 2.** Summary of Themes that Emerged from Data Analysis

Themes	Sub-themes
Theme 1: Telehealth is a valuable tool in HIV care	Reduces turnaround time
	Improves services accessibility
	Increase patient flexibility
	Decongest healthcare facilities
	Requires fewer healthcare staff
	Reduces costs for patients
Theme 2: Challenges hindering effective telehealth implementation and scale up	Poor internet and mobile network
	Financial challenges for implementers
	Unavailability of policies guiding use of telehealth
Theme 3: Strategies to ensure effective telehealth implementation and scale-up	Multi-sectoral collaboration to ensure provision of reliable and affordable mobile and internet connectivity
	Policy formulation
	Piloting the program
	Engaging donors for uninterrupted funding.
	Engaging technically competent staff to lead the program

### Theme 1: Telehealth is a Valuable Tool in HIV Care

Key stakeholders perceived telehealth as a valuable tool in HIV care with the potential to

improve service accessibility especially in resource limited areas.

In addition, telehealth services reduce turnaround time, increase patient flexibility,

decongest healthcare facilities, and require fewer healthcare workers.

**Jane: Program Manager, Policy Maker**

*“It’s not every time that a patient must visit a healthcare facility or see a doctor. Patients can have their prescriptions, discuss adherence, or be referred for a HIV viral load test, over the phone.*

*Also even considering that healthcare workers are inadequate in Zimbabwe; one healthcare worker can serve many patients in a short space of time. We also need telehealth to decongest the clinics and minimise the spread of infections spread by contact.”*

**Peter: Program Coordinator, Policy Maker**

*“Telehealth is needed because it reduces the turn-around time. There is real time availability of laboratory results and clinicians can manage their patients better. Despite infrastructural gaps and funding challenges that need to be addressed for full implementation, telehealth is still a better option because it cuts down turnaround time, which is what healthcare systems need.”*

**Brenda: Program Officer, Public Health Professional**

*“We really need telehealth. There are several conditions that do not require patients to visit the clinic, overcrowding and waiting in long queues. A text message or reminder saying for example: collect your medicines at 2 pm, creates convenience to both the patient and clinic. In other words, telehealth saves time.”*

**Paul: Public Health Logistician, Policy Maker**

*“Telehealth has a lot of advantages compared to the conventional way of HIV service provision. Telehealth ensures flexibility for employed patients. It reduces time of waiting at the facility. Also, telehealth is cost effective as transport costs are eliminated, and this*

*increases accessibility of medical services to more patients.”*

**Mark: SIE Manager, Policy Maker**

*“Telehealth is a timely intervention. Digital platforms offer an opportunity to save on healthcare costs. Although HIV services are generally for free in the public sector in Zimbabwe, patients still face transport costs. For example, a high HIV viral load result requires the patient to visit the clinic several times for monitoring and enhanced adherence counselling which can be done virtually.”*

**Theme 2: Challenges Hindering Effective Telehealth Implementation and Scale-up**

The interviewee alluded to challenges that were impeding the implementation and scale-up of telehealth in HIV care in Harare. The key stakeholders cited poor mobile and internet connectivity as the major obstacle. There was consensus among participants that addressing the major challenges would ensure effective telehealth implementation and scale-up.

**Sub Theme 1: Poor Internet and Mobile Network**

**Peter: Program Coordinator, Policy Maker**

*“The main challenge is poor mobile network and limited internet access for both patients and service providers. Currently network strength and coverage are poor in Harare, and Zimbabwe as a whole. The strength of the network is even weaker in rural areas, and since telehealth relies mainly on network, weak mobile and internet network could be a very big obstacle.”*

**Tabitha: Healthcare Provider, Management**

*“There are several challenges to the implementation of telehealth. Not all the patients have the capacity to purchase mobile internet data. Mobile network is also poor, and so is the*

*internet connection. There will be need for Wi-Fi which is quite costly to the user."*

**Moses: Laboratory Mentor, Policy Maker**

*"Some patients may not be able to access internet in Zimbabwe. Adopting an internet-based system will be problematic because, currently we do not have widespread internet access. In my organisation, we have tried sending text messages to HIV patients, but some could not receive the messages promptly because of poor mobile network."*

**Sub Theme 2: Financial Challenges on Implementers and End Users**

The participants perceived financial challenges as one of the main barriers to the effective implementation and scale-up of telehealth in HIV care in Harare.

**Peter: Program Coordinator, Policy Maker**

*"Hardware like phones and computers for telehealth is limited in most public institutions and among patients. Because of the economic hardships Zimbabwe is facing, access to electronic devices is limited for the low social class."*

**Moses: Laboratory Mentor, Policy Maker**

*"Some of the telehealth users may not afford the internet for internet-based telehealth. Similarly, the government may not afford to wholly fund the full implementation and scale-up chiefly due to the poor economic performance and consequently inadequate budget allocations to the health sector. External funding is crucial."*

**Sub Theme 3: Unavailability of Policies Guiding Use of Telehealth**

The interviewee highlighted their concerns on the absence of policies guiding telehealth use. The key stakeholders agreed that more needs to be done on policy formulation before the scale-up of telehealth. A call was made to standardize telehealth use in all facilities.

**Mark: SIE Manager, Policy Maker**

*"I remember coming across a mobile health policy in Zimbabwe, but it was still a draft. It was not published through the Ministry of health. I haven't seen any documented policy on telehealth. What I am aware of, is a data protection act which has provisions to protect health data. Policy development is something Zimbabwe needs to work on. I am afraid we may not have a digital health policy at the present moment."*

**Jane: Program Manager, Policy Maker**

*"To be honest, I don't know of any telehealth policy in existence. Maybe the policy is still under development. I am aware that some doctors already consult patients using telehealth, but I am not sure if there is a policy guiding services offered virtually. It could be a vague area."*

**Tabitha: Healthcare Provider, Management**

*"I am not aware of any telehealth policy available."*

**Luke: University Lecturer, Informatics Advisor**

*"I am not so sure about telehealth policies in existence, but we have a digital health strategy which was recently reviewed, and it covers the general concepts of telehealth intervention. It is a good start to guide the country towards prioritising digital health. However, there are many policies that are still required to address specific issues like ownership. I believe the next step towards implementation will be the formulation of these policies."*

**James: Director of Health Informatics**

*"What is currently happening for doctors is that they get a guideline from the Medical and Dental Practitioners Council, on telehealth use. However, we just received funding from the World Health Organisation to develop a telehealth policy and we will be starting the*

*consultation meetings soon. We realised that all the efforts of digitalising are moving well but there is a void in the policies governing the practice. There is also a gap in laws around telehealth, and currently digital health is not recognised by any legislature.”*

### **Theme 3: Strategies to Ensure Effective Telehealth Implementation and Scale-Up**

Participants presented their views on strategies the Ministry of Health and Childcare should adopt to ensure successful implementation and scale-up of telehealth in HIV care. The following strategies were suggested: multi-sectoral collaboration to ensure provision of reliable and affordable mobile and internet connectivity; policy formulation; piloting the program; engaging technically competent staff to lead; and engaging donors for uninterrupted funding.

#### **Sub theme 1: Multi-sectoral Collaboration to Ensure Provision of Reliable and Affordable Mobile and Internet Connectivity**

Key stakeholders unanimously raised their concerns on the poor mobile and internet coverage in Zimbabwe. Participants noted that any internet-based telehealth may fail if internet services are not improved. Participants further highlighted the need for collaboration with relevant ministries and other stakeholders in improving internet and mobile network services.

#### **Moses: Laboratory Mentor, Policy Maker**

*“The Ministry of Health really must ascertain the need per site and consider if there is need to capacitate the sites with internet service. Internet is really a challenge in the country. The Ministry will have to ensure that the system is running on a low bandwidth to support the system even when the internet signal is not strong. There is also a need for power back-up system to support the internet during power-cuts. Installing solar panels provides enough back-up power.”*

#### **Brenda: Program Officer, Public Health Professional**

*“Ensure that health facilities have gadgets like laptops, tablets, and computers, and most importantly, provide reliable internet connectivity. The Ministry should engage relevant players in the ICT (Information and Communication Technology) sector.”*

#### **Peter: Program Coordinator, Policy Maker**

*“Good mobile and internet connection for everyone, is the first step. Without strong network we cannot talk of telehealth. I understand that telehealth involves covering distance and this relies on network for exchange of data. So, the government really has to come up with a strategy to turnaround the ICT industry.”*

### **Sub-theme 2: Policy Formulation**

Most participants were of the viewpoint that Zimbabwe needs policies to ensure proper regulation of digital health. Key stakeholders noted that currently in Zimbabwe, no policy exist. Drafting policies will ensure effective telehealth implementation and scale-up.

#### **Mark: SIE Manager, Policy Maker**

*“I think scoping is the initial stage. The next step could be formulation of policies and designing of the intervention. This will guide the implementers and provide an idea on the services that should be offered via telehealth, and services that need face-to-face consultation.”*

#### **Joshua: Chief Pharmacist, Management**

*“It’s very important to have a policy in place. There is need for clear guidelines on what needs to be done. At the moment some service providers are already using telehealth, but without proper monitoring from the government or the Ministry of health. This, in my view poses serious problems on issues to do with data security and confidentiality. In addition, no*

*known penalties are available to deter offenders.”*

### **Sub Theme 3: Pilot the Program**

When it comes to effective telehealth implementation and scale-up, participants recommended piloting the telehealth program at a few healthcare facilities. The participants argued that piloting would provide an insight into the true scope of the project, potential challenges and resources required.

#### **Brenda: Program Officer, Public Health Professional**

*“I think the Ministry of Health must take a cascaded approach, rolling out the implementation gradually in stages. The ministry can start with a pilot, learn lessons from it, and then cascade the program to the whole of the country. The pilot can be done at selected busy facilities like Parirenyatwa hospital, to enable better insights.”*

#### **Paul: Public Health Logistician, Policy Maker**

*“It would be wise for the Ministry of health to start with a pilot study at central hospitals. Central hospitals can offer an opportunity to identify a wide range of challenges associated with the intervention by virtue of the hospital’s being busy. The Ministry can also borrow ideas from successful implementation stories in other countries. This way challenges can easily be identified and resolved.”*

### **Sub Theme 4: Engaging Donors for Uninterrupted Funding**

Ensuring a constant supply of funds was another common theme raised by the key stakeholders. It was highlighted that telehealth implementation and scale-up requires sufficient funding, to ensure the provision of quality services. The provision of subsidies was perceived as a necessity in encouraging the scale-up of telehealth by players. Key stakeholders suggested engaging international and local

donors as a means of ensuring a constant stream of funds.

#### **Howard: Program Manager, Policy Maker**

*“Telehealth is the future and is here to stay. It however requires funding for periodic upgrades and maintenance of the systems which can be quite expensive. There is also the cost of training staff and acquiring new hardware. The government may not always afford this but luckily there are international donors like ICAP (International Center for AIDS Care and Treatment Programs), ready to assist in digital health interventions. The government can also engage local stakeholders interested in investing in this sector.”*

#### **Dorcas: Healthcare Provider, Policy Maker**

*“Telehealth can be an expensive intervention. The government needs to source funds for subsidies.”*

### **Sub Theme 5: Engage Technically Competent Staff to Lead the Telehealth Program**

The participants emphasized the need for engaging trained individuals to lead the telehealth implementation, and maintenance of the systems at the health facilities.

#### **Jane: Program Manager, Policy Maker**

*“There is need for competent people to lead the implementation of telehealth. Experienced Health Information Officers and ICT professionals with practical experience in digital health transformation and change management should be at the forefront. There is also a need to train healthcare workers on the use of the applications.”*

#### **Howard: Program Manager, Policy Maker**

*“The selection of people to lead the implementation of telehealth should be rigorous*



*as these individuals can determine the trajectory of the whole program.”*

## **Discussion**

This study presents perceptions of key stakeholders on telehealth implementation and scale-up in Harare, Zimbabwe. Key stakeholders perceived telehealth as a valuable tool in HIV care with the potential to improve the accessibility of healthcare. This corroborates well with the WHO's Global Strategy on Digital Health aimed at promoting healthy lives and well-being for everyone [4]. The findings of this study reveal that key stakeholder regard telehealth as an imperative intervention in the elimination of HIV/AIDS. However key stakeholders cited poor mobile and internet connectivity as a major obstacle to telehealth implementation and scale-up. Multi-sectoral collaboration, adequate funding, and policy formulation were suggested as possible strategies for strengthening telehealth efforts.

This study demonstrated that key stakeholders perceive telehealth to reduce healthcare costs and ensure patients' flexibility in accessing services. These findings agree with results from recent studies showing that adopting telehealth is beneficial to HIV patients, and improves overall service delivery [1, 6, 7, 8, 9, 10]. Key stakeholders were also of the viewpoint that telehealth alleviates the burden on healthcare facilities, and consequently requires fewer healthcare staff to attend to patients. This is in tandem with findings from a study conducted in Taiwan which concluded that telehealth adoption could solve healthcare staff shortages in most developing countries [29].

A recently published study conducted in the United States of America showed that despite success stories in telehealth, lack of broadband access, compatible devices, standardization, and government regulations of telehealth in HIV care still posed challenges to scaling-up [18]. Identically, key stakeholders in this study conveyed concerns, and cited poor internet connectivity and unavailability of regulatory

policies as potential pitfalls in Harare. Some studies have identified lack of funding as the biggest barrier to telehealth implementation and scale-up in Africa [30, 31]. Similarly, in this current study, key stakeholders blamed inconsistent funding for the poor performance of telehealth [32].

Policy formulation and the provision of reliable mobile and internet connectivity emerged as key strategies to effective telehealth services in this study. Previous studies highlighted similar recommendations elsewhere [33, 9, 34]. However unlike in this study, promoting strong political commitment was cited as an effective strategy in African countries [35].

## **Strengths and Limitations to the Study**

The study has demonstrated the feasibility of telehealth implementation and scale-up in HIV care in Harare from a key stakeholder's perspective. A notable strength of this study is the inclusion of both men and women, providing a balanced and wide analysis. Additionally, both national-level key stakeholders and lower-level key stakeholders were incorporated in the current study. Furthermore, the methods and results in this study are presented according to the consolidated criteria for reporting qualitative research providing an accurate assessment of the subject under study.

Researcher bias may have affected the selection of the key stakeholders. However, the sample was drawn from professionals who are knowledgeable on telehealth and the status of the HIV pandemic in Zimbabwe. Finally, qualitative research can be highly subjective [36]. The researcher, however enhanced the credibility of the study by performing a meticulous inductive analysis and interpretation of the data.

## **Recommendations for Further Research**

Further research incorporating telehealth end-users is recommended, to fully understand challenges and hence inform policy.

## Conclusions

Integration of telehealth in HIV care is a crucial tool in improving access to healthcare. The study findings showed the confidence of key stakeholders in Harare to effectively sustain telehealth in HIV intervention. Despite its promising potential, significant hurdles to telehealth implementation in Harare exist and should be addressed to realise the full potential.

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## Conflict of Interest

The authors wish to declare no conflict of interest in this manuscript.

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