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Health Care Providers' Challenges to High-Quality HIV Care and Antiretroviral Treatment Retention in Rural South Africa

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Abstract

Provision of high-quality HIV care is challenging, especially in rural primary care clinics in high HIV burden settings. We aimed to better understand the main challenges to quality HIV care provision and retention in antiretroviral treatment (ART) programs in rural South Africa from the health care providers' perspective. We conducted semi-structured qualitative interviews with 23 providers from 9 rural clinics. Using thematic and framework analysis we found that providers and patients face a set of complex and intertwined barriers at the structural, programmatic, and individual levels. More specifically, analyses revealed that their challenges are primarily structural (i.e. health system- and micro-economic context-specific) and programmatic (i.e. clinic- and provider-specific) in nature. We highlight the linkages providers draw between the challenges they face, the motivation to do their job, the quality of the care they provide, and patients' dissatisfaction with the care they receive, all potentially resulting in poor retention in care.

Keywords

quality HIV care; ART retention; challenges providing HIV care; providers' perspectives; South Africa

Introduction

South Africa has the largest HIV epidemic in the world, with an estimated 7.7 million people living with HIV (PLHIV), and an HIV prevalence among adults (15–49 years) of 20.4% (UNAIDS, 2018). South Africa also has the largest HIV care and antiretroviral

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treatment (ART) program in the world, and began implementing universal treatment in 2016 to achieve the UNAIDS fast-track 90-90-90 and 95-95-95 targets by 2020 and 2030 respectively (Abuelezam et al., 2019; AVERT, 2019; Johnson et al., 2017; UNAIDS, 2014). To achieve these targets and curb the HIV epidemic, it is imperative to increase the number of people tested, and ensure that PLHIV are linked to care, remain on treatment and achieve viral suppression. However, despite the efforts made by the South African Department of Health and many non-governmental organizations, improving HIV detection and lowering the risk of new infections is still most urgent in the region, and evidence shows that significant barriers still remain to testing, linkage to and retention in HIV care (Bor et al., 2017; Govindasamy et al., 2012; Johnson, 2012; Lippman et al., 2016).

Social barriers reported in prior studies to affect individuals' linkage and retention in HIV care include HIV-related stigma; fear of disclosure; lack of social, family, or partner support; unequal gender norms; cultural and religious beliefs; and relocation and mobility (Govindasamy et al., 2012; Kelly et al., 2014; Kim et al., 2016; Lippman et al., 2017; Mill et al., 2013; Pulerwitz et al., 2019; Quinn et al., 2018; Shabalala et al., 2018). Key structural barriers reported include distance to the clinic, the cost of transportation, time to get to the clinic, wait times at clinics, lack of adherence counseling, and limited availability of support services such as peer support groups, adolescent-friendly services and Antenatal Care Services (Geng et al., 2016; Geng, Bangsberg, et al., 2010; Geng, Nash, et al., 2010; Govindasamy et al., 2014; Lamb et al., 2012; Losina et al., 2010; MacPherson et al., 2012; Roura et al., 2009; Scanlon & Vreeman, 2013; Tweya et al., 2018).

In addition to the challenges PLHIV face linking to and remaining in HIV care and ART programs, health care providers in sub-Saharan Africa also face many barriers when providing care and when trying to engage and retain PLHIV in care. Previous qualitative studies have investigated barriers to HIV care linkage and retention from patients' and/or providers' perspectives elsewhere in Africa, and specifically in South Africa's urban or peri-urban settings (Amanyire et al., 2010; Bezabhe et al., 2014; Bogart et al., 2013; Kave et al., 2019; Kim et al., 2016; Kulkarni et al., 2016; MacPherson et al., 2012; Roura et al., 2009; Shabalala et al., 2018; Ware et al., 2013). However, to our knowledge, little is known about the perspectives and experiences of health care providers in rural high HIV burden areas.

Our study aimed to explore and better understand the challenges and barriers faced by health care providers in delivering high-quality care when initiating and retaining patients on ART in rural South Africa. We define a *high-quality health system* as "one that optimizes health care in a given context by consistently delivering care that improves or maintains health outcomes, by being valued and trusted by all people, and by responding to changing population needs," as proposed by The Lancet Global Health Commission on High Quality Health Systems (Kruk et al., 2018). The challenges to deliver high-quality HIV care are pronounced in rural areas where health system resources are more limited (Leslie et al., 2017). These rural areas may also have a different patient and provider composition, as well as disparities in HIV outcomes. Other studies have reported unequal access to and retention in ART care, as well as differences in care quality indicators in urban versus rural settings. One study by Cleary et al. (2012) reported that patients attending rural clinics had higher availability barriers (i.e. more time travelling to clinic, more time spent at clinic collecting

medication), and higher affordability barriers (i.e. total expenditure on health care), than those attending urban clinics. Other studies have also reported differences in urban versus rural HIV care quality – specifically, higher use of alternative/traditional medicines, lower on-time drug pick-up, heavier clinic workload, limited access to patient data or more incomplete files, and lower viral load coverage and monitoring in rural settings (Ekwunife et al., 2012; Fokam et al., 2020). The goal of our qualitative descriptive study is twofold: 1) to understand the challenges to deliver quality HIV care that are unique or most pervasive in rural Mpumalanga, and 2) to understand health care providers' perspectives on how they address these deficits.

Moreover, we aimed to gain insight into what providers believe are the barriers patients face regarding their HIV care, in order to characterize the ways in which providers interpret their clients' needs and the structural or clinic challenges their clients might face. Taken together, mapping providers' experiences with HIV care provision and their perspectives of how patients experience barriers to quality care, could 1) allow providers to improve their clinical practice, and 2) provide evidence needed by policy makers to develop interventions and make policy changes to address the challenges health care systems face when serving people in rural HIV high prevalence areas in sub-Saharan Africa.

Methods

Study Setting

This qualitative descriptive study was conducted in the Agincourt Health and Socio-Demographic Surveillance System study area (Agincourt HDSS), which was established in 1992 by the South African Medical Research Council and Wits University Rural Public Health and Health Transitions Research Unit (Kahn et al., 2012). The Agincourt HDSS is located in the Bushbuckridge sub-District of Mpumalanga, South Africa, about 500 km northeast of Johannesburg. Mpumalanga is a rural province characterized by high levels of poverty, unemployment, and labor migration as well as high prevalence of HIV. In 2018, the estimated HIV prevalence in Mpumalanga was 22.8% among adults aged 15–49 years (Human Sciences Research Council, 2018).

The qualitative interviews analyzed for this article were conducted as part of a clinic quality assessment (CQA) study aimed at characterizing quality of care at primary health facilities in the Agincourt study area. Data were collected between February and May 2019 in order to assess the challenges and barriers health care providers face in delivering high-quality care to patients on ART in rural South Africa; and to gather insight into how providers think about the challenges patients face when engaging in HIV care. The overall CQA study was nested in the Randomized Controlled Trial (RCT) *Tsima.* The *Tsima* intervention aimed to address social barriers to HIV testing, linkage to and retention in HIV care, and has been described elsewhere (Lippman et al., 2017).

Study Population

The Agincourt HDSS is comprised of 31 villages, 15 of which participated in the *Tsima* trial and the CQA study. All nine health care facilities that serve these 15 villages provide HIV

testing and clinical care to study area residents and multiple other communities in the Bushbuckridge sub-District of Mpumalanga. Additionally, three of these nine facilities are community health centers located in the three largest villages of the HDSS, which also provide 24-hour service or specialized HIV and tuberculosis care and treatment services. Purposive sampling was used to recruit care providers and clinic managers (18–70 years of age) with a variety and range of experiences (e.g. nurse, lay counselor, operational manager) from all nine facilities that serve the 15 villages in the study area. We emphasized recruitment of nurses as they have the most in-depth knowledge of HIV and ART care provision. Recruitment of participants for interviews was conducted by the study's field manager. The field manager used a script introducing the study purpose and recruited health care providers in person at their health facility once clinic managers had provided approval for the research visit. We aimed to interview a minimum of 18 participants. All 23 individuals invited agreed to participate. All nine health facilities where the 23 study participating participants work were also part of the aforementioned larger CQA study and the parent RCT.

Data Collection & Analysis

Qualitative data were collected via face to face interviews with health care providers lasting about one hour. The interviews were conducted at each provider's clinic on the day and time of their choice and followed a semi-structured interview guide (Appendix). The interview topic guide incorporated themes directed primarily at answering the study research questions: 1) What are the challenges health care providers face in providing high-quality care to patients receiving ART in rural South Africa?; 2) From these health care providers' perspective, what are the challenges patients receiving ART face to link to HIV care and remain on treatment? A qualitative interviewer trained on consent and confidentiality procedures, study topic, and the interview guide consented participants and carried out the interviews in the local language of Shangaan or in English, depending on the participant's preference. Interviews were audio-recorded (with the participants' permission), transcribed verbatim and translated from Shangaan to English.

Coding and analysis of the interview transcripts were facilitated by NVivo 12 software (Bazeley & Jackson, 2013). Data were analyzed after all interviews were completed. Our analytic strategy involved two processes: first we inductively built a thematic framework from the interview data, then we mapped this thematic framework to a theoretical framework of barriers and facilitators to HIV care, which will be described in more detail below. Our descriptive analyses followed thematic and framework analysis techniques (Flick, 2014; Kahlke, 2014; Ritchie & Lewis, 2003; Vaismoradi et al., 2016). In the first stage of analysis, inductive thematic analysis techniques were used to develop themes grounded in the data. In an effort to ensure reflexivity, researcher triangulation was used. Two researchers with different expertise independently coded the first three interviews, discussed the preliminary codes and emerging themes, and subsequently tested those themes by rereading and carrying out a constant comparison of the transcripts, and by fine-tuning interpretation of themes to maximize rigor. To arrive at a thematic framework, the initial codes and themes and their similarities and differences were compared between the two researchers to enhance trustworthiness of the data. In the second stage of analysis, the remaining 20 interviews were

analyzed using techniques from framework analysis to label, code and sort the data to the thematic framework with flexibility to add new items. Data which did not fit under existing themes were coded as new codes and included as additional themes or sub-themes after discussion among the researchers. Codes, themes and sub-themes were refined and renamed as needed, and supporting quotes were identified to support each theme.

Lastly, after our inductive thematic analysis was conducted, we mapped our inductive themes onto our theoretical framework, which is an adaptation of a framework developed by MacPherson et al. (2012). In this theoretical framework we define *structural challenges* to high quality HIV care as those that relate to health policy/systems, the socio-economic environment, the micro-economic environment, the socio-cultural environment, primary care coverage, distance to the clinic and transportation costs/availability. *Programmatic challenges* are those specific to the health facility and the health care providers and are related to the availability of resources (both human and material), the availability of provider support (e.g. supervision, professional development, positive reinforcement), and providers' workload. Finally, *individual challenges* are those specific to the patients and relate to their knowledge/attitudes/beliefs regarding HIV/ART, treatment literacy, perceived benefits/constraints of HIV testing/ART, fear of disclosure and patient mobility (Figure 1). As our descriptive study aimed at understanding challenges and barriers to high quality HIV care in a real-life context, we placed emphasis on the perspectives and experiences of providers in these facilities. Thus, the bolded items in Figure 1 represent the challenges most commonly cited by providers interviewed.

Ethics

Approval for this research was provided by the Harvard Human Research Protection Program (IRB18–1400), the Human Research Ethics Committee (Medical) at the University of the Witwatersrand (Ethics Ref No. 150104), the Provincial Health Research Committee at the Mpumalanga Province Department of Health (MP_201812_004), and the Antwerp University Hospital Ethics Committee (UZA Ethics Ref No. 18/42/462). Written informed consent was obtained from all participants included in the study.

Results

A total of 23 health care providers (males and females) representing all 9 clinics in the study site participated in the open-ended interviews. The majority of providers interviewed were professional nurses (65.2%), and female (82.6%), which is representative of the general health care workforce in rural clinics in the study area (Table 1). Emerging from our analysis is a combination of complex and intertwined challenges (specifically those relating to the bolded items in Figure 1), which have a significant effect in health care providers' motivation to do their job, the quality of care they provide, as well as in patients' satisfaction and/or ability to link to and remain in care. Moreover, our analysis revealed several categories of themes and sub-themes (Table 2), and thus, the results outlined in the section below are organized around 4 main themes.

Providers interviewed for this study spontaneously shared their perspectives on and experience with the main challenges they and their patients face, and extensively elaborated

on the issues they felt strongly about. Our analyses revealed that the majority of providers – and from their perspective, their patients as well – face structural, programmatic and individual level barriers that affect their ability to provide high quality care, and patient's ability to remain in care.

1. Providers' challenges in providing high quality HIV and ART care are primarily structural and programmatic in nature

The main challenges providers reported in delivering high-quality care to patients receiving ART in the Agincourt HDSS were *structural challenges* pertaining to the health system financing and supply chain, and *programmatic challenges* that are both clinic- and provider-specific. The main and highly pervasive structural challenge was specific to the lack of resources. Programmatic clinic-specific challenges were related to the lack of provider support. Reports of programmatic provider-specific challenges included difficulties in managing the workload and feeling unsatisfied with their professional activities or having poor motivation to do their job. A more detailed analysis and description of these main challenges faced by providers is presented below.

Structural Challenges.—All 23 participants cited *lack of resources* as the main structural challenge they face in providing high-quality HIV care. Specifically, providers reported that shortages of staff, medication stock outs or shortages, and limited or inappropriate clinic space occurred frequently and impeded their ability to provide comprehensive primary care and high-quality HIV/ART care. With regard to staff shortages, providers said there's simply too much to do and too many patients to see to provide the best or most comprehensive service:

> "Another thing is that we are having shortage of staff. You find that the clinic only has two nurses… You find that those two nurses have to attend all the patients who are coming to the clinic and it is not easy to do so as we are seeing many patients each day… They will go home later, and they start to complain while they are here. I think that is the negative side of our service." (Clinic 7, Enrolled Nurse)

> "I cannot say we are providing good quality care meanwhile we have a serious shortage of staff. Over the weekend you find that there are two nurses... we don't have a data capturer and no lay counsellor. So, in that situation you cannot expect me to render the best quality in this way: Let me say an HIV patient is coming and he/she will need counselling. Thinking of the time that I have to spend with that person, looking at the queue, definitely I would skip some of the important information. Or I will tell that patient to come back for HIV counselling as today the lay counsellor is not on duty. In that way I didn't provide the good care that was expected to be done..." (Clinic 9, Professional Nurse)

Medication stock outs or shortages were also reported by providers as an important challenge influencing their ability to provide quality HIV care. The lack of an adequate ART stock affects providers' ability to ensure high-quality and comprehensive HIV care, and patients' ability to maintain a suppressed HIV viral load. Additionally, although this challenge could be categorized as both structural (originating at the level of the health system more generally) or programmatic (specific to the clinic's availability of resources),

the majority of providers alluded to this challenge as one that originates at a higher level. That is, providers noted that they plan according to their needs and that they place their medication stock orders in time, but often they do not receive what they order. Moreover, the fact that this issue seems to cut across all clinics, rather than just across a few, also suggests that the issue is more pervasive and indeed at the level of the health system supply chain structure.

> "Now we are having the shortage of 3CT and Abacavir. If we don't have this treatment our challenge is that the viral load in our patients is going higher. It is not suppressed. And it has been for a longer period since we don't have this treatment. The challenge is that when they ordered the treatment, they don't get what they have ordered. They are telling us that the depot has got a shortage. They are supplying only few...Really this needs the intervention from the government…" (Clinic 3, Enrolled Nurse)

> "That is a very big challenge. It is like now we have a shortage of treatment and it is not one drug... So, we are asking from other clinics. Like now we are using 3CT and it is finished. We don't have pills at all, and we are using syrup. Most of the time you find that we don't have drugs, but we have ordered, and they don't deliver them. And sometimes they just deliver the limited number, which means we have to reorder again..." (Clinic 6, Professional Nurse)

The majority of providers also cited inappropriate or limited space – e.g. small, old or outdated and unclean clinic structures, as well as lack of water – as a debilitating resource challenge they face. These inappropriate clinic spaces result in providers feeling unable to provide quality HIV/ART care and to ensure confidentiality for their patients:

> "That is why the counsellor has to make sure that those who are coming for an HIV test must come out looking good and not crying. The testing room is a serious challenge. Our clinic is of the old style. The rooms are small, not enough space. And while counselling, you have to switch your voice down so that people at the door might not get what you are talking about." (Clinic 4, Operational Manager) [by "old style" the provider is referring here to the fact that the clinic structures are old an outdated.]

> "We don't have water here at the clinic. We do have water sometimes from the water boreholes. Our toilets are not working…Those toilets are not in good condition as they are full, and they take time to come and drain them... Now, we locked them, and patients will go to the homes around the clinic…The kind of service we are providing here is not of good quality when it comes to that." (Clinic 4, Professional Nurse)

Programmatic Clinic-Specific Challenges.—Second to lack of resources, the *lack of provider support* was reported by the majority of providers (21 out of 23) as a major clinic-specific challenge. Providers cited lack of professional development and limited positive reinforcement, as their superiors (either onsite or external managers) rarely take the time to visit, evaluate or show appreciation for their work, and seldomly acknowledge a job well done. Instead, their appraisals often only focus on errors or the work that was not done.

> "… We have lack of support from the management I would say. This is demotivating us. We have lack of support and appraisal. The problem is that people are always looking for mistakes. When we do mistakes that's when we will see them. They are coming and complaining… Whereas they were supposed to come and see how we are working. To ask patients how they feel about the service. They were supposed to praise us by hearing how we are treating the patients. Just saying well done is a good thing. But here at this clinic, we are taking almost three months without seeing anyone from the management..." (Clinic 9, Professional Nurse)

Lack of positive reinforcement – specifically lack of salary bonuses – was also often cited as demotivating:

> "I'm not motivated at all. Why? Even last year we didn't receive our performance money. … We don't know the reason, but they told us that they don't have money. They just decided to cut some of those who didn't get their incentives irrespective of how hard that particular person is working. They didn't consider us." (Clinic 7, Professional Nurse) Facility operational managers are expected to attend professional development workshops or courses, and to train the rest of the staff at their facility. This was not perceived as sufficient or as the best approach. It was reported that more training is needed for *all* staff, not just for the senior staff, and that more extensive and appropriate ART care-related training is needed.

> "But I think the training that we are getting is not enough as they are training one, and they say he/she is the one who will train the rest. The information cannot be the same as I said. There needs to be an improvement." (Clinic 4, Operational Manager)

> "Now the challenge is that you can be the professional nurse, but you are not trained on ART and TB. Not all professional nurses have been trained for ART and TB. I think they must train the staff…" (Clinic 8, Professional Nurse)

Programmatic Provider-Specific Challenges.—The majority of providers interviewed (22 out of 23) also cited challenges in managing their workload and being unhappy or unmotivated to do their job. *Challenges in managing the workload* related to the long work hours, patient overload, or lack of time necessary to complete all tasks that are required for comprehensive health care.

> "…We are just working, and we are getting tired, particularly the professional nurses. You can see that they are tired... Most of the time they don't have lunch or breaks, and they are used to that." (Clinic 8, Enrolled Nurse)

> "The challenge is that when it comes to the issue of HIV, we are sending our patients to the lay counsellor to deal with them. With us we are just initiating treatment. The problem that we have is that we don't have time. We only intervene if a problem is there. When we initiate the treatment, all we do is to give the information, but we are not following or checking whether those patients are doing like that. We give and say, come back the following month. If they don't come, we

are just calling and don't visit their homes to check why did they fail to come..." (Clinic 9, Professional Nurse)

Being unsatisfied or unmotivated also came up repeatedly. Providers emphasized that this is the direct result of the programmatic clinic-specific challenges they face. They reported that the lack of resources and support from their superiors makes them tired, unhappy with their work, and unmotivated to continue working.

"That's why I'm saying even if I can get any opportunity today, I can leave as soon as possible…Truly speaking I have my resignation letter in my computer. At any time, if I get an opportunity I will simply go. This is due to the management. This one is the problem of management... I'm not happy working here my sister. I'm not." (Clinic 4, Professional Nurse)

"My sister, our government is dead. Things have changed a lot. This is not motivating us as they were supposed to be here, helping us about our work. In the past they were coming and doing red flag [campaign for HIV prevention]. They were checking infection control, checking in the pharmacy on how we packed treatments. But now everyone is doing things according to his/her way. That is why I want to quit with nursing. I see that I'm not feeling good about working in the industry like this one. I want to go home and rest." (Clinic 6, Professional Nurse)

2. Providers also face patient-specific challenges that hinder their ability to provide high-quality HIV and ART care

The majority of providers interviewed (21 of the 23) reported that *loss-to-follow-up or treatment default*, and *poor treatment literacy* were frequent **individual patient-specific challenges** they encountered. Providers reported that patients are lost to follow up because they moved or decided to seek care elsewhere, or because they stopped taking their medication once they became virally suppressed. According to these providers, some patients demand to be re-tested to determine their HIV status as they misinterpret an undetectable viral load as no longer being HIV-infected, and for that reason want to stop their treatment or consult traditional healers.

"Even if we trace them to come back, we find that that person was here for blood test to try to prove whether they are negative or positive. Even if you can teach them that while on treatment they don't have to do blood tests as this cannot change their status. Or maybe the treatment has caused them to have viral suppression and they will test negative meanwhile they are positive. But people will stop taking the treatment and think they are negative. And while doing blood tests they don't tell the one who was testing them that they are on treatment." (Clinic 1, Professional Nurse)

"The reason why we have patients lost to follow up is that they are ill…You find that the patient tested but it showed nothing. There is no line that shows he/she has HIV. So, when it comes to that, they stop taking the treatment and say they are not ill. Or the other challenge that we have with those patients is that they are also consulting traditional healers." (Clinic 8, Enrolled Nurse)

3. From the providers' perspective, the key challenges patients face are linked to the structural barriers and programmatic issues at the health facilities

The majority of providers interviewed (20 out of 23) linked the main challenges patients face accessing HIV care and remaining on treatment, to the structural level barriers in these rural areas and the programmatic issues they identified at the facilities. Providers regarded patients' dissatisfaction as directly linked to the structural barriers that are out of patients' control and to the deficits in resources at the clinics.

As mentioned above (and illustrated in Figure 1), the structural level challenges in these rural settings and the programmatic issues at the facilities, can lead to challenges in quality HIV care provision. This can in turn lead to patient dissatisfaction, and in some cases to patients lost-to-follow up. One key complaint that providers reported their patients having was dissatisfaction with *medication shortages*. Providers cited that at times they are forced to get creative with the medications they dispense when there are ART stock outs and they are unable to get help from other facilities, which can be distressing to patients. As a result of stock outs, some clinics have had to dispense ART medication in syrup form – normally used for children – rather than tablets, resulting in patients complaining or even defaulting on their medication.

> "It is obvious they are not happy. Though we are telling them that the syrup is working the same as pills. But to show that they are not happy, I told you that they are not adhering to that treatment. Particularly with old people, they started complaining while they are still at the clinic…They will tell you that they were getting the treatment that was not combined into one, we changed them into one pill, now we are changing to syrup and still we are going to change them." (Clinic 6, Professional Nurse)

Providers also believe that the programmatic clinic-specific challenges at these facilities lead to patients' dissatisfaction. For example, the lack of space or inappropriate clinic structures do not lend themselves to ensuring quality confidential service and as a result, patients complain of *lack of confidentiality* at the clinics.

> "The main barrier is the structure. That is the main thing. They are saying there is no confidentiality. Even if we test them, they are complaining. They are saying the place doesn't have confidentiality." (Clinic 4, Operational Manager)

Another structural challenge that providers cited as pervasive in these rural settings, and also affecting patients' linkage and retention in care, is the *availability and cost of transportation*. For patients who live far away from their nearest clinic (or far from their clinic of choice), transport options and lack of transport money is a major challenge:

> "They don't have money for transport, and they are complaining because of that." (Clinic 7, Professional Nurse)

> "They come complaining as most of them used to walk, there are old people and they are coming from the other villages where there is no transport to this side. They have to walk and if they want to get transport, which means they have to pass

two villages. I mean they have to pay two different transports." (Clinic 5, Professional Nurse)

To note is that although providers also cited programmatic provider-specific challenges as a barrier for some patients, only 6 out of the 23 providers interviewed discussed patients' complaints of unmotivated or unfriendly nurses. This might be expected as few providers might be willing to admit that they are unfriendly to their patients, or that their dissatisfaction with their job affects their patients' care.

4. Individual patient-specific challenges also affect patients' own ability to remain in care

Providers reported *fear of disclosure* of HIV status to family, friends and even to health care providers, and *patient mobility (patients changing clinic or having to seek care elsewhere)* – due to fear of disclosure or to their mobility given the high rates of unemployment in the area – as the key individual patient-specific challenges impeding patients' ability to remain in HIV care. Providers believe that some patients prefer to seek care and collect HIV treatment elsewhere at a clinic far away from their home, either due to labor migration or because that is how they maintain their confidentiality and keep their HIV status unknown to their community:

"They don't disclose their status. They don't use condoms when asked. They are scared to tell their partners that they are HIV positive. That is the big challenge we are facing. And there is nothing we can do as it is their choice to disclose and not ours." (Clinic 9, Professional Nurse)

"Those who are not able to remain [on treatment] here at the clinic are those that have their jobs. They started taking it here and we give them information. We are monitoring them for six months. But due to employment they are taking transfers and go..." (Clinic 1, Professional Nurse)

"The challenge that we are facing is of those who tested here, after finding out about their status, they moved to other clinics because they don't want it to be known that they are on treatment." (Clinic 9, Professional Nurse)

Discussion

This study aimed to get a better understanding of providers' challenges with delivering quality care to patients receiving ART in primary health facilities in rural South Africa, and the challenges they believe these patients face linking to care and remaining on treatment. Evidence from sub-Saharan Africa and other regions shows that structural-, programmatic- and individual-level factors influence not only individuals' progression through the HIV care continuum, but also affect health care providers' ability to engage and retain patients in HIV care (Amanyire et al., 2010; Bezabhe et al., 2014; Bogart et al., 2013; Flores et al., 2016; Govindasamy et al., 2012, 2014; MacPherson et al., 2012; Roura et al., 2009). As the findings from our study highlight, this is also true in rural Mpumalanga, South Africa.

In this qualitative descriptive study, we have shown that ultimately it is the structural and programmatic level factors that lead to providers' and patient' challenges. Providers in our study cited *structural barriers* – lack of staff, limited space, medication stock outs –, and

programmatic clinic-level barriers – lack of positive support from their supervisors or from the local government, and limited opportunities for professional development –, some of which are consistent with those reported by studies in other regions of South Africa and elsewhere (Bezabhe et al., 2014; Bogart et al., 2013; Kave et al., 2019; Shabalala et al., 2018; Ware et al., 2013; Yehia et al., 2015). These *structural* and *programmatic clinic-level barriers* to quality HIV and ART care result in *programmatic provider-specific barriers*, such as maintaining confidentiality, managing the workload and being unsatisfied with or unmotivated to do the job. These factors then lead to poor quality of care, resulting in unsatisfied patients or patients who are not retained in care or are lost-to-follow-up. Indeed, providers also cited patients lost-to-follow-up and poor treatment literacy as key *individual patient-specific barriers* impeding their ability to retain patients on ART. Providers were empathetic to the challenges patients face, largely noting that the most important factors hindering quality HIV care and retention of patients on ART are structural and programmatic in nature.

The finding that both providers and patients face ART medication shortages as a key barrier warrants attention. A study recently published by Hwang et al. (2019), suggests that there is in fact a high prevalence of ART medication stock outs nationwide in South Africa, which can certainly hinder progress already made in the region with the implementation of universal test and treat guidelines. Lack of transport options or transport money have also been previously reported as key structural barriers for patients (Gelaude et al., 2017; Geng et al., 2016; Geng, Glidden, et al., 2010; Geng, Nash, et al., 2010; Govindasamy et al., 2012; Lankowski et al., 2014; Yehia et al., 2015), which has resulted in research and work around community-based HIV testing and ART distribution.

From the perspective of providers at these facilities, the lack of resources and support they receive are a result of the inconsistent and limited management from their superiors. Thus, although these challenges may be clinic-specific in some cases, they are also structural and system-wide. Operational managers and providers at these facilities report a lack of supervision and support from district area supervisors, who are expected to visit these rural facilities at least once a month, but often times are only seen once a quarter and sometimes less. Thus, these providers placed equal weight on the lack of resources and the lack of provider support, as from their perspective, both contribute to their job dissatisfaction and their inability to provide high-quality HIV care. Other qualitative studies also reported similar clinic- and system-level barriers faced by providers (Amanyire et al., 2010; Gelaude et al., 2017), and we were able to highlight the linkages providers draw between the challenges they face and their dissatisfaction with and lack of motivation to do their job. This lack of motivation results in a negative downward spiral affecting patient care and provider satisfaction, which some providers further linked to client satisfaction or retention in care.

While some of the challenges we identify occur in both rural and urban settings, the lack of resources seems more pervasive and more severe in the rural setting. In contrast with the perspective of providers in the rural context, in a qualitative study with both patients and providers at peri-urban clinics in South Africa, Bogart et al. (2013) found that while patients had concerns about clinic and programmatic-level barriers, the providers minimized the

effects of such barriers on the quality of care they provide and did not recognize the extent of patients' dissatisfaction. Moreover, similar findings reporting structural and programmatic level challenges to quality HIV care and ART retention – such as availability barriers, affordability barriers, higher use of alternative/traditional medicines and heavier clinic workload – have also been reported more frequently in the rural setting (Cleary et al., 2012; Ekwunife et al., 2012; Fokam et al., 2020).

A number of interventions or system changes could address the challenges identified and improve HIV care and retention in ART in rural high HIV burden settings, to ensure further progress towards the UNAIDS 90–90-90 and 95–95-95 targets. Improved referral systems using medical record linkage or electronic communication between clinics can improve assessment of health services uptake, as well as tracing and tracking of patients who are lost to follow-up (Flores et al., 2016; Kabudula et al., 2014). Functional and more comprehensive mobile clinics or other community-based approaches can bring confidential HIV/ART-related services closer to patients (Flores et al., 2016). More streamlined differentiated models of care such as South Africa's Central Chronic Medication Dispensing and Distribution (CCMDD) services, and improved deployment of health care workers such as ward-based outreach teams (WBOTs), can alleviate workforce shortages and improve access to primary health care services (Agaba et al., 2018; Flores et al., 2016; Macdonald et al., 2017; Perriat et al., 2018; World Health Organization, 2015). However, these interventions require that policy makers make choices on how to make best use of scarce resources. Therefore, acknowledging the value of improved communication between patients and providers; better collaboration and coordination between clinic staff, government and community stakeholders; and evidence-based decision making, are all crucial to address the challenges identified and move towards more efficient health systems that provide patient-friendly high-quality HIV care.

A few limitations to our study should be highlighted. First, we interviewed health care providers with the aim to better understand their perspectives on challenges to care delivery and patient retention. A follow-up study with patients who were not retained in care, to confirm or refute the perception of health care workers, could strengthen our findings. Second, we may not have reached data saturation for lay counselors and clinic managers. Thus, exploring the experiences and perspectives of these types of providers, as well as of clinic supervisors, community partners and stakeholders (e.g., district and sub-district government or department of health officials) in similar rural or resource-limited settings, could also provide further insights. Finally, the study took place in a setting where the *Tsima* RCT was ongoing, which was aimed at comparing gains in HIV testing, linkage, and retention in care in communities served by the same health care facilities. Thus, as *Tsima* fed trial data back to these facilities and their providers on a regular basis during the 2015–2018 study period, this could have made an impact both in providers' perceived provision of services and gaps in service provision.

Despite these limitations however, our study contributes notably to the field in that it provides qualitative insights previously understudied in Mpumalanga, South Africa, and it gives voice to health care professionals in this area. Our study is also nested in an important community based RCT and its Clinic Quality Assessment study. The findings from our

qualitative study, the overall *Tsima* trial, and the larger CQA study will also be shared and discussed with stakeholders in the area, which can optimally inform the development of facility-based policies and HIV care quality improvement interventions in the region.

In conclusion, it is evident that the barriers patients face to remain on ART and that providers face in providing high-quality HIV care and retaining patients on treatment are numerous, complex, and intertwined. They are rarely isolated barriers, but rather a combination of barriers at different levels of the HIV care pathway, which complicate and hinder the health care system's ability to link PLHIV to care and retain patients on ART. Our study highlighted that health facilities and their providers are not only unable to address patients' challenges, but also lack the tools and support they need to address their own challenges. Structural and programmatic changes to the health care system, with particular attention to the provision of sufficient human, space and medication resources and professional support to health care staff, can have an important effect in increasing quality of care for patients receiving ART in rural South Africa. These changes can lead to an overall better clinic environment, higher levels of provider and patient satisfaction, and ultimately result in improved retention in HIV care.

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Appendix.: Clinic Quality Assessment Provider Interview

Participant demographic details: Please record these at the start of the interview

1. Date of interview: yyyy/mm/dd
2. Clinic ID:
3. Provider cadre:

   Sister in charge……1

   Professional nurse (not sister in charge)…… 2

   Enrolled nurse…… 3

   Lay counselor…….. 4
4. Participant Gender:

Male…….1

Female……..…2

Opening script for interviewer:

We are interested in your perspectives on quality of care for this clinic, including what contributes to providing high quality care and how you know if care is high quality. We also want to hear about the challenges you face in providing high quality care and what barriers you see patients facing to access care and remain in treatment.

- What helps you as an individual to provide good patient care?
- What helps the clinic as a whole to provide good patient care?
- How do you know if a clinic is providing high-quality care? What kind of assessment indicators / metrics/ measures would you be proud to know this clinic did well on?
  - *If examples needed:* Some examples might be a clinic where patients reported high satisfaction, where they didn't have to wait long, where the provider was kind to them, or where people living with HIV achieved viral suppression. What would you be proud to hear your clinic did well at?
- Thinking about the measures we just talked about, what kind of measures do you think matter to patients? How do patients know a clinic is providing good care?
- Now we will turn to some of the challenges you have. What is the biggest barrier you face to providing high-quality care?
  - Potential prompts: materials? Motivation? Instruction? System support?
  - Are they any other challenges that you face in your work at the clinic?

Now we want to hear your thoughts on HIV care at this clinic in particular, and how patients are able to or not able to remain in treatment over time at this clinic.**

- What are the main challenges you face in providing high-quality care to patients receiving ART in this facility?
  - What do you need to help you address those challenges?
    - *If examples needed:* Examples might include policies and procedures, training, supervision, additional staffing, or further resources.
  - In your opinion, what are the barriers at this clinic for patients with HIV to link to care?
    - *If examples needed:* This could be clinic resources, clinic staffing, patient privacy concerns.

**Analyses reported in this manuscript focused on providers' answers to these specific set of questions

- What does this facility need to help address those challenges?

– In your opinion, what are the main barriers at this clinic that make it hard for patients receiving ART to remain in care?

- *If examples needed:* This could be clinic resources, clinic staffing, patient privacy concerns.
- What does this facility need to help address those challenges?

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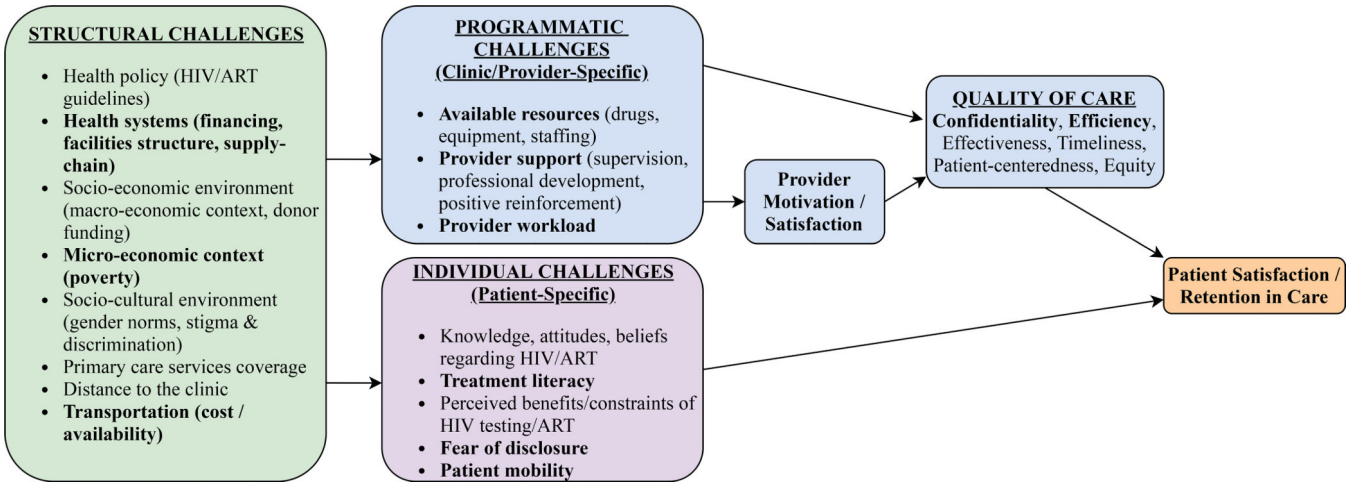

Figure 1.

Complex and Intertwined Challenges to High-Quality HIV Care Provision and ART Retention in Mpumalanga, South Africa.

Note. Bolded items represent the challenges most commonly cited by providers interviewed.

Table 1.

Participant Characteristics.

Type of Provider	Females	Males	Total
Operational Manager	2	0	2
Professional Nurse	12	3	15
Enrolled Nurse	4	1	5
Lay Counselor	1	0	1
Total	**19**	**4**	**23**

Table 2.

Summary of Themes and Sub-Themes.

Theme Category		Theme	Sub-Theme
PROVIDER CHALLENGES			
Structural	**Health System-Specific**	Lack of resources	• Limited/inappropriate space • Medication shortages • Staff shortages
Programmatic	**Clinic-Specific**	Lack of provider support	• Lack of positive reinforcement • Lack of professional development
	Provider-Specific	Work/Time Management	• Long work hours • Patient overload
		Unsatisfied/unmotivated nurses	
Individual	**Patient-Specific**	Patients lost-to-follow up	• Patients stop their treatment
		Patients' treatment literacy	
PATIENT CHALLENGES*			
Structural	**Health System-Specific**	Lack of resources	• Medication shortages
	Transportation / Poverty	Lack of transport	• Lack of transport money
Programmatic	**Clinic-Specific**	Lack of confidentiality	
Individual	**Patient-Specific**	Fear of disclosure	
		Mobility (changing clinic or seeking care elsewhere)	

*From the perspective of providers