REVIEW PAPER

The impact of COVID-19 pandemic on HIV and AIDS care provision in South Africa: an integrative literature review

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Abstract

Worldwide, the coronavirus (COVID-19) pandemic has negatively impacted healthcare services, including human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) care. In 2020, the attention shifted from HIV and AIDS to COVID-19, and as a result, there was a decline in using HIV services, such as antiretroviral treatment and pre-exposure prophylaxis. Moreover, people living with HIV cancelled and/or missed their clinic appointments due to fears of contracting the virus.

The aim of this paper was to explore the impact of COVID-19 pandemic on HIV and AIDS care provision in South Africa. In this integrative review, Google Scholar, Scopus, EBSCOhost, Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases as well as literature on HIV/AIDS and COVID-19 were searched for publications between 2020 and 2022. Out of 255 publications, 150 were considered irrelevant, 105 were potentially eligible, and 30 were fully screened. In total, only 12 research papers met inclusion criteria. From the literature reviewed, 4 themes and related sub-themes emerged. The findings revealed reduced HIV testing and monitoring, missing and cancellation of appointments, a decline in antiretroviral treatment initiation services and other services, such as antiretroviral treatment collections and adherence, were all affected by the COVID-19 pandemic.

COVID-19 had a negative impact in the uptake, HIV monitoring, and adherence to antiretroviral drugs by people living with HIV. The use of telehealth, de-centralization, online classes, and call centers can be some of the innovative strategies that South Africa can adapt, which will help in the prevention of care and avoidance of negative impacts of future pandemics on the health of South Africans.

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Key words: impact, HIV and AIDS, COVID-19, provision, care.

Introduction

The provision of human immunodeficiency virus (HIV) care services, such as treatment adherence, medication collections, and regular follow ups, has always been a challenge globally [1-3]. In South Africa (SA), these issues became worse after the announcement of the state of disaster due to COVID-19 in 2020. When the COVID-19 pandemic hit

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nations, the main concern was the health of every citizen of the world. In many countries, SA included, local and international borders were closed to curb the spread of the disease. Sadly, in SA, not only borders but other services were closed and restricted for citizens. National lockdown was declared, which meant that only essential services, such as food and healthcare, were available.

People's movement around the country was restricted due to the COVID-19 national lockdown, which led to a decrease in patients' attendance at healthcare facilities for HIV testing and monitoring [1-4]. Additionally, transportation was affected; taxis, buses, and other public transport were not permitted to operate. People had to obtain permits to move around, and as a result, the access to healthcare services for HIV and acquired immune deficiency syndrome (AIDS) was affected.

Globally, people living with HIV (PLHIV) were anxious and fearful due to the COVID-19 pandemic [5]. Some of the reasons for the experienced fear and anxiety were concerns related to patients' health as they were afraid of getting infected during clinic visitations. Physical distancing and social isolation also influenced PLHIV's access to antiretroviral therapy (ART) in clinics [5]. The extended home isolation due to lockdown restrictions increased symptoms of mental illnesses, such as anxiety and depression, among sub-Saharan African (SSA) adolescents living with HIV [6].

In SSA countries, job and incomes losses related to negative experiences caused by the COVID-19 pandemic were some of the factors that impacted ART adherence among PLHIV [7]. Furthermore, there were restrictions on social and health services, which resulted in disruptions and barriers to healthcare accessibility. For example, medications were not collected, HIV adherence counselling was not conducted, and HIV and AIDS support groups sessions were ceased [8]. These all affected and interrupted ART updates and adherence, as PLHIV faced structural challenges through a lack of safe healthcare facilities: HIV diagnostic platforms were turned into central points for COVID-19 diagnostic testing, and the closure of health facilities were due to infected healthcare providers [6].

In SA, COVID-19 has negatively affected HIV response through the interim suspension of many activities, such as scientific research, diversion of key resources for HIV control, and accessibility of patients to healthcare facilities [8]. Restrictions on the use of public transport limited mobility, resulting in a lack of access to health services, thereby jeopardizing broader public health goals [9, 10]. Moreover, traveling restrictions and cancelation of flights impacted SA's HIV medicine supply chains [9]. The interruption of supply chains, diversion of resources to COVID-19 response, and overwhelmed health system had severe collateral effects on existing public health programs [3, 11]. However, the impact of the COVID-19 pandemic on conditions, such as HIV and AIDS is not well-documented in SA. Without these information, the country would not be able to implement strategies to increase HIV testing and treatment initiation during pandemics in the future. Ultimately, this would slow down the country's progress in achieving the sustainable development goal of ending HIV by 2030 [12]. Therefore, this paper aims to review and discuss the literature on the impact of the COVID-19 pandemic on HIV/AIDS care provision in SA.

Material and methods

Data sources

This was an integrative literature review, guided by Whittemore and Knafl's steps of integrative reviews. Mulaudzi and Peu [13] and Kemppainen *et al*. [14] indicated that an integrative literature review is conducted to guide researchers on the topic of choice. Here, the guiding topic was extensively searched, which guided researchers to start reading and writing a draft article. The literature was searched in Google Scholar, Scopus, EBSCOhost, Cumulative Index to Nursing and Allied Health Literature (CINAHL), HIV/AIDS and COVID-19 literature as well as other diverse sources, such as dissertations and thesis on HIV/AIDS and COVID-19 [13]. Key terms used in this search included "Impact", "HIV and AIDS", "COVID-19 Pandemic", "ART Drugs", and "PLHIV".

Inclusion criteria: 1) published literature addressing the impact of COVID-19 pandemic on HIV/AIDS care provision between 2020 to August 2022; 2) studies conducted in and/or focused on SA; 3) articles written and published in English.

Exclusion criteria: 1) published and not published literature not addressing the impact of COVID-19 pandemic on HIV/AIDS care provision; 2) all studies not conducted in and/or not focusing on SA; 3) articles written and published in other than English languages.

Data evaluation stage

The authors searched and accessed 255 publications, of these, 30 texts were fully screened, and 12 research papers met the inclusion criteria. Empirical reports, such as case studies, systematic reviews, cross-sectional, grounded theory, cluster randomized control trials, and phenomenological studies were included. These reports were classified under three criteria: methodology, area of study, and data relevance. No article was excluded based on data evaluation.

Data analysis stage

Data analysis consisted of data reduction, data display, data comparison, conclusion, and verification [15].

Data reduction

Extracted data on the impact of the COVID-19 pandemic on HIV/AIDS care provision in SA were entered into a Microsoft Excel spreadsheet. Data were reduced by classification into provinces and national studies. The last step in

Table 1. Evaluated data

Author and year of study	Study area	Methodology	Relevant findings	Quality appraisal criteria (scale: Y = yes, P = poor, NI = not indicated)
Dorward *et al.*, 2021	KwaZulu-Natal Province, SA	Quantitative, descriptive statistics	- ART provision was generally maintained during the 2020 COVID-19 lockdown - HIV testing and ART initiations were heavily impacted - Lockdown was associated with an estimated 47.6% decrease in HIV testing in April 2020	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (NI) Limitations presented
Campbell *et al.*, 2022	Western Cape Province, SA	Cluster randomized control trial	- A minority of participants reported issues with accessing healthcare to support their ART adherence, while a majority reported feeling worried about the access - At follow-up, 13 (15.66%) respondents stated that because of the lockdown, they had missed an appointment at the clinic for their HIV treatment or care (Supplementary material, Table 2); 47 (56.63%) respondents worried that they would run out of their HIV medication, and 11 (13.25%) stated that they had run out of medication - The majority of respondents (n = 58, 69.88%) stated that they missed CHW's support	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented
El-Krab *et al.*, 2021	Western Cape Province, SA	Qualitative	- Participants reported disruptions in receiving healthcare services, with 33% (n = 91) of participants having clinic appointments cancelled, and 43% (n = 119) being unable to get the medicines they needed because of COVID-19 - Due to COVID-19, more than one in three participants had experienced interruptions in their HIV care, including accessing medications	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented
Jardim *et al.*, 2022	Nationwide, SA	Quantitative, systematic review	- Decreases in HIV testing - Positive HIV tests and initiation of ART - Resilience of ART provision was reported, meaning that treatment adherence was sustained throughout the pandemic - HIV services at private PHC facilities were unaffected; however, an overall decrease in HIV services at public PHC facilities was reported, excluding antenatal care that showed resilience	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (NI) Limitations presented
Kaswa, 2021	Eastern Cape, SA	Case study	- Lockdown regulations had a huge impact on healthcare access for people on chronic medication. Disruption of ART had a profound effect on HIV-associated morbidity and mortality - The impact on HIV programs due to interruption in ART could be bigger than HIV pandemic alone - Study's findings suggest that poor access to healthcare services during the COVID-19 lockdown had a serious impact on HIV care - Immunodeficiency because of poor ART adherence amongst people living with HIV increased their vulnerability to severe COVID-19, and was associated with prolonged viral shedding	(N) Aims and objectives clearly defined (N) Study design adequately described (N) Research methods appropriate (NI) Limitations presented

Table 1. Cont.

Author and year of study	Study area	Methodology	Relevant findings	Quality appraisal criteria (scale: Y = yes, P = poor, NI = not indicated)
Benade *et al.*, 2022	Nationwide, SA	Quantitative	- In 2,471 facilities (59% of all ART sites in DHIS), 28% fewer initiations occurred in 2020 than in 2019 - The number of ART initiations declined sharply in all provinces in April-June 2020 compared with the same months in 2019. The number remained low for the rest of 2020, with some recovery between COVID-19 waves in October 2020 and possible improvement beginning in March 2021 - Percentage reductions were largest in district hospitals, larger facilities, and urban areas. After an initial decline in April-June 2020, most provinces experienced a clear inverse relationship between COVID-19 cases and ART initiations, but a little relationship between ART initiations and lockdown level	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (NI) Limitations presented
Mutyambizi *et al.*, 2021	Limpopo Province, SA	Qualitative, retrospective review	- At the onset of the first wave in April 2020, a statistically significant decline of 10% was recorded for total HC utilization rates ($p = 0.1$) - 665 HIV tests decline (from 1,608 to 942), and 22 positive HIV tests (from 27 to 4) for children aged between 18 months and 14 years ($p = 0.05$), with no recovery - Significant declines were also recorded for children aged < 15 years of starting (from 35 to 21) and remaining (from 4,032 to 3,986) on ART as well as for adults of starting ART (from 855 to 610) at the onset of the first wave ($p = 0.01$) - No significant change was detected in PMTCT and TB indicators during the first wave	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented
Roy *et al.*, 2022	Nationwide, SA	Quantitative, systematic review	- Declines in ART, PrEP, and HIV testing during the initial lockdown period, with slight variations across South African provinces	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented
Jarolimova *et al.*, 2021	Nationwide, SA	Quantitative	- Twenty-five (8%) participants had delayed ART collection due to the pandemic, while 212 (70%) had new concerns about ART access going forward - De-centralized ART distribution systems have the potential to support patients outside of health facilities during the COVID-19 pandemic; still, economic concerns and mental health impacts related to the pandemic must also be recognized and addressed	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented
Bisnauth *et al.*, 2022	Gauteng Province, SA	Qualitative	- Women in cross-border migration patterns compared with inter-provincial and intra-regional mobility, experienced barriers of documentation, language availability, mistreatment, education, and counselling - Due to border closures, women were unable to receive ART, which interrupted adherence. They relied on SMS reminders to adhere to ART during the pandemic - All 40 women struggled to understand the importance of adherence because of lack of infrastructure to support social distancing protocols, and to provide PMTCT education	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented

Table 1. Cont.

Author and year of study	Study area	Methodology	Relevant findings	Quality appraisal criteria (scale: Y = yes, P = poor, NI = not indicated)
Bisnauth *et al.*, 2022	Nationwide, SA	Qualitative	- Five main themes emerged: Facilitators and barriers to adherence, which included the need for multi-month dispensing for long-term supply of antiretrovirals (ARVs) and the fear of contracting COVID-19 at the hospital that disrupted patients' continuum of care - Financial challenges and opportunity costs, PMTCT proved difficult for migrants due to border closures and documentation required to receive care, which resulted in treatment interruption, and left many unable to receive support at the facility due to capacity restrictions - Inter-personal interactions, mistreatment, and xenophobic attitudes existed towards the migrant HIV population - Program sustainability revealed three key areas for strengthening: longer duration of time allocated with counselling for same-day initiation, increased use of technology, and translation services for migrants	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented
Pillay, 2021	Nationwide, SA	Quantitative	- Nationally, 3.44 million fewer HIV tests were done from March to December 2020 compared with 2019 (a 22.3% decline) - Apart from Northwest, which recorded a 1.7% increase in the number of HIV tests conducted, all provinces showed significant declines: Western Cape (36.1%), Gauteng (31.4%), and Northern Cape (29.2%). Figure 10 shows the number of tests done each month during 2019 and 2020 - Each month in 2020 was lower than the corresponding month in 2019, with a period between April and July 2020, which related to lockdown levels 5 to 3, showing the largest decline in HIV tests done	(Y) Aims and objectives clearly defined (Y) Study design adequately described (Y) Research methods appropriate (Y) Limitations presented

data reduction was based on findings relevant to the topic. Articles, which findings were not related to the impact of the COVID-19 pandemic on HIV/AIDS care provision were not considered.

Data display

All papers conducted in SA that showed relevant findings were displayed in a Table 1. They were summarized and displayed as follows: author(s), year of publication, study area, methodology, relevant findings, and quality appraisal criteria.

Data comparison

Data were assessed, displayed, and compared with the primary source while identifying similarities and differences to create categories. Data were intensely read, and important categories were highlighted. Then, all categories were grouped and turned into themes. Furthermore, an analysis and synthesis of data extracted from the published articles that met the inclusive criteria in a descriptive format was conducted using a table to assist with distinctive assessment, counting, and classification.

Conclusion drawing and verification

All the authors drew conclusions and conducted data analysis verification. Categories and similar themes were grouped, and description and interpretation of themes patterns were done. Themes and related sub-themes were verified for accuracy to find better meanings. Then, themes and related sub-themes were labelled and recorded.

Data presentation

Four themes and related sub-themes were identified during the integrative review. As presented in Table 2, the themes included disruption of HIV testing uptake, disrupted appointments, ART initiation services, and other HIV services.

Table 2. Themes and sub-themes

Themes	Sub-themes
Disruption in HIV testing uptake	Reduced HIV testing and monitoring
Disrupted appointments	Missed and cancelled appointments
ART initiation services	A drop in ART initiations
Other HIV services	Delayed ART pick-up ART uptake and adherence Declined PrEP utilization Private versus public clinics PMTCT services

ART – antiretroviral therapy, PrEP – pre-exposure prophylaxis, PMTCT – prevention of mother-to-child transmission of HIV

Theme 1: Disruption in HIV uptake

The first theme that emerged from the integrative review was the disruption in the uptake of HIV, leading to reduced HIV testing and monitoring [3, 16].

Reduced HIV testing and monitoring: Lockdown has affected HIV testing and monitoring. For example, before the lockdown, between 2018 and December 2019, 41,926 tests were done monthly in the KwaZulu-Natal Province as compared with 38,911 tests done four months after the lockdown [3]. HIV tests in April 2020 dropped by approximately 47.6% [3]. However, the same study indicated that HIV testing during the COVID-19 lockdown declined further in urban healthcare facilities than in those in rural areas [3].

Another study that was conducted in the Limpopo Province, Mopani District found a decline of 665 HIV tests: from 1,608 to 942 [16]. Regardless of these declines, out of the tests conducted, the District recorded 22 positive HIV tests (out of 27) and four HIV-positive cases among children between 18 months and 14 years of age [16]. The same study indicated that polymerase chain reaction (PCR)-positive test results were not affected in March 2020, but there was a significant declining trend post-lockdown [16].

Additionally, approximately 36% of the studies conducted in SA reported a massive decrease in HIV testing during the period of the COVID-19 lockdown [17]. Moreover, a decrease in regular HIV testing was observed nationwide at the onset of the COVID-19 pandemic in primary care and antenatal visits nationwide [4]. In contrast, antenatal resilience was reported during the COVID-19 lockdown [17].

Overall, in SA, HIV testing and monitoring were affected by COVID-19. This was reported in a study conducted nationwide showing that every month in 2020, the number of services was lower than in 2019 [18]. During April and July 2020, the results demonstrated a huge decrease in HIV testing. Furthermore, the findings reported a nationwide HIV test reduction of 22.3% (3.44 million) from March to December 2020 [18]. There was a decline in HIV tests done in each month of 2020 (between April and July 2020) as compared with the corresponding months in 2019, which corresponded to lockdown levels 5 to 3 [18].

However, the effect was not the same in all provinces. For example, North West recorded a 1.7% increase in the number of HIV tests conducted, while other provinces reported a significant reduction in HIV testing and monitoring, such as Gauteng (31.4%), Western Cape (36.1%), and Northern Cape (29.2%) [18]. Migrant women with unsuppressed viral load experienced difficulties in thorough counselling during COVID-19 [21].

Theme 2: Disrupted appointments

PLHIV are expected to be visiting HIV counselling sites monthly. During the pandemic, almost all patients were not followed up. This was evident from the literature, as most patients missed their appointments and healthcare providers cancelled their appointments, because the focus was more

on the pandemic [20, 21]. From this theme, one sub-theme emerged, as indicated below.

Missed and cancellation of appointments: Research indicated that during COVID-19, PLHIV's clinic appointments were affected. For example, the literature indicated that most participants missed their appointments with community healthcare workers as well as in the clinic for HIV treatment and care appointments [19]. As such, 43% of patients could not collect their medicines [20]. Additionally, some patients were not able to get their ART medicines because they were turned away from the clinics [21].

Theme 3: ART initiations services

Several studies reported a decline in ART initiations during the COVID-19 lockdown [2, 3, 17]. This theme discusses the reasons why ART initiations dropped.

Decline in ART initiations: ART initiations were negatively affected; for example, before the lockdown in the KwaZulu Natal Province, 571 ARTs were normally initiated on a weekly basis as compared with 375 during the first week of lockdown [3]. Apart from this, studies reported a greater decrease in ART initiation nationwide [2, 17].

On the contrary, some studies showed that ART provision was generally maintained during the 2020 COVID-19 lockdown [3]. In line with the maintenance of ART during COVID-19, Jardim *et al.* [17] indicated that there was a strong resilience of ART provision. Nonetheless, ART initiations improved by 15.6%, and this improvement was seen more in women than men [3]. There was some ART initiations recovery between COVID-19 waves [2].

Theme 4: Other HIV services

The COVID-19 pandemic affected many HIV services, such as delay in medicine collection, patients running out of medicines, pre-exposure prophylaxis, and prevention of mother-to-child transmissions (PMTCT) programs.

Delayed ART pick-up: The literature showed that there was a delay in patients collecting their ART during the COVID-19 pandemic: 8% of the participants delayed collecting their ART due to the pandemic, while 70% were concerned how they were going to access ART from now on [23].

ART uptake and adherence

Many PLHIV were worried and fearful of contracting COVID-19, and this resulted in challenges in ART adherence [4]. In contrast, others were more concerned about the issues of accessing healthcare facilities for ART support. For example, research revealed that 56.63% of the respondents were worried that they would run out of HIV medication [19]. Moreover, 13.25% stated that they ran out of medication already [19].

In the Mopani District of Limpopo Province, there was a significant decline among people on ART. The number of adults who were to start ART dropped from 855 to 610 during the first wave of the COVID-19 pandemic [16]. Consequently, poor ART adherence was observed amongst PLHIV, and this was linked with prolonged viral shedding, leading to HIV-associated morbidity and mortality [22].

Declined pre-exposure prophylaxis utilization

Pre-exposure prophylaxis usage was also affected during the initial lockdown period; however, this differed across provinces [4].

Private versus public clinics

Generally, during the COVID-19 lockdown, there was poor access to healthcare services, and this impacted HIV services [22]. However, research showed that HIV services were more affected in public clinics than in private ones [17].

PMTCT services

The studies highlighted that there were no significant changes in PMTCT during the first wave of the COVID-19 pandemic [16]. However, migrant women were mostly affected during this lockdown due to several reasons, including finances, closure of borders, language barriers, mistreatment, and fear of xenophobia [21, 24]. As a result, there was a great PMTCT interruption, which left pregnant women and lactating mothers unable to receive support in the facilities due to capacity restrictions [21]. However, the program's sustainability improved through the use of technology and translation services, enabling the access to PMTCT. The study showed that migrant women relied on SMS reminders to adhere to ART during the pandemic [24].

Discussion

The current paper concludes that the largest decline in HIV testing and monitoring around the country occurred during COVID-19 lockdowns and restrictions [3, 16-18]. This is supported by the studies worldwide, which indicated that the was a decrease in HIV testing and in the number of new HIV diagnoses [25-27]. Nonetheless, HIV testing and monitoring during COVID-19 did not affect antenatal services only [4]. In contrast, some authors found that it also affected antenatal testing and monitoring [17]. These findings are in line with the literature indicating that most pregnant women were worried about contracting COVID-19, and as a result, they did not visit clinics for medical assessments. However, other technological strategies, such as online classes, were conducted [28]. Not all provinces were affected in the same way. North-West Province had an increase in HIV testing and monitoring, whereas others experienced a decline [18]. This validates that the use of technological platforms by healthcare providers can improve the access to HIV testing and monitoring.

Moreover, the authors concluded that there were many missed and cancelled clinic appointments for PLHIV during

the COVID-19 lockdown. This issue was due to patients being turned away from healthcare facilities and the lockdown movement restrictions [19, 20]. These results show that in general, cancellations and missing appointments were due to patients avoiding crowded places, their anxiety, and following preventative measures [29, 30]. Also, a lack of health check-up routines and a reduction in the number of face-to-face consultations were highlighted in the literature [25, 31].

On this basis, we conclude that this review emphasized a sharp decline and delay in ART initiations. There was ART initiation reduction since the announcement of COVID-19 as the state of natural disaster [2, 3, 17]. Similar findings were demonstrated by Rick *et al.* [25], who showed that there was a reduction in enrolments of new HIV care. However, other studies concluded that ART provision was maintained throughout the lockdown [3, 17]. This is supported by a study in Australia showing that the provision of HIV care and ART during COVID-19 continued normally and uninterrupted [32]. However, in areas where ART initiations were affected, things gradually improved as the lockdown levels eased [2].

Finally, data from an integrative review underlined that there was a delay in ART collections and patients worrying about how they will access healthcare services [23]. ART uptake and adherence were greatly affected by the fear of contracting COVID-19 [4], and patients running out of medicines [19]. The decline in ART update and adherence was observed in both children and adults [16]. Additionally, the literature indicated that most of the reduced ART uptake and adherence were due to missed appointments, delayed ART pick-ups, and financial burden [33, 34]. In addition, another study indicated that women could not access ART during COVID-19 because of involuntary default and shortage of medication [33]. Different from all the findings, El Moussaoui *et al.* [27] highlighted a decrease in the number of viral load and blood CD4+ T cells count analyses performed, especially during the first wave of the COVID-19 pandemic. However, some tests in HIV-infected patients had a reduction in numbers, such as hepatitis C, syphilis, colorectal and anal cancers, and hypercholesterolemia [27]. This is important for SA and other countries, emphasizing the importance of continued HIV testing during a pandemic.

Various countries, such as Nigeria, ensured retention of ART among PLHIV through initiations of immediate multi-month dispensing (MMD), i.e., dispensing medications for three to six months [35]. The consequence of non-adherence was associated with HIV morbidity and mortality [22]. This is in line with the studies reporting disruption of HIV services resulting from an increased number of HIV-related deaths [26, 36].

There was a huge decrease in the uptake of pre-exposure prophylaxis across the country [4], with a disruption in pre-exposure prophylaxis accessibility [37, 38]. Moreover, PMTCT services affected mainly foreign women due to language barriers, border closures, fear of xenophobia, and poor socio-economic status [21, 24]. However, other studies indicated that there were no significant changes in PMTCT during COVID-19 [16]. Lastly, research indicated that most HIV care and services were more affected in public clinics than in private ones [17].

Conclusions

The COVID-19 pandemic and subsequent restrictions in the movement of people had a negative impact on HIV and AIDS services in SA. The disruption of HIV and AIDS services led to poor uptake of HIV testing, lack of follow-up care, decreased ART initiation and compliance, and reduced utilization of pre-exposure prophylaxis services. The findings suggest the need for SA to explore and adopt certain strategies in the provision of HIV and AIDS services during pandemics. This can include the use of technological platforms to improve access to HIV testing and monitoring, provision of ART for several months, and introduction of home HIV testing [39, 40]. However, further research should be conducted to explore additional strategies from the perspective of consumers of care.

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