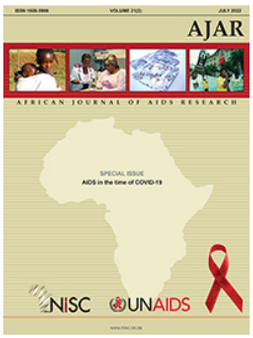

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Research Article

Factors associated with poor access to HIV and sexual and reproductive health services in Nigeria for women and girls living with HIV during the COVID-19 pandemic

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***Aim*: To determine the proportion of women and girls living with HIV (WGLHIV) who had poor access to HIV, tuberculosis and sexual and reproductive health (SRH) services in Nigeria during the COVID-19 pandemic and associated factors.**
***Methods:* This was a cross-sectional study that recruited WGLHIV with six categories of vulnerability (sex work, transactional sex, injecting or using illegal drugs, people on the move, transgender women and people with a disability) through an online survey conducted in ten Nigerian states between June and October 2021. The associations between the limited access to HIV, tuberculosis and SRH services due to COVID-19, the categories of vulnerability and the financial and non-financial barriers to these services were determined using multivariable logistics regression analysis.**
***Results:* Over 6 in 10, almost 2 in 10, and almost 4 in 10 WGLHIV had limited access to HIV, tuberculosis and SRH services respectively during the COVID-19 pandemic. Transgender women had 3.59 (95% CI 2.19–5.91) higher odds, women who engaged in sex work had 4.51 (95% CI 2.28–8.42) higher odds, and women who inject or use illegal drugs had 2.39 (95% CI 1.47–32.90) higher odds of facing limited access to sexual and reproductive health services when it was needed. In addition, the direct consequences of the COVID-19 crisis, such as the closure of HIV services and SRH service points, exacerbated pre-existing barriers significantly. Having no money, having to pay additional unofficial fees and the lack of security on the road to the health facility were the barriers with the greatest impact on access to health services.**
***Conclusions:* The COVID-19 pandemic had a negative impact on the access of WGLHIV to essential health services. This impact was disproportionately higher for marginalised groups. WGLHIV need non-discriminatory and affordable access to essential health services during the pandemic.**

Keywords: barriers to health services, key population, service disruption, tuberculosis, vulnerable population

This article is part of a special issue on *AIDS in the time of COVID-19*

Introduction

The COVID-19 pandemic worsened the financial and social barriers associated with access to health care services (Azar et al., 2020; Shadmi et al., 2020; Abedi et al., 2021; Núñez et al., 2021; Han & Guan, 2022). These health care services include HIV and sexual and reproductive health services. The disruption of access to HIV and sexual and reproductive health services is a huge concern for the West and Central Africa region, home to 4.7 million of the 37.7 million people living with HIV in 2020. Of these, 150 000 died of HIV in 2020, and there were 200 000 new infections (UNAIDS, 2021b).

Nigeria, a country in West and Central Africa, has 1.9 million people living with HIV. This was the second highest absolute number of people living with HIV in Africa at the end of 2018 (UNAIDS, 2019). The estimated prevalence is high among key, vulnerable and stigmatised populations like transgender individuals, people who use drugs, people who sell sex and people with disabilities (National Agency for the Control of AIDS, 2014; Enhancing Nigeria's HIV and AIDS Response Programme, 2015; United Nations Office on Drugs and Crime, 2018; Eneni et al., 2020). The epidemic is skewed toward women and girls in Nigeria — the HIV prevalence among females aged 15–49 years is 1.7% (1.6%–1.9%), while that for males aged 15–49 years is 0.8% (0.7%–0.9%) (UNAIDS, 2019). HIV services are essential services for Nigeria. Ensuring uninterrupted access to lifelong antiretroviral therapy for people living with HIV is critical to ensuring viral suppression and reducing the risk of HIV transmission (Gavin & Pazol, 2016; Oguntibeju, 2012).

A second essential service is tuberculosis services. Nigeria has one of the world's highest tuberculosis burdens, with about 590 000 new cases each year. The country accounts for about 4% of the world's incident tuberculosis cases (WHO, 2018; Abdullahi et al., 2020), placing Nigeria as the country with the third highest burden of tuberculosis in the world after China and India (Copenhagen Consensus Centre, n.d.). The country has been unable to contain its tuberculosis epidemics because of poor access to health care services, especially among people living with HIV (KNCV Tuberculosis Foundation, n.d.). The disruption of access to tuberculosis services increases the risk of developing tuberculosis multidrug resistance strains (WHO, 2014; Sultana et al., 2021), and this increases the risk of death for an individual living with HIV who is co-infected with tuberculosis (Aliyu et al., 2018; Singh et al., 2020).

A third essential service is sexual and reproductive health services, such as contraceptive services, pregnancy testing and counselling and sexually transmitted disease services (Gavin & Pazol, 2016). Sexual and reproductive health services are essential in Nigeria to facilitate safe spacing of pregnancies, to not unduly increase the unsustainable population growth and to reduce the health risk of women and children (Health Policy Project, 2011). The population in Nigeria is currently about 2.64% of the total world population (Worldometer, 2022) and may become the third most populated country in the world by 2047 due to the high birth rates and poor access to contraceptives (World Population Review, 2022).

Uninterrupted access for women living with HIV to sexual and reproductive health services reduces the risks of unwanted pregnancies and adverse pregnancy outcomes, such as preterm birth, low birth weight and infant mortality (Amin, 2015; Gómez-Suárez et al., 2019). The need to reduce the risk for unwanted pregnancies by women living with HIV during COVID-19 is further heightened because of their high risk of both intimate and non-intimate partner violence (UN Women, 2017; Peitzmeier et al., 2021). The estimated lifetime exposure of women to intimate partner violence from their current husband or partner in Nigeria is estimated be 19% for emotional intimate partner violence, 14% for physical intimate partner violence and 5% for sexual intimate partner violence (National Population Commission & ICF International, 2014). However, studies conducted in the country give a higher prevalence ranging from 31% to 61% for psychological/emotional violence, 20% to 31% for sexual violence and 7% to 31% for physical violence (Mapayi et al., 2013).

Women living with HIV also need uninterrupted access to HIV services to reduce the risk of mother-to-child transmission of HIV associated with unwanted pregnancies. Programmes instituting measures to ensure access of women living with HIV to services may also need to address pre-COVID-19 pandemic-related barriers to service access like stigma and discrimination, lack of access to and control over resources and fear of HIV status disclosure (Obinna, 2022). COVID-19 may also have created new barriers that may make women living with HIV vulnerable to financial and non-financial barriers associated with poor access to health services not access these services.

COVID-19 disrupted access to essential health services in Nigeria (Assefa et al., 2021), such as HIV (Pinto & Park, 2020), tuberculosis (Odume et al., 2020), and sexual and reproductive health services (Adelekan et al., 2021; Balogun et al., 2021). However, there is little knowledge about how the pandemic affected vulnerable populations like women living with HIV. Other sub-populations of women vulnerable to HIV infection include women who inject drugs, are sex workers, are living with a disability and are migrants, refugees and displaced persons (WHO, 2022). The aim of this study was, therefore, to determine the proportion of women and girls living with HIV who reported poor access to HIV, tuberculosis and sexual and reproductive health services in Nigeria between June and October 2021 during the COVID-19 pandemic; and the financial, non-financial factors and respondents' vulnerability status associated with the poor access to these services.

Methods

Ethical considerations

This study is part of a survey approved by the Institute of Public Health Research Ethics Committees (IPH/OAU/12/1692) and the ethics committee from six states (LS/C.350/S.1/215 for Lagos State, MH/AWK/M/321/363 for Anambra State, ADHEC07/06/2021 for Adamawa State, MH/PRS/99/Vol.V/994 for Akwa Ibom State, MOH/STA/208/VOL.1/183 for Benue State and MOD/ADM/774/VOL.1/1008 for Kaduna State) in Nigeria. The primary survey generated information that can be used to design measures to mitigate

the impact and strengthen access to essential health services for the population during the pandemic. It therefore had social value for the target community. The risk of adverse or serious adverse events was considered unlikely or minimal. A waiver for parental consent for adolescents aged 15 to 17 years was obtained for this non-intrusive sexual and reproductive health research in line with the national guidelines on sexual and reproductive health research conducted with adolescents (Federal Ministry of Health, 2014). Participants provided written informed consent before starting to fill in the online questionnaire by ticking a box. Study participants who completed the online survey on their own device received airtime vouchers for internet usage expenses valued at USD 1.70 (NGN 1 000). Participants also got a face mask and hand sanitiser valued at ≈USD 1.00.

Study design, target population, study sites and study population

The main study had a cross-sectional design and collected data using self-administered electronic and web-based data collection methods. The target population for the survey were adolescent girls and women living with or at risk of HIV acquisition, as defined by the World Health Organization (WHO, 2022). The study recruited girls and women who were aged 15 years and older, living with a disability (women who have long-term physical or sensory impairments), who sell sex (women who engaged in commercial sex work), migrants, refugees and displaced persons (non-Nigerians who have moved across an international border away from their habitual place of residence and referred to as people on the move from here on), who inject or use illegal drugs, who engage in transactional sex (entering into a sexual relationship with a man — not the husband — to get needed or important things such as food, clothing, school fees, gifts) and transgender women.

Sample size

The sample size for each of the six vulnerable population groups (living with a disability, engaged in sex work, engaged in transactional sex, people on the move, injecting or using illegal drugs and transgender women) was determined based on the statistical modelling perspective based on comparable surveys and on pragmatic considerations of time, cost and risk of exposing data collectors to COVID-19. We set a presurvey minimum threshold of 66 participants for each of the key population groups in each of the six states, representing a minimum of 396 valid participants per vulnerable population group, corresponding to a minimum sample size of 2 400 participants at the country level. This sample size is required for a 95% confidence level within $\pm$ 5% of an estimated proportion. From a statistical perspective, an a priori sample of at least 122 valid respondents was needed for multiple regressions with eight predictors with a desired statistical power level of 0.95 and a probability level of 0.05.

Study instrument

The questionnaire for the survey contained validated instruments for collecting survey data among women and vulnerable populations. The questionnaire was first reviewed for content validity by 18 data collectors recruited for the study. The data collectors were social scientists resident in the different states where the study was to be conducted. The review of the study questionnaire by the data collectors was followed by a review of the revised questionnaire by 36 community representatives to ensure the language of the instrument could be understood by community members. The revised questionnaire was pretested with 18 community members drawn from the target populations. The content of the questionnaire was then harmonised with standard indicators and protocol checklists used in behavioural surveillance. We organised the questionnaire into different modules, including a sociodemographic module, the assessment of the impacts of COVID-19, including impact on HIV, tuberculosis and sexual and reproductive health services access, the participant's economic and social situation, behavioural economics, health and well-being modules and six modules that assessed risks specific for each of the vulnerable population groups.

The survey was made available in English, Nigeria's official language of communication. To ensure the most extensive participation of the different communities' members across the six geopolitical regions, keywords in the questionnaire were translated into the main languages in the surveyed regions — Yoruba, Igbo and Hausa — and to specific dialects or local languages that were predominant in the states. The data collectors translated these words, keywords and phrases into local dialects and in consultation with representatives of the target population leading the community entry process in each state. The terms used were reached by consensus. A similar approach was successfully implemented in the 2005 and 2007 National HIV/AIDS and Reproductive Health Survey, as well as the 2008 and 2010 Integrated Biological and Behavioural Surveillance surveys conducted in Nigeria, given the more than 300 different languages spoken in the country.

Access to the online survey was provided through LimeSurvey™, a secure, SSL encrypted (using TLS cryptographic protocols) weblink compliant with the EU-US Privacy Shield Framework and Swiss-US Privacy Shield. The tool did not install any targeting or advertising cookies.

Participant recruitment

Representative organisations and networks of vulnerable populations at national, state and local levels were contacted for study participation and venue-based sampling. They informed community members about the study and identified the community entry leads for each study population in each target state.

Community entry leads were community members who managed large community-based organisations addressing the needs of populations targeted for this study. Community entry leads for adolescent girls and women living with HIV were identified by the African Network of Adolescent and Young Person's Development (ANAYD), while the National Association of Persons with Physical Disability (NAPWPD) identified the community entry leads for females with a disability. The National Sex Workers Association (NSWA) identified the community entry leads for women who sell sex, YouthRise identified the community entry leads for female drug users, the Northern Nigerian Transgender Initiative identified the community entry leads for transgender women

and Jami Al Hakeem Foundation identified the community entry leads for migrants and refugees.

A three-day online training session was conducted for the data collectors (three data collectors in each state — one data collector per two target populations) and the supervisor (one supervisor per state). Data collectors were recruited from the target states to improve communication. The training included a review and pilot testing of the questionnaires, research ethics and effective communication. The translated keywords were also discussed by the team during the training session.

Data collectors and the supervisor in each state held a two-day training session for the community entry leads (six leads per state) to discuss the study protocol, study tools and their roles in participant recruitment. Community entry leads were to introduce the study to their community members and identify the first community contacts for the study. Recruitment strategies were discussed and adjusted to ensure diversity of study participant recruitment by geolocation (rural, urban and semi-urban) and socio-economic strata.

Community entry leads developed the outreach strategies in collaboration with key community-based organisations and support groups working with the target population groups in the state. The strategies were designed for the effective roll-out of the survey among community members. Community members interested in the study were linked to the data collectors at a venue familiar to community members. Each state research team recruited study participants over two weeks. The survey was open from 30 June to 1 October 2021.

Sampling procedure

Multiple non-probability sampling methods were used to recruit participants to promote the diversity of respondents. First, we used a venue-based sampling method in which the venue defined the primary sampling unit. The venue-based sampling method is appropriate for recruiting hard-to-reach and hidden populations like those we targeted (Muhib et al., 2001). It also allows for the construct of a sample with known properties, thereby enabling statistical inferences to be made to the larger population. Using the premises of community-based organisations working with the target population ensured convenient and confident access to the community members. The venue facilitates the identification of actual members of the community (Muhib et al., 2001).

Respondents who completed the survey were given coupons to invite up to five peers. This snowball sampling process was used to reach other community members who may not have been reached using the venue-based sampling method. It is also a method appropriate for reaching hard-to-reach populations like those we targeted for this study (Shaghaghi et al., 2011). We tried to resolve the problem of selection bias associated with snowball sampling by selecting a large sample of study participants (Atkinson & Flint, 2001).

Additional participants were recruited in Enugu, Gombe and Niger states through the river sampling method. Community leaders in these states posted the survey link on social media (Facebook, Twitter, Instagram and WhatsApp groups) and email networks, and invited peers to take the survey. This enabled the survey to reach community members who otherwise may not be in the network of those reached by the venue-based and snowball sampling methods.

Study dependent variables

Access to HIV services

Respondents were asked if the COVID-19 pandemic impacted their attendance at the health facilities for HIV prevention, treatment and care-related services, referred to as HIV services (UNAIDS, 2006). Respondents had the option of ticking “yes”, “no” or “not needed”. The responses were dichotomised into “yes” and “no/not needed”. A “yes” answer was coded as poor access to services. The question was adapted from the questionnaire developed by the United Nations (United Nations Population Fund, 2020).

Access to tuberculosis services

Respondents were asked if the COVID-19 pandemic had an impact on their attendance at the health facilities for tuberculosis services when needed. Respondents had the option of ticking “yes”, “no” or “not needed”. The responses were dichotomised into “yes” and “no/not needed” (United Nations Population Fund, 2020).

Access to SRH services

Access to sexual and reproductive health services was a composite score derived from indications of access to at least one of the following services: abortion, family planning, sexually transmitted infection treatment and gender-based violence services (United Nations Population Fund, 2020). Respondents were asked if the COVID-19 pandemic impacted their attendance at the health facilities for any of the sexual and reproductive health services when they needed them. Respondents had the option of ticking “yes”, “no”, or “not needed”. An indication of the inability to access any of these services indicated the respondent’s inability to access a sexual and reproductive health service. The responses were dichotomised into “yes” and “no/not needed”. A “yes” response indicated poor access to services (United Nations Population Fund, 2020).

Study independent variables

Vulnerability status

Respondents were asked to identify whether they identified as one of the following groups: people with a disability (yes/no); transgender women (yes/no); persons on the move (yes/no); engaging in transactional sex (yes/no); selling sex (yes/no); and injecting or using illegal drugs (yes/no) (UNAIDS, 2021a).

Financial reasons for poor access to HIV, tuberculosis and SRH services

Study participants were explicitly asked if there were costs or expenditures that prevented them from accessing HIV, tuberculosis or sexual and reproductive health services needed during the COVID-19 pandemic. Participants had the option of ticking what was applicable on the list and including other reasons not listed. Reasons listed were: (1) transportation costs; (2) the costs of medicines or tests; (3) paying fees at the clinic or hospital; (4) the additional

unofficial fees to the cost of care; (5) loss of income from hospital visit; and (6) having no money. Participants who ticked the box were categorised as having financial reasons for poor access to services.

Non-financial reasons for poor access to HIV, tuberculosis and SRH services

Study participants were also asked whether other (non-financial) reasons prevented them from accessing HIV, tuberculosis or sexual and reproductive health services needed during the COVID-19 pandemic. Reasons listed were: (1) "*the way to the health facility is risky for me*" [violence, high risk of sexual assault]; (2) "*worried people could disclose one's sexual orientation*"; (3) "*worried people could disclose one's HIV status*"; (4) "*was humiliated at my last visit for HIV service*"; (5) "*faced improper treatment* [violence, insult, or discrimination] *the last time I went for HIV service*"; (6) "*do not have the time to go to the health facility*"; (7) "*the service point was closed due to COVID-19*"; and (8) "*concerned with being infected with COVID-19 at the health facility*". Participants were required to tick the box for options most appropriate to them. Participants who ticked any of the boxes to these questions were categorised as having non-financial reasons for poor access to services.

Study confounders

Sociodemographic variables

The sociodemographic variables were grouped as ages 15–24 years, 25–44 years and ≥ 45 years, and socio-economic standing was rated on a scale of 1–10, with 1 representing those "having the least money, least education and least respected jobs or no job", and 10 representing being "among those having the most money, most education and most respected jobs" in the country. The MacArthur scale defined the socio-economic status for subjective socio-economic status assessment (Adler et al., 2000). The rating was converted to terciles representing lower, middle and higher socio-economic statuses. All confounder variables were preliminarily tested for their correlation with the independent and the dependent variables using binary logistic regressions and chi-squared correlation tests.

Data management and data analysis

Respondents who left the survey before completing the first module were de facto excluded from the survey. Respondents who click the "exit" button are also excluded from the survey. To improve the dataset quality, the research team constructed discrepancy flags indicating whether respondents supplied inconsistent data in different areas of the questionnaire.

Only the data from adolescent girls and women living with HIV for this study were considered. A descriptive analysis of all the study variables was done. A test of the associations between the dependent, independent (financial and non-financial) and confounding variables was conducted using Pearson's chi-square test. Three multivariable logistic regression models were built to determine associations between the respondents' three dependent variables and vulnerability status. Another three multivariable logistic regression models were built to determine associations between the three dependent variables and the financial barriers to health services. An additional three multivariable logistic regression models were constructed to determine the associations between the three dependent variables and the non-financial barriers to health services. The models were adjusted for the confounding variables. Statistical significance was taken at a *p*-value less than 0.05. Statistical analyses were performed using Stata 16.

Results

Table 1 shows the sociodemographic profile of the study participants with the modal age being 25 to 44 years (54.77%). Also, 458 (22.52%) respondents had middle socio-economic standing. There were 1 056 (50.87%) study participants who engaged in transactional sex and 1 283 (64.5%) who reported poor access to HIV services, and 764 (38.96%) participants who reported poor access to sexual

Table 1: Characteristics of study participants, and access to selected health services during the COVID-19 pandemic ($N = 2076$)

Variable	Valid respondents		Missing	
	n	%	*n*	%
Age group				
15–24 years	774	37.28	0	0.00
25–44 years	1 137	54.77		
≥45 years	165	7.95		
Socio-economic standing				
Lower	779	38.30	42	2.02
Middle	797	39.18		
Higher	458	22.52		
People with disability				
No	1 829	88.96	20	0.96
Yes	227	11.04		
Transgender woman				
No	1 749	84.25	0	0.00
Yes	327	15.75		
People on the move				
No	2 039	98.22	167	8.04
Yes	37	1.78		
Women who engage in transactional sex				
No	1 020	49.13	0	0.00
Yes	1 056	50.87		
Women who sell sex				
No	1 155	55.64	0	0.00
Yes	921	44.36		
Women who use inject or use illegal drugs				
No	1 565	75.39	0	0.00
Yes	511	24.625		
Poor access to HIV services				
No	706	35.50	87	4.19
Yes	1 283	64.50		
Poor access to tuberculosis services				
No	1 512	80.511	198	9.54
Yes	366	19.489		
Poor access to sexual and reproductive health services				
No	1 197	61.04	115	5.54
Yes	764	38.96		

and reproductive health services during the COVID-19 pandemic.

Table 2 shows that 15- to 24-year-old women and girls living with HIV had significantly higher odds of reporting limited access to HIV services during the COVID-19 pandemic when compared with peers aged 25–44 years (AOR 1.391; $p = 0.003$). Study participants with higher socio-economic standing also had significantly higher odds of reporting limited access to HIV services during the COVID-19 pandemic when compared with peers with middle socio-economic status (AOR 1.582; $p = 0.001$). In addition, transgender women (AOR 2.593; $p = 0.002$) and women who sell sex (AOR 2.635; $p = 0.019$) had significantly higher odds of reporting limited access to HIV services during the COVID-19 pandemic when compared to respondents who were not transgender individuals nor women who sell sex.

With respect to access to tuberculosis services, surprisingly, women and girls living with HIV who had higher socio-economic standing had significantly higher odds of reporting limited access to tuberculosis services during the COVID-19 pandemic when compared with peers with middle socio-economic status (AOR 1.592; $p = 0.003$). Also, transgender women (AOR 2.138; $p = 0.007$) and women who sell sex (AOR 3.118; $p = 0.003$) had significantly higher odds of reporting limited access to tuberculosis services during the COVID-19 pandemic. On the contrary, those with lower socio-economic standing had significantly higher odds of reporting limited access to tuberculosis services during the COVID-19 pandemic when compared with peers with middle socio-economic status (AOR 0.652; $p = 0.005$). Persons on the move also had significantly lower odds of reporting limited access to tuberculosis services during the COVID-19 pandemic (AOR 0.19; $p = 0.029$) compared to respondents who were not on the move.

Concerning the access to sexual and reproductive health services, women and girls living with HIV aged 15–24 years had significantly higher odds of reporting limited access to HIV services during the COVID-19 pandemic compared with peers who were aged 25–44 years (AOR 1.307; $p = 0.014$). Also, transgender women (AOR 3.585; $p < 0.001$), women who engaged in sex work (AOR 4.51; $p < 0.001$) and users of illegal drugs (AOR 2.393; $p < 0.001$) had significantly higher odds of reporting limited access to sexual and reproductive health services during the COVID-19 pandemic when compared to respondents who were not transgender women, women who engaged in sex work and users of illegal drugs. On the contrary, those older than 45 years had significantly lower odds of reporting limited access sexual and reproductive health services compared with peers aged 25–44 years (AOR 0.597l; $p = 0.040$).

Table 3 shows that women and girls living with HIV who had limited access to HIV services had higher odds of identifying the payment of additional unofficial fees (AOR 17.32; $p < 0.001$), loss of income from hospital visits (AOR 7.207; $p < 0.001$), having no money (AOR 3.922; $p < 0.001$), fees at the clinic or hospital (AOR 3.498; $p < 0.001$), transportation costs (AOR 3.394; $p < 0.001$) and costs of medicines or tests (AOR 2.525; $p < 0.001$) as financial factors associated with poor access to HIV services during the COVID-19 pandemic when compared with women and girls living with HIV who did not have limited access to or did not need HIV services.

Study participants who had limited access to tuberculosis services had higher odds of reporting the costs of medicines or tests (AOR 5.827; $p < 0.001$), paying additional unofficial fees (AOR 4.674; $p < 0.001$), loss of income from hospital visits (AOR 4.674; $p < 0.001$), having no money (AOR 4.549; $p < 0.001$) and transportation costs (AOR 2.614; $p < 0.001$) as financial barriers to accessing tuberculosis services during the COVID-19 pandemic when compared with women and girls living with HIV who did not have limited access to or did not need tuberculosis services.

Furthermore, study participants who had limited access to sexual and reproductive health services had higher odds of reporting fees at the clinic or hospital (AOR 4.148; $p < 0.001$), paying additional unofficial fees (AOR 22.128, $p < 0.001$),

Table 2: Association between access to HIV and tuberculosis and sexual and reproductive health (SRH) services among subgroups of women and girls living with HIV in Nigeria

Variable	Limited access to HIV services		Limited access to TB services		Limited access to SRH services	
	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Age group						
15–24 years	1.391 (1.12–1.727)	0.003	1.238 (0.951–1.612)	0.113	1.307 (1.054–1.619)	0.014
25–44 years	1.000	–	1.000	–	1.000	–
≥45 years	0.745 (0.519–1.068)	0.109	0.697 (0.382–1.271)	0.239	0.597 (0.365–0.977)	0.040
Socio-economic standing						
Lower	0.824 (0.661–1.026)	0.083	0.652 (0.484–0.879)	0.005	1.05 (0.833–1.322)	0.682
Middle	1.000	–	1.000	–	1.000	–
Higher	1.582 (1.194–2.097)	0.001	1.592 (1.169–2.167)	0.003	0.904 (0.688–1.188)	0.469
Categories of vulnerable people						
People with disability	0.84 (0.561–1.259)	0.398	0.604 (0.299–1.219)	0.159	0.642 (0.351–1.174)	0.150
Transgender woman	2.593 (1.424–4.721)	0.002	2.138 (1.228–3.723)	0.007	3.585 (2.174–5.912)	<0.001
People on the move	1.741 (0.151–20.111)	0.657	0.19 (0.043–0.846)	0.029	1.092 (0.063–18.943)	0.952
Women who engage in transactional sex	0.844 (0.528–1.351)	0.480	0.921 (0.472–1.796)	0.809	2.054 (1.238–3.407)	0.005
Women who sell sex	2.635 (1.176–5.908)	0.019	3.118 (1.464–6.639)	0.003	4.51 (2.275–8.942)	<0.001
Women who inject or use illegal drugs	1.357 (0.848–2.172)	0.203	1.295 (0.706–2.374)	0.403	2.393 (1.47–3.896)	<0.001
Constant	1.227 (0.981–1.536)	0.073	0.168 (0.123–0.228)	<0.001	0.225 (0.172–0.293)	<0.001

Table 3: Association between related financial factors and access to HIV, TB and SRH services among women and girls living with HIV in Nigeria

Variable	Limited access to HIV services		Limited access to TB services		Limited access to SRH services	
	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Age group						
15–24 years	1.451 (1.163–1.809)	0.001	1.23 (0.947–1.597)	0.121	1.314 (1.065–1.621)	0.011
25–44 years	Base	–	Base	–	Base	–
≥45 years	0.543 (0.378–0.781)	0.001	0.489 (0.27–0.885)	0.018	0.273 (0.168–0.445)	<0.001
Socio-economic standing						
Lower	0.792 (0.631–0.994)	0.044	0.661 (0.489–0.895)	0.007	0.995 (0.792–1.251)	0.968
Middle	Base	–	Base	–	Base	–
Higher	1.604 (1.221–2.107)	0.001	1.584 (1.176–2.134)	0.002	1.028 (0.794–1.332)	0.832
Types of financial barriers						
Transportation costs	3.394 (2.542–4.531)	<0.001	2.614 (1.646–4.151)	<0.001	2.69 (1.913–3.784)	<0.001
Costs of medicines or tests	2.525 (1.529–4.168)	<0.001	5.827 (3.151–10.776)	<0.001	3.329 (1.97–5.627)	<0.001
Fees at the clinic or hospital	3.498 (1.736–7.049)	<0.001	3.962 (1.763–8.904)	0.001	4.148 (2.103–8.18)	<0.001
Additional unofficial fees	17.32 (5.186–57.845)	<0.001	4.674 (2.043–10.692)	<0.001	22.128 (8.795–55.674)	<0.001
Loss of income from hospital visits	7.207 (2.671–19.449)	<0.001	4.425 (1.816–10.782)	0.001	7.267 (3.24–16.297)	<0.001
I have no money	3.922 (2.187–7.032)	<0.001	4.549 (2.257–9.171)	<0.001	4.433 (2.484–7.913)	<0.001
Constant	0.572 (0.434–0.755)	<0.001	0.086 (0.055–0.136)	<0.001	0.202 (0.145–0.282)	<0.001

loss of income from hospital visits (AOR 7.267; $p < 0.001$) and having no money (AOR 4.433; $p < 0.001$), costs of medicines or tests (AOR 3.329; $p < 0.001$) and transportation costs (AOR 2.69; $p < 0.001$) as financial barriers to accessing sexual and reproductive health services during the COVID-19 pandemic when compared with women and girls living with HIV who did not have limited access to or did not need sexual and reproductive health services.

Table 4 shows that women and girls living with HIV who faced limited access to HIV services had significantly higher odds of reporting (1) being humiliated at the last visit for HIV services (AOR 3.726; $p = 0.018$), (2) facing improper treatment at the last visit for HIV services (AOR 2.806; $p = 0.040$), (3) having the HIV services usually offered at school or a local NGO closed due to COVID-19 (AOR 2.646; $p = 0.003$), (4) concern with being infected with COVID-19

Table 4: Association between non-financial-related factors and access to HIV and TB and SRH services among women and girls living with HIV in Nigeria

Variable	Limited access to HIV services		Limited access to TB services		Limited access to SRH services	
	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Age group						
15–24 years	1.595 (1.291–1.969)	<0.001	1.306 (1.013–1.683)	0.039	1.415 (1.156–1.732)	0.001
25–44 years	Base	–	Base	–	Base	–
≥45 years	0.618 (0.437–0.874)	0.007	0.545 (0.305–0.975)	0.041	0.316 (0.198–0.504)	<0.001
Socio-economic standing						
Lower	0.784 (0.631–0.974)	0.028	0.648 (0.482–0.87)	0.004	0.989 (0.794–1.232)	0.921
Middle	Base	–	Base	–	Base	–
Higher	1.422 (1.09–1.856)	0.009	1.648 (1.23–2.208)	0.001	0.901 (0.699–1.162)	0.422
Type of non-financial barriers						
The road to the health facility is risky for me	1.704 (1.288–2.256)	<0.001	1.181 (0.838–1.663)	0.342	1.968 (1.504–2.576)	<0.001
I'm worried people could discover my HIV status	1.017 (0.798–1.297)	0.889	1.064 (0.774–1.462)	0.702	1.107 (0.86–1.425)	0.431
Last time I went for HIV or health services, I was humiliated	3.726 (1.257–11.039)	0.018	3.12 (1.366–7.126)	0.007	2.601 (1.19–5.684)	0.017
Last time I went for HIV or health services, I faced improper treatment	2.806 (1.047–7.521)	0.040	1.846 (0.782–4.359)	0.162	2.1 (0.964–4.574)	0.062
The service was offered at school or at a local NGO and it is now closed due to COVID 19	2.646 (1.382–5.065)	0.003	1.146 (0.506–2.599)	0.744	3.1 (1.796–5.349)	<0.001
I fear being infected with COVID-19 in the health facility	2.213 (1.33–3.682)	0.002	1.333 (0.76–2.338)	0.315	1.184 (0.741–1.892)	0.481
Constant	1.29 (1.052–1.582)	0.014	0.194 (0.149–0.254)	<0.001	0.459 (0.372–0.567)	<0.001

at the health facility (AOR 2.213; $p = 0.002$), and (5) the road to the health facility is risky (AOR 1.704; $p < 0.001$) as non-financial barriers when compared with women and girls living with HIV who did not face limited access to or did not need HIV services

With the exception of being humiliated during their last visit for HIV or health services (AOR 3.12; $p = 0.007$), women and girls living with HIV who faced limited access to tuberculosis services did not report statistically significant differences in non-financial barriers to access the tuberculosis services during COVID-19 when compared with those who did not face limited access to or did not need tuberculosis services

Lastly, women and girls living with HIV who reported limited access to sexual and reproductive health services had significantly higher odds of identifying the following two non-financial factors for poor access to sexual and reproductive health services during the COVID-19 pandemic when compared with those who did not face limited access to or did not need sexual and reproductive health services: being humiliated at the last visit for HIV service (AOR 2.601; $p = 0.017$) and having the SRH services usually offered at a school or a local NGO closed due to COVID 19 (AOR 3.1; $p < 0.001$).

Discussion

The study results indicated that before October 2021, the COVID-19 pandemic disrupted the access of over 6 in every 10, almost 2 in every 10 and nearly 4 in every 10 women and girls living with HIV to HIV, tuberculosis and sexual and reproductive health services. We identified five key findings: (1) adolescents and young people aged 15 to 24 years are the most affected age group regarding disrupted access to HIV and sexual and reproductive health services during the first year of the COVID-19 pandemic; (2) women and girls living with HIV from the higher socio-economic tercile were more likely to have their access to HIV and sexual and reproductive health services disrupted during the first year of the COVID-19 pandemic; (3) the members of vulnerable population groups appear disproportionately impacted by disruptions in the access to essential health services when it was needed during COVID-19. More particularly, transgender women and women who sell sex were more likely to report limited access to the three services. Women and girls who engaged in transactional sex and who inject or use illegal drugs were more likely to report limited access to sexual and reproductive health services; (4) additional unofficial fees, loss of income from the hospital visits and lack of money seem to be the three most impactful financial barriers faced by adolescent girls and women living with HIV to access HIV, tuberculosis and sexual and reproductive health services during the pandemic. Other financial barriers such as transportation costs and fees at the clinic or hospital appear to have a lower yet significant impact on access to the three services. The costs of medicines or tests seem to be a major financial barrier to accessing tuberculosis services; and (5) the experience of being humiliated at the last HIV or health service appears to have been the main non-financial barrier associated with the disruption in access to all three health services. Having the service usually offered at school or a local NGO unavailable following its closure due to COVID 19 is an important non-financial barrier to accessing HIV and sexual and reproductive health services. Finally, improper treatment was also a critical non-financial barrier to access of women and girls living with HIV to HIV services.

One of the strengths of this study was the inclusion of samples of subpopulations of women and girls living with HIV in the study. These subpopulations are often left out of online surveys because they are hidden and difficult to access, but also because many are in the lower tercile of society and are therefore less likely to have internet access, or are unable to read and write. The engagement of community representatives in the design and implementation of this study and the purposive recruitment strategies that enabled potential study participants to receive support to respond to the questionnaire allowed us to reach a diversity of vulnerable populations that may have been left behind in many studies conducted during this pandemic.

Despite these strengths, the study had some limitations. The survey used a non-probability, convenience sample and thus suffers the risk of selection bias and low generalisability of the study results beyond the population studies. Caution needs to be taken when trying to extrapolate the results of this study to the general population. However, the study used a combination of the most appropriate non-probability sampling methods for the hidden and hard-to-reach populations targeted for this survey. Despite this, the need for internet access to take the survey may have limited respondents with financial or material constraints from participating in the study. Although the survey covered the costs of internet access and provided support to study participants reached through the venue-based sampling to address literacy challenges that could have been a barrier to completing the survey, those who were not part of any of the study teams' community networks may have been left out of the survey due to these barriers. In addition, the study does not have a pre-COVID-19 comparator group; thus, there can only be an assumption of the impact of the pandemic on access based on the magnitude of observation made. Despite these limitations, the findings are valuable for the purposes for which they were generated.

First, the limited access for adolescent girls and young women to HIV and sexual and reproductive health services due to financial and non-financial reasons was similar to their poor access to HIV prevention (Sam-Agudu et al., 2016; Ajayi et al., 2020; Badru et al., 2020), HIV treatment (Spreckelsen et al., 2022) and sexual and reproductive health services (Odo et al., 2018) before the pandemic (Nmadu et al., 2020). Though measures are needed to facilitate the access for adolescent girls and young women in Nigeria to HIV and sexual and reproductive health services as the COVID-19 pandemic continues to unfold in the country, longer-term policy and health service reforms are needed to address the inequity in health service access deepened by the pandemic. Such policy reforms should improve access to friendly services that reduce the risk of experiencing discrimination and humiliation that may disrupt access to services.

Second, the reasons why women and girls living with HIV with high socio-economic standing were more likely to report limited access to HIV and sexual and reproductive health

services during the pandemic are not readily discernible. We postulate that the closure of private clinics and hospitals — the point of receipt of health care services by those with higher socio-economic status — during the pandemic (the current study indicated that service closures increased the risk for poor access to HIV and sexual and reproductive health services) may explain this finding. Also, the pandemic-associated financial shocks may have resulted in an astronomical increase in service costs in the few open private clinics, making services less accessible. These are postulations that need to be studied further.

Third, we observed that transgender women and women who sell sex were more likely to report poor access to the three services. The similarity in the profile of the two populations may be because many transgender women sell sex (Nadal et al., 2014). This study provides one of the very few pieces of information about the access of women who sell sex and transgender women to health services in Nigeria. Transgender women and women who sell sex may keep away from public health care centres where they are humiliated (Sekoni et al., 2022) and patronise private health care centres instead. The services provided by the private health care sector were severely disrupted in Nigeria (Wallace et al., 2022). These factors may have caused exacerbated disparities in health care access for the two populations because of the low income from sex work and the failure of the government to provide the community with economic relief (Adebisi et al., 2020). Though the country successfully instituted multiple strategies to mitigate the impact of the pandemic on HIV service delivery (Boyd et al., 2021), these study findings suggest that hard-to-reach populations like transgender women and women who sell sex may have been left behind. Of concern is the possibility of increased risk for mortality among transgender women and women who sell sex living with HIV who also have tuberculosis. This risk needs to be monitored by disaggregating data on HIV-related deaths by HIV risk profile.

Fourth, the financial barriers to accessing the three essential services are not new to the pandemic. Transport costs, costs of medicines and tests, additional unofficial fees and loss of income are known disruptors of services (Tuller et al., 2010). Advocates have been pushing hard to remove fees paid at the HIV clinics known as “user fees” (Ahonkhai et al., 2020). The results of this study seem to indicate that “user fees” also disrupt access to sexual and reproductive health services. Instituting community-based and community-owned programmes can significantly improve the general population’s access to HIV services without compromising on quality (Inegbedion, 2021). Implementing community-based HIV treatment programmes worked well for the HIV response in Nigeria during the COVID-19 pandemic (Boyd et al., 2021) and may be replicated for sexual and reproductive health delivery during and after the pandemic. The country has tried to promote community-based services for HIV and sexual and reproductive health (Beyeler et al., 2015; Akeju et al., 2021). Lessons learnt can be used to scale up community-based service accesses, and future studies can explore the effectiveness of community service delivery for routine HIV, tuberculosis and sexual and reproductive health care delivery in preparation for future emergencies.

Fourth, the leading direct impact of the COVID-19 pandemic on adolescent girls and women living with HIV was the closure of HIV services and sexual and reproductive health service points due to the stay-at-home order in response to the pandemic. These are known COVID-19-specific health access disruption factors that national emergency response plans can address. The risk linked to the road to the health facility cannot be considered a direct COVID-19-specific factor. There is a possibility that this was a limiting factor to health care access before the pandemic and continued to exert its effect during the pandemic. There is also the possibility that due to COVID-19 sanitary measures, choices of transportation were limited and the access to health services by other means, such as walking, made it riskier for some vulnerable groups of women and girls. The data do not enable us to isolate the impact of COVID-19 sanitary measures on increased risk linked to lack of security for women and girls.

Finally, we found a significant effect in the fear of being infected with COVID-19 in the health facility as a barrier to accessing HIV services only. This finding highlights the need for more communication and information on the increased risk that COVID-19 puts on people living with tuberculosis and on pregnant women. Though we found direct associations between these COVID-19-specific and non-specific factors and poor access to the three essential health services, these factors may have acted as mediators or moderators of other associations. Age (i.e., aged ≥45 years) and socio-economic status (i.e. low socio-economic standing) may also have moderated or mediated these associations. Future studies are needed to explore these possibilities.

Conclusion

This study was conducted to assess the health vulnerability of women and girls living with HIV in Nigeria during the first year of the COVID-19 pandemic. The results indicated that a very high proportion of women and girls living with HIV in Nigeria reported that the COVID-19 pandemic impacted their attendance at the health facilities for HIV, tuberculosis and sexual and reproductive health services in Nigeria. Also, there were different associations between the ease of access to health, vulnerabilities and COVID-19 pandemic-induced social and economic determinants of health. Financial and non-financial barriers factors associated with limited access to HIV, tuberculosis and sexual and reproductive health services appear to be a combination of new factors linked to the prevailing sanitary situation, such as the closure of HIV services and sexual and reproductive health service points due to lockdown measures, and pre-existing factors exacerbated by the COVID-19 crisis such as having no money or having to pay additional unofficial fees due to COVID-19. The lessons learnt about factors that could negatively affect the access to critical health services can inform governments and civil society organisations involved in health care planning and delivery about measures to take to mitigate the impact of the next COVID-19 wave or the next pandemic on the health of adolescent girls and women living with HIV in countries with sociodemographic profiles like Nigeria.

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