

Impact of Health workers observance of the COVID-19 protocols on medication adherence among persons living with HIV/AIDS attending an ART clinic in Central Hospital Warri, Nigeria

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Abstract

The interruption of the continuum of care of persons living with Human Immunodeficiency Virus /Acquired Immunodeficiency Syndrome (HIV/AIDS) by the Coronavirus Disease 2019 (COVID-19) pandemic could lead to the worsening of their state. This study assessed the impact of the observance of COVID-19 protocols by healthcare providers on patients' adherence to their antiretrovirals. This was a retrospective study carried out in Central Hospital, Warri-Nigeria. Patients (18 years and above) attending the Heart-to-heart clinic and receiving Antiretroviral Therapy (ART) for at least six months prior to and during the COVID-19 pandemic were included in the study, socio-demographic data, viral load and appointment diaries in the period preceding and during the pandemic were obtained. Descriptive statistics were done for demographic data, relationship between viral suppression and COVID-19 era were determined using a chi squared test, mean difference in appointment visits kept before and during COVID -19 pandemic was determined with the aid of a paired sample t- test. One hundred and fifty-six cases were assessed, mean age was 49.12±0.83, 115 (73.4%) were female, 108(59%) married, self-employment, 93(59.6%), was the commonest means of livelihood and the majority, 132(84.6%), had been on ART for a duration of 11-15 years. There was a significant relationship between viral load suppression and the periods studied ($p<0.001$), mean appointments kept

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was significantly higher during than before the COVID-19 pandemic ($p=0.002$). The observance of measures to curb the spread of COVID-19 by healthcare workers did not reduce the level of adherence to antiretroviral therapy (ART) in persons living with HIV/AIDS (PLWHA).

Keywords: Adherence, Antiretroviral therapy, Coronavirus disease, HIV/AIDS, Pandemic

INTRODUCTION

The widespread use of ARVs in the treatment of HIV/AIDS has led to significant decrease in HIV-related morbidity and mortality worldwide (Kunutsor *et al.*, 2010), with the condition becoming a chronic illness which is manageable. As a chronic disease, HIV/AIDS requires life-long management to delay disease progression, with regular follow-up and medication to prevent severe opportunistic infections and reduce morbidity and mortality. The continuity in medical treatment of HIV/AIDS as well as other chronic illnesses was interrupted due to the COVID-19 pandemic (Mirzaei *et al.*, 2022) and this could lead to progression of the disease and worsening of the state of the patient. Coronavirus disease 2019 is a highly infectious virus that claimed millions of lives within a short period, to mitigate the spread of the virus and curtail the fatality spike, mandatory mass quarantines and travel restrictions were implemented globally and Nigeria was no exception. The nationwide lockdown which occurred in multiple phases was imposed beginning from March 30, 2020 to curb the spread of the virus. These uncertain circumstances had posed extreme challenges for patients with chronic diseases, with difficulty for access to hospital visits and to procure medications (Abraham *et al.*, 2020). Persons living with HIV/AIDS are particularly vulnerable during COVID-19 pandemic as they might have compromised immune systems (Chenneville *et al.*, 2020). A previous study in Nigeria reported difficulty in access to medications by 35% of persons on chronic medications (Nwoke *et al.*, 2020) and as of April 2020, 19% of persons surveyed in Zimbabwe were either unable or partially able to get medication refill on their antiretrovirals (Jewell *et al.*, 2020). Another study revealed that in April 2020, 14% of people surveyed in Nigeria and Kenya were unable to get their routine medications. (Finmark Trust, 2020).

Aside from access to medications, patient counselling was one of the services negatively impacted by the COVID-19 pandemic (Ramakrishnan *et al.*, 2023), this may be due to healthcare providers' observance of social distancing and reduction in the time of contact with patients. Inadequate patient counselling and education could increase non-adherence in the use of medicines.

Non-adherence to medical treatment remains a challenge in patients' care. Prior to the COVID-19 pandemic era, poor medication adherence (Achappa *et al.*, 2013) and failure of periodic HIV/AIDS follow-up visits posed an obstacle for the proper disease management. Efforts to ensure adherence often appeared to be ineffective and the COVID-19 protocols put in place to curb the menace of the virus may worsen non adherence to ART due to inaccessibility to healthcare centres and unavailability of drugs.

This study therefore assessed the impact of the observance of COVID-19 protocols by healthcare providers on patients' adherence to their antiretrovirals in Warri, Delta State, Nigeria.

METHODS

Study design and setting

This was a retrospective study carried out in Central Hospital, Warri-Nigeria. Central Hospital Warri is a secondary health-care facility and runs a Heart-to heart clinic where

PLWHA are managed. The ART Centre consists of the pharmacy unit where all medications are kept and drugs are dispensed to patients as indicated in the pharmacy order form by the consulting doctor; the laboratory where tests are carried out; monitoring and evaluating unit (M&E) where all records and data of the patients are kept using the electronic medical records (EMR); consulting rooms where the patients see the doctors; the adherence counseling room where both new and old patients are counseled and given health education on the disease condition and also follow-up on patients is done.

Maintenance of social distancing which led to the window dispensing and reduction in the frequency of appointments were the basic COVID-19 protocols assessed in this study.

Inclusion and Exclusion criteria

Patients (18 years and above) attending the Heart-to-heart clinic and receiving ART for at least six months prior to and during the COVID-19 pandemic were included in the study while patients (18 years and above) receiving ART with less than a period of three months, those who stopped ART before the COVID-19 pandemic and those younger than 18 years were excluded from this study.

Data abstraction

A data extraction form (proforma) was designed for the purpose of this study. The first section consisted of the socio-demographic data of the PLWHA such as hospital number, sex, age, occupation, marital status, date of commencement of ART. The second section of the proforma consisted of the year the patient registered at the ART centre, type of ARV drugs the patient is taking, appointment diaries before and during the COVID-19 and the viral loads of the patients before and during the COVID-19 pandemic. Three months prior to the pandemic and three months into the pandemic (April, May June) were studied for the participants. The information were extracted from the case files by the researchers with the aid of the proforma. Outcomes measured in this study were percentage of appointments kept and viral load. A viral load of less than 50 copies per millimeter was set as a marker for adherence. Keeping 100% appointments was also regarded as an adherence measure.

Data Analysis

Descriptive analysis was employed for demographics, Paired student t-test was used to determine mean difference in percentage of appointments kept pre- and during COVID-19 pandemic, also chi-square was used to determine if a relationship existed in viral load suppression during the two periods under review. *P*-values < 0.05 were considered statistically significant.

Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 23.0 for windows (SPSS Inc., Chicago, USA).

Ethical Consideration

Ethical approval for this study was obtained from Ethical Research Committee, Central Hospital, Warri with protocol number: CHW/ECC VOL 1/240). Informed consent was not obtained from patients as information was retrieved from the case files. Confidentiality of the patients' information was upheld.

RESULTS

Socio-demographics of the study population

A total of 156 patients were involved in this study with mean age of 49.12 ±10.83 as their ages range from 18-76 years. The result shows that a high proportion of the patients were females with a frequency of 115 (73.7%). Most patients in this study were married, 108(59%). A good number were self-employed, 93 (59.6%). Majority of the patients studied, 132 (84.6%), had been on Antiretroviral therapy for 11 -15 years while 2(1.3%) have been receiving antiretroviral therapy for 16-20 years. These are detailed in table 1

Table 1: Social demographic characteristics of Patients attending Heart-to heart Clinic in Central Hospital Warri (N= 156)

Variable	Frequency (%)
Gender	
Male	41 (26.3)
Female	115 (73.7)
Marital Status	
Single	25 (16.0)
Married	108 (69.2)
Widowed	23 (14.7)
Occupation	
Unemployed	10 (6.4)
Self Employed	93 (59.6)
Civil Servant	30 (19.2)
Student	23 (14.7)
Duration of ART	
1 - 5 Years	4 (2.6)
6 - 10 Years	18 (11.5)
11 - 15 Years	132 (84.6)
16 - 20 Years	2 (1.3)

Types of Antiretroviral Drugs Given to the patients

A total of 336 Anti-retroviral drug combinations were prescribed for the management of HIV/AIDS in this study. The combination of Tenofovir, Lamivudine and Dolutegravir with the frequency of 142(42.3%) is mostly used for the management of HIV/AIDS at this centre. The combination of Abacavir, Lamivudine, Efavirenz, 1 (0.3%) and the combination of Zidovudine, Lamivudine and Nevirapine, 1(0.3%) were the least used combination therapy in this study. The antiretroviral combination used are shown in table 2.

Table 2: Combinations of Antiretroviral Drugs Commonly Administered to Patients Attending the Clinic

Combinations of Antiretrovirals used (N=336)	Frequency
Lamivudine, Zidovudine and Nevirapine	99(29.5)
Tenofovir, Lamivudine and Efavirenz	80(23.8)
Tenofovir, Lamivudine and Dolutegravir	142(42.3)
Abacavir, Lamivudine and Efavirenz	1(0.3)
Tenofovir, Lamivudine and Atazanavir	13(3.9)
Zidovudine, Lamivudine and Nevirapine	1(0.3)

Viral Load suppression before and during the COVID-19 pandemic

Sixty-four(41%) had a viral load greater than 50 copies/ml and 92(59%) had viral load less than 50 copies/ml before the wake of the COVID-19 pandemic while twenty-three (14.7%) had a viral load greater than 50 copies/ml and 133(85.3%) had a viral load less than 50 copies/ml during the pandemic. Details are shown in table 3.

Table 3: Relationship between viral suppression within period of study

	COVID-19 Pandemic Before	During	X ² value	p-value
Viral suppression				
Unsuppressed	64(41.0)	23(14.7)	15.459	<0.001
Suppressed	92(59)	133(85.3)		

Adherence to Appointments Before and during the COVID-19 Pandemic

Appointment to hospital visits was determined for the patients studied. Paired sample t- test was used to determine the mean difference in percentage of appointments kept before and during the COVID-19 pandemic.

Table 4 shows the paired- sample t test on appointment visits kept

Table 4: Determination of appointment to hospital before and during the COVID-19 pandemic

COVID-19 Pandemic	N	Mean ±SEM
Before	156	85±1.02
During	156	89.99±1.05

P=0.002

Discussion

The study showed a significant difference existed in patients with viral suppression in the two periods studied (p<0.001). This difference might have resulted from measures taken to improve adherence to antiretroviral medications such as the use of telecommunication services to monitor and follow up the patients, as reported in a previous study (Izzo *et al.*, 2021), telehealth services have also been shown to be useful in improving medication adherence in other chronic illnesses (Kim *et al.*,2022). This however, contradicts the finding that the odds for viral non-suppression were 31% higher than before the pandemic in San Francisco (Spinelli *et al.*,2020), possibly because the population in the San Francisco study were vulnerable and needed clinic-based social support and not just telehealth services (Christopolous *et al.*, 2013) .

Mean percentage of appointment kept was significantly higher during the pandemic, a plausible explanation could be interventions put in place by the healthcare providers to monitor patient and ensure adherence to appointments for refills and follow-up with the aid of telecommunication. This corroborates the findings in an obstetric patient population where there was a significantly lower rate of non-adherence to hospital appointments (p ≤0.02) when comparing between 2019 and 2020 (Jeganathan *et al.*, 2020). Nonetheless, 19% of persons on ART reported that the pandemic had negatively affected their keeping up with follow -up appointments. (Shimels *et al.*, 2022).

Although, previous studies had reported the interruption of the continuum of HIV care by the COVID-19 pandemic (Shi *et al.*, 2021; Norwood *et al.*, 2022; Mirzaei *et al.*, 2022), overall

there were no negative impact of the COVID-19 protocols studied on the outcomes measured in this study.

This study, to the best of our knowledge, is the only one that gives an insight into the impact of COVID-19 protocol observance on the adherence to ART by PLWHA in our locality.

The limitation of a smaller than estimated sample size which was occasioned by some regulations implemented at the centre during the course of the study leading to restrictions in access to data.

Conclusion

The observance of measures to forestall the spread of COVID-19 by healthcare workers did not impact negatively on the patient adherence to medication as other measures of reaching out to patients were employed.

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