Socio-Demographic Determinants of Compliance to Scheduled Clinic Appointments among HIV Patients in a Tertiary Hospital in a Resource Limited Setting in Nigeria

Kenechi A. Uwakwe[1]*, **Anthony C. Iwu[2]**, **Kevin C. Diwe[1]**, **Chukwuma B. Duru[1]** and **Irene A. Merenu[1]**

[1]Department of Community Medicine, College of Medicine, Imo State University, Owerri / Imo State University Teaching Hospital, Orlu, Imo State, Nigeria.

[2]Department of Community Medicine, Imo State University Teaching Hospital, Orlu Imo State, Nigeria

*Corresponding author: Kenechi A. Uwakwe, Email: drkenuwa@yahoo.com

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Abstract

Background: HIV/AIDS is a potentially fatal infection of the immune system, but can become a chronic manageable disease as long as it is diagnosed early, linked to treatment and treatment is strictly adhered to.

Objective: To determine the socio-demographic factors associated with the compliance of HIV patients to scheduled clinic appointments in a resource limited environment.

Methods: This is a hospital record based cross sectional descriptive survey and cases were selected using a simple random sampling technique. Data was collected using a proforma. Descriptive analyses were done with frequencies and summary statistics. Chi square was computed to determine significant associations and multi-variate logistic regression to determine socio-demographic predictors of compliance to scheduled clinic appointments. P value was set at 0.05 significance level.

Results: The results revealed that, only 78.3% of patients complied with scheduled clinic appointments and that age (p=0.001), gender (p=0.009), marital status (p=0.000) and the level of education (p=0.000) were significantly associated with compliance. Furthermore, patients more than 40 years old, female, married and with a primary school level of education were significantly more likely to comply with scheduled clinic appointments.

Conclusion: Socio-demographic factors can be used specifically to identify particular HIV sub-population groups that may benefit more from targeted interventions and this would enable the clinician to focus attention and apply the most appropriate strategy when working with these particularly susceptible patients to improve compliance.

Keywords: HIV; Socio-demographic determinants; Compliance; Tertiary hospital; Nigeria

Introduction

Human immunodeficiency virus/Acquired immunodeficiency syndrome (HIV/AIDS) has become a chronic manageable disease due to early diagnosis, simultaneous linkage to treatment and subsequent treatment adherence [1]. Sub-Saharan African region remains the most affected with about 25.6 million people living with HIV as at the end of 2015 and accounting for two-thirds of the global total of new HIV infections [2]. Nine percent of all people living with HIV globally live in Nigeria [3], with about 3.2 million people living with the virus in the country and an estimated 0.75 million receiving antiretroviral therapy (ART) as at 2014 [4], while Imo state has a prevalence of 2.5% [5].

Globally, by 2015, there was a 45% reduction in the mortality from HIV related causes when compared to 2005 due to the significant expansion of ART programme with over 18 million people having access to ART [6]. In sub-Saharan African countries where ART scale up has been successful, a major challenge has been medication adherence with high levels of non-adherence rates to ART of between 50-70% reported by World Health Organization (WHO) [7]. This has been a concern especially in resource limited environments were low levels of adherence have been reported [8,9]. More so, limited treatment alternatives exist in these environments, therefore making it very challenging to manage the appearance of resistant strains due to poor medication adherence [10].

It is critical that emphasis on strict medication adherence begins from the start of the patient's first HIV regimen, as research has also shown that it offers the best chance for sustained HIV suppression, reduced risk of drug resistance, decreased risk of HIV transmission, long term treatment success, improved quality of life and overall survival [11-13].

The non-compliance to scheduled clinic appointments among HIV patients which are the main opportunities in our resource limited environments for medication refill, has the potential to further impact on the levels of non-adherence being currently observed; as high levels of medication adherence (>95%) are required for ART to be effective in the long term in order to prevent the emergence and spread of HIV resistant strains [14,15].

Scheduled clinic appointment compliance is an important factor to retention in care that indirectly assesses the patient's adherence motivation and willingness. This can be exploited by the health care workers, as patients' compliance with scheduled appointments provide not only the opportunity for medication refill but for maintaining and improving good patient-provider communication which enhances patient trust This helps in improving adherence and invariably retention in care, as patient provider relationships are believed to be a motivating factor for adherence [16].

Due to the fact that, HIV patients in our resource limited environment receive their medications (anti-retroviral, cotrimoxazole and anti-malarial) free of charge, they become dependent on their scheduled clinic appointment visits to receive and refill their medication. During these visits, the exact numbers of pills are given for the duration until their next scheduled clinic appointment, ranging from 1 to 3 months depending on their state (clinical and laboratory) and self-reported level of medication adherence. So assessing compliance to scheduled clinic appointments, that is medication refill, gives a fair and close indication of the level of ART adherence among these patients, as skipping scheduled appointments would imply that the patient inconsistently took the pills or has no medication following the missed appointment. A study in Nepal [17], reported that missing scheduled visits was significantly associated with non-adherence to treatment. Also a study in Cameroon [18], reported that pharmacy-refill adherence was a significant predictor of virologic treatment failure unlike self-reported adherence.

It is important to note that even though some factors influencing non-adherence to ART may be similar across countries, they may also be highly contextual, cultural and country specific. [19-21]. In some cases, socio-demographic factors may appear not to predict adherence

behaviour while in some others, sex, age, being employed and education have been associated with adherence [22,23].

So within this context, the knowledge of the socio-demographic characteristics that may influence the compliance of scheduled clinic appointments by HIV patients receiving care in resource limited settings could provide useful information about the demographic groups most at risk, and as such, may help in identifying the groups of patients that are less likely to comply. Thus, enable the development of targeted strategies and interventions that will influence their compliance, or provide evidence for remodeling of existing interventions and strategies.

Methodology

Study area

The study was conducted at the adult HIV clinic of Imo State University Teaching Hospital (IMSUTH), situated in Orlu Local Government Area (LGA) of Imo State, in South Eastern part of Nigeria. Imo State covers an area of about 5100 sq. km with a population density varying from 230-1400 persons per sq. km. The study centre is a tertiary health care facility with an ART clinic that has a total enrolment of 4,800 patients and offers comprehensive outpatient HIV care services to about 900 patients monthly [24].

Study Population and Inclusion/Exclusion criteria

The study population comprised adult HIV infected patients accessing ART from the ART clinic of Imo State University Teaching Hospital, Orlu.

Inclusion criteria: all patients who have been accessing care at the ART clinic within the past five years and were currently on ART for at least 6 months. Exclusion criteria; all case files of adult HIV patients currently on second line HIV regimen, and patients from outside the state.

Sample Size Estimation

The minimum sample size required was estimated using Cochran formula [25].

$$n = Z^2 pq/ d^2$$

When n= minimum sample size required, Z= Standard normal deviate corresponding to the probability of type I error, p = proportion of HIV patients estimated to comply with scheduled appointments, which is set at 50%, q=1-p, d= tolerable error of margin set at 0.05.

Z=1.96, p=0.50, q=1-0.50, n=384.

The sample size used for the survey taking into account incomplete data was 400.

Study design/Sampling technique

This was a hospital record based cross sectional descriptive survey

A simple random sampling technique using the table of random numbers was used to select 400 eligible case files of HIV patients receiving treatment from the monitoring and evaluation unit of the ART clinic.

Data Collection and Analysis

Using a Proforma, data was abstracted from the eligible patient's case files which included HIV care cards, pharmacy forms and adherence forms. The Proforma content included: age, gender, level of education, marital status, scheduled appointment dates and clinic attendance dates and pharmacy refill. Adherence was assessed by matching the scheduled appointment dates with the clinic attendance dates and those that had 95% or more of the dates matched were categorized as 'compliant' while those with less than 95% matched were categorized as 'not compliant'. Two trained research assistants were involved in data abstraction. Data was validated manually, and analyzed using Statistical Package for Social Sciences (IBM-SPSS) version 22. Descriptive statistics (frequency tables and summary indices) were generated, Chi Square was used to test for association between categorical variables, and the sociodemographic factors that were significantly associated with 'compliance to scheduled clinic appointments' were included in the logistic regression model to determine the predictors of compliance to scheduled appointments. P value was set at 0.05 significant level.

Limitation: Incomplete records posed a challenge; as such case files with inconclusive data were not analyzed.

Ethical considerations

Ethical approval was obtained from the Ethics Committee of Imo State University Teaching Hospital Orlu. Permission was sought from the records department and the ART clinic. All authors hereby declare that the study has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

Results

Four hundred case files were abstracted in the Proforma but three hundred and ninety one case files had complete information (97.8%)

Socio-demographic Characteristics of adult HIV infected patients in the ART clinic Imo State University Teaching Hospital Orlu

More than half of the study cases were female (59.3%), married (58.6%) and were aged 40 years and above (57.8%) with at least a secondary level of education (68.8%) (Table 1).

More than one fifth of the study cases (21.7%) did not comply with scheduled clinic appointments (Figure 1).

Table 1: Socio-demographic Characteristics of adult HIV infected patients in the ART clinic of Imo State University Teaching Hospital Orlu.

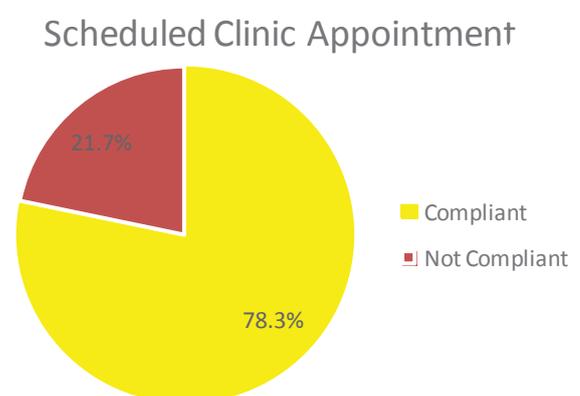| Variable	Category	Frequency (%) n=391
Age	20-39 40 and above	165(42.2) 226(57.8)
Gender	Male Female	159(40.7) 232(59.3)
Level of Education	No formal/Primary Secondary Tertiary	122(31.2) 162(41.4) 107(27.4)
Marital Status	Single Married	162(41.4) 229(58.6)

Figure 1: Compliance to Scheduled Clinic Appointments of adult HIV infected patients in the ART clinic of Imo State University Teaching Hospital, Orlu.

Table 2: Socio-demographic Characteristics versus Scheduled Clinic Appointment Compliance of adult HIV infected patients in the ART clinic of Imo State University Teaching Hospital, Orlu.

Variable	Non-Compliance (%)	Compliance (%)	Total (%)	χ^2	df	p-value
Age (years)						
20-39	49(29.7)	116(70.3)	165			
40 and above	36(15.9)	190(84.1)	226	10.63	1	0.001*
Total	**85(21.7)**	**306(78.3)**	**391**			
Gender						
Male	45(28.3)	114(71.7)	159			
Female	40(17.2)	192(82.8)	232	6.78	1	0.009*
Total	**85(21.7)**	**306(78.3)**	**391**			
Level of Education						
No formal/Primary	15(12.3)	107(87.7)	122			
Secondary	54(33.3)	108(66.7)	162	22.09	2	0.000*
Tertiary	16(15.0)	91(85.0)	107			
Total	**85(21.7)**	**306(78.3)**	**391**			
Marital Status	60(37.0)	102(63.0)	162			
Single	25(10.9)	204(89.1)	229	38.05	1	0.000*
Married	**85(21.7)**	**306(78.3)**	**391**			

*Statistically significant

Scheduled Clinic Appointment Compliance and Sociodemographic Factors of adult HIV infected patients in the ART clinic of Imo State University Teaching Hospital, Orlu

Age (p=0.001), gender (p=0.009), marital status (0.000) and the level of education (0.000) were significantly associated with compliance to scheduled clinic appointments (Table 2).

Socio-demographic Predictors of Scheduled Clinic Appointment Compliance of adult HIV infected patients in the ART clinic of Imo State University Teaching Hospital, Orlu

The study cases who were 40 years old and above were significantly more likely to comply with scheduled clinic appointments when compared to those who were less than 40 years old (ORa: 2.23; P=0.001).

Similarly, the study cases who were female were significantly more likely to comply with scheduled clinic appointments when compared to the male cases (ORa: 1.89; P=0.009), and those that were married were also significantly more likely to comply with scheduled clinic appointments when compared to those that were single (ORa: 4.80; P=0.000)

Furthermore, the study cases with a secondary level of education were significantly less likely to comply with scheduled clinic appointments when compared to those with no formal or primary education (ORa: 0.28; P=0.000) (Table 3).

Discussion

This study assessed the socio-demographic determinants of compliance to scheduled clinic appointments among HIV patients in a Tertiary Care Hospital within a resource limited setting. It revealed that only 78.3% of patients complied with scheduled clinic appointments for their refill medication, and furthermore that age, gender, marital status and the level of education of these patients receiving ART were significantly associated with their compliance to scheduled clinic appointments.

The assessment of compliance to scheduled clinic appointments within a resource limited environment where the patients depend solely on receiving their HIV medications free of charge in controlled quantities from designated health institutions, can serve as a proxy to assessing medication adherence in these patients.

Table 3: Socio-demographic Predictors of Scheduled Clinic Appointment Compliance of adult HIV infected patients in the ART clinic of Imo State University Teaching Hospital, Orlu.

Variable	ORa(Estimate)	95%(CI)	p-value
Age (years)			
20-39	1.00	-	-
40 and above	2.23	1.368-3.633	0.001*
Gender			
Male	1.00	-	-
Female	1.89	1.167-3.077	0.009*
Level of Education			
No formal/Primary	1.00	-	-
Secondary	0.28	0.149-0.527	0.000*
Tertiary	0.80	0.373-1.701	0.560
Marital Status			
Single	1.00	-	-
Married	4.80	2.843-8.103	0.000*

*Statistically significant

In spite of the fact, that this study assessed medication adherence by the level of compliance of these patients to scheduled clinic appointments, some caution is still needed when comparing adherence rates across studies due to the different methods adopted in measuring adherence. The level of clinic appointment compliance among the patients in the present study (78.3%) appears to be similar to a review of studies conducted in sub-Saharan Africa, that estimated the level of adherence to be 77% [26], and more specifically in studies done in South-East and South-South Nigeria, where adherence levels of 75.3% and 73.4% respectively were reported [27,28]. Nevertheless, this was not consistent with a study from a tertiary Hospital in Kenya that similarly reported from hospital records, that 93.5% of the respondents kept their clinic appointments [29].

In the present study where age was significantly associated with compliance, it was observed that those 40 years and above, were more likely than those below 40 years to comply with their scheduled clinic appointments. This was similar with a study done in India that revealed poor treatment adherence among HIV patients who were aged below 40 years [30]. This could be due to the fact that older individuals are more likely to have prior experience taking medication for age-related diseases, and the associated lifestyle adjustments required are often less burdensome for older people [30,31]. This observation could also be explained by some other studies [32,33], which reported that adolescents and young adults experience substantial challenges in trying to achieve levels of medication adherence necessary for good therapeutic response. A study done in Kenya [34], also reported that

adherence to ART treatment was significantly associated with age, but on the contrary, it reported that respondents aged below 25 years were more likely to have optimal ART adherence. This significant association of adherence with age was not consistently observed in other studies done in Kenya, Ethiopia or South Africa [29,35,36].

In the present study also, there was a significant association between compliance and gender, where female respondents were more likely to comply with scheduled clinic appointments. A probable explanation for the gender association could be cultural, with women having a higher social burden in our environment and as such, have a more engaging role in the physical upkeep of their households and care of their children, of which, they are aware of. As a consequence, they appear to be self-motivated towards complying with any health instruction that promises to keep them healthy in order to keep fulfilling their role in the household and care of their children. On the other hand, a study in Nepal reported that, socio-cultural restrictions on women made it more difficult for the female gender to adhere to ART medication [17]. Likewise, a review of multiple studies done in developed countries reported that female gender was often a predictor of lower adherence [37] and more specifically, a study done in South-West Nigeria [38], reported that, the male gender was more adherent. Some other Nigerian studies however reported no significant association between adherence and gender [39,40].

Similarly, in the present study, marital status was significantly associated with compliance, where married patients were more likely to comply with scheduled clinic appointments. It is known that marriage provides an environment for family support and if the relationship is cohesive with full disclosure and acceptance, spouses serve as reminders for each other. This may offer a plausible explanation for the significant association observed between compliance and marital status. In further support, a meta-analytical study reported that adherence was 1.74 times higher in patients from cohesive families [41]. Also, in a study done in Kenya [34], a similar marital relationship with adherence was observed, even though, this relationship was among married respondents that were either monogamous or polygamous compared with respondents that were widows. This observed significant association with marital status was not consistent with some other studies done in Nigeria, Kenya, Ethiopia and South Africa [29,35,36,38-40].

Finally, in the present study, the level of education was significantly associated with compliance of scheduled clinic appointments, which was similar to other studies that reported a significant association between educational level and adherence [41-43]. On further analysis of the present study, it was observed that while patients with a tertiary school education compared to those with no formal or primary education were less likely to comply, though not statistically significant, those with secondary school education were also less likely to comply but this was statistically significant. Similarly observed in another study [19] was that, education attainment at secondary school level was significantly associated with non-adherence. Furthermore, a study in India [23] observed that, those with less than a university level of education were significantly associated with lower adherence. This relatively lower compliance observed in those with secondary education in the present study, which is in tandem with other studies is worrisome, as this forms the major population in the study and the immediate environment. On the contrary though, some studies done in Nigeria and in other African countries reported a non-significant association between educational level and adherence status [34,35,39,40].

Conclusion

In spite of the fact that socio-demographic factors in general appear not be consistently associated with medication adherence across several studies, they could still be used specifically to identify particular sub-population groups that may benefit more extensively from targeted interventions, or modification of interventions. So given that there are many strategies and interventions to improve adherence and retention in HIV care, the challenge is to select that most appropriate to each patient and patient population group while taking into cognizance the socio-demographic characteristics that influence their adherence. Hence, identifying the characteristics that have been associated with such adherence would enable policy makers, program managers and clinicians to focus attention and apply the most appropriate strategies when working with these particularly susceptible patients and groups.

Authors Contribution

KAU conceived the study, while KAU and ACI designed the study. KAU, ACI and CBD wrote the manuscript and handled the analysis. KCD, IAM, ACI and KAU managed the literature review. All authors read, reviewed and approved the manuscript.

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