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**Original Research Article**

# The effect of socio-economic status on adherence to anti-retroviral therapy

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## Abstract

**Background:** Human Immunodeficiency Virus infection is a pandemic disease threatening public health for decades now. With the advent of antiretroviral drugs (ARDs) being taken on long term basis, it is important to examine factors that could affect adherence to these medications

**Objectives:** To determine relationship between socio-economic status of sero-positive HIV patients on antiretroviral drugs and their adherence to these drugs

**Methods:** This is a descriptive cross sectional study. One hundred and fifty patients on ARDs attending retroviral treatment clinic were recruited into the study. Multistage sampling technique was employed in sample selection. Research instrument was semi-structured interviewer administered questionnaires, and data was managed using the SPSS 17 software.

**Results:** There was no statistically significant association between socio-economic status in both sexes (p=0.58). There was a statistically significant comparison between socio-economic status and educational status of respondents (p=0.001). Low income group and retired individuals adhere more with their medications. Respondents with lower socio-economic status are twice more likely to adhere with the use of ARDs compared to those of higher socio-economic status.

**Conclusion**: In the absence of financial implication, patients with low socio-economic status adhered more to ARDs compared to those of higher socio-economic status.

**Keywords:** socioeconomic status, adherence, Antiretroviral drugs (ARDs)

## 1. Introduction

The human Immunodeficiency Virus (HIV) once discovered in about three decades ago is still a medical challenge to the world population. However, there are drugs discovered for it management though this drugs do not provide permanent cure. Untreated patients after sometimes are vulnerable to opportunistic infections which may be as a result of impaired cellular immunity. About 33.2million was estimated to be living with HIV/AIDS worldwide in 2007, with about two-thirds (22.5 million) of them living in sub- Saharan Africa countries[1]. The groups of drugs in use for the treatment of HIV sero-positive individual is termed Highly Active Antiretroviral Therapy (HAART) and have been in use with appreciable efficacy. These drugs are prescribed to be taken in combination of three drugs

for as long patients live. Patients on chronic medication like this have tendency to lose compliance to the treatment. Loss of compliance may be associated with poverty, socio-economic status as well as educational status of the concerned individuals

People living with HIV generally may experience reduced productivity which may be as a result of social stigma or the disease burden. This makes them increasingly vulnerable to poverty. Anti-retroviral therapy reduces the impact of the disease on productivity by preventing opportunistic infections; promoting wellbeing and increasing life expectancy therefore also improve their socio-economic status.

The challenge to achieve good adherence to antiretroviral drugs (ARDs) is particularly needed in Sub-Saharan Africa. Numbers of affected individuals in Sub-Saharan Africa is more than in other low-income regions. There are challenges of ARDs adherence, the magnitude of this in sub-Saharan Africa remains large [2,3] and there is growing evidence of loss of patients to follow-up in the clinics [4]. Strict adherence to antiretroviral therapy is generally required to obtain optimal treatment success, inadequate adherence may result into loss of treatment efficacy due to viral rebound and drug resistance [5,6].

In view of the above facts and in the consideration of morbidity and mortality associated with HIV/AIDS as well as the chronicity of the treatment, this study was designed to identify the effect socio-economy has on the adherence of HIV sero-positive patient to ARDs.

## 2. Method

The study site was RT clinic of Ladoke Akintola University of Technology Teaching Hospital (LAUTECH), Osogbo. Osogbo is the capital city of Osun State in South Western Nigeria. It has a population of about 3.6 million, and majority of people there are self employed, civil servants, farmers or artisans. Human Immunodeficiency Virus prevalence in Osogbo could be comparable to that of Osun State which is about 1.8% [7]. Treatment of HIV sero-positive patients is mainly offered to the people of the state in LAUTECH Teaching Hospital Osogbo. There are approximately about 1500 HIV sero-positive patients accessing care in this institution.

The design of the study was a descriptive cross sectional study to access socio-economic status and its effect on the pattern of adherence to ARDs among HIV sero-positive patients.

### 2.1 Subjects

One hundred and sixty patients who attended the clinic between February and May 2012 were recruited into the study. Children who are less than 18 years were excluded from the study. In addition, patients who are yet to commence ARDs were excluded. All recruited patients had history of at least one year on ARDs. A multi-stage sampling method was employed in sample selection. In stage I, one out of two clinic days were chosen by simple random sampling employing simple balloting. In stage II, a systematic sampling of one in three patients on the clinic day (resisters were sampled) was recruited into the study after making a sample frame for that day. Semi structured pre tested questionnaires were used to get patients' socio-demographic characteristics and pattern of adherence to ARDs. Questionnaires were administered by five trained research assistants who could speak the local language. Validity of questionnaire was established by the research team to ensure that questions were properly asked. Ethical clearance to carry out the study was obtained from LAUTECH Teaching Hospital ethical review committee,

### 2.2 Data management

SPSS software version 17.0 was used in data analysis after sorting out the questionnaires. Validity of data was ensured by double entry and random checks on some data sets. Frequency tables were generated while relationship and associations between categorical variables was established using chi square. Test of significance was taken at a $p < 0.05$.

## 3. Results

A total of 150 questionnaires were returned from the field and completely analyzed by the SPSS software.

Table 1 shows percentage age, gender, marital and religion status distribution of the study population. About eighty six percent of the respondents are Yoruba by tribe, 12.0 Igbos, 4.0 Hausas and 2.0 from other tribes.

**Table 1: Personal Data**

| Variables | Frequency | Percentage |
|---|---|---|
| AGE | | |
| 15-30 | 29 | 19.3 |
| 31-40 | 61 | 40.7 |
| 41-50 | 33 | 22.0 |
| 51-60 | 20 | 13.3 |
| 61-70 | 6.0 | 4.0 |
| 71-80 | 1.0 | .7 |
| **SEX** | | |
| Male | 52 | 34.6 |
| Female | 98 | 65.2 |
| **MARITAL STATUS** | | |
| Single | 49 | 32.7 |
| Married | 82 | 54.7 |
| Cohabiting | 1 | .7 |
| Separated/divorced | 11 | 7.3 |
| Widowed | 4 | 2.7 |
| Remarried | 3 | 2.1 |
| **ETHINCITY** | | |
| Yoruba | 130 | 86.7 |
| Hausa | 6 | 4.0 |
| Igbo | 12 | 12.0 |
| Others | 2 | 2.0 |
| **RELIGION STATUS** | | |
| Christianity | 85 | 56.7 |
| Islam | 61 | 40.7 |
| Traditional | 3 | 2.0 |
| None | 1 | 0.7 |

**Table 2: Socio-Demographics Characteristics**

| Variable | Frequency | Percentages (%) |
|---|---|---|
| **Educational status:** | | |
| No formal education | 15 | 1.0 |
| Primary | 35 | 23.3 |
| Secondary | 42 | 28.0 |
| Tertiary | 50 | 33.3 |
| Other(specify) | 8 | 5.3 |
| **Occupation:** | | |
| Student | 3 | 2.0 |
| Traders | 44 | 29.3 |
| Civil servant | 45 | 30.0 |
| Artisan | 39 | 26.0 |
| Others | 18 | 12.0 |
| Politician | 1 | 0.7 |
| **Employment status**: | | |
| Full time | 64 | 42.7 |
| Part time | 29 | 19.3 |
| Unemployed | 10 | 6.7 |
| Retired | 15 | 1.0 |
| SELF EMPLOYED | 19 | 12.7 |
| Other (specify) | 13 | 8.7 |
| **Estimated income** | | |
| Less that 5000 naira | 50 | 33.3 |
| 5000-20000 | 48 | 32.0 |
| 20000-50000 | 24 | 16.0 |
| 50000-100000 | 17 | 11.3 |
| Above 100 thousand | 11 | 7.3 |
| **Types of House where you live** | | |
| Single room | 53 | 35.3 |
| Room and palour | 28 | 18.7 |
| Self contained room | 16 | 10.7 |
| Flat | 53 | 35.3 |
| **Types of toilets** | | |
| None | 12 | 8.0 |
| Pit | 39 | 26.0 |
| Water closet | 99 | 66.0 |
| **Family types** | | |
| Monogamous | 88 | 58.7 |
| Polygamous | 62 | 41.3 |

Table 2 shows socio-demographic characteristics of the study population. One percent of the respondents did not have a formal education, 23.3% has primary education and 28.0% were secondary school certificate holders while 33.3% has tertiary education and 5.3% has other forms of education. Two percent of the studied population was students, 29.0% were traders, 30.0% are civil servants and 0.7% is politicians. The table also shows average monthly income of the subjects. About 33.3% were earning below 5,000 naira per month, 32.0% earn between 5,000-20,000 naira, 16.0% earn between 20,000-50,000, while 11.3% earn 50,000 and 100,000 naira monthly and 7.3% earn above 100, naira monthly. About Fifty eight percent were from polygamous family setting while 41.3% were from monogamous settings.

**Table 3: Pattern of Adherence**

| | Total | Missed Medication in the last 6 month | Missed Medication in the last 1 month | Missed Medication in the last 1 week | Did not miss medication in the last 6 month |
|---|---|---|---|---|---|
| **Educational Status** | 15.0 | 0.0 | 2.0 | 1.0 | 11.0(73.3%) |
| Primary | 35.0 | 1.0 | 5.0 | 10.0 | 19.0(54.3%) |
| Secondary | 42.0 | 10.0 | 7.0 | 10.0 | 15.0(35.7%) |
| Tertiary | 50.0 | 9.0 | 15.0 | 20.0 | 10.0(20.0%) |
| **Income in Naira** | | | | | |
| <5,000 | 50.0 | 11.0 | 4.0 | 4.0 | 31.0(62%) |
| 5,000-20,000 | 48.0 | 16.0 | 5.0 | 2.0 | 25.0(52.1%) |
| 20,000-50,000 | 24.0 | 8.0 | 2.0 | 5.0 | 9.0(37%) |
| 50,000-100,000 | 17.0 | 3.0 | 3.0 | 5.0 | 6.0(35.3%) |
| >100,000 | 11.0 | 7.0 | 1.0 | 1.0 | 2.0(18.2%) |
| **Employment Status** | | | | | |
| Full time | 64.0 | 40.0 | 10.0 | 4.0 | 10.0(15.6%) |
| Part time | 29.0 | 7.0 | 7.0 | 3.0 | 11.0(37.9%) |
| Unemployed | 10.0 | 4.0 | 1.0 | 1.0 | 4.0(40.0%) |
| Retired | 15.0 | 3.0 | 3.0 | 2.0 | 7.0(46.6%) |
| Self Employed | 19.0 | 8.0 | 4.0 | 3.0 | 4.0(21.1%) |
| Others | 13.0 | 5.0 | 3.0 | 1.0 | 4.0(30.8%) |
| **Gender** | | | | | |
| Male | 52.0 | 29.0 | 10.0 | 3.0 | 10(19.2%) |
| Female | 98.0 | 19.0 | 10.0 | 4.0 | 65(66.3%) |

**Table 4: Association of Socio- economy by Income with Gender and Educational Status**

| | SOCIO ECCONOMIC BY INCOME | | | | | |
|---|---|---|---|---|---|---|
| **Sex** | **Low** | **Average** | **High** | **Total** | **Df** | **P-Value** |
| Male | 33(61.25) | 16(32.7%) | 3(6.1%) | 52(100%) | 6 | 0.058 |
| Female | 68(78.8) | 23(23.5) | 7(7.1) | 98(100%) | | |
| **Education** | | | | | | |
| Nil formal | 15(100%) | 0(0%) | 0(0%) | 15(100%) | 8 | 0.001 |
| Primary | 33(94.3%) | 2(5.7%) | 0(0%) | 35(100%) | | |
| Secondary | 28(66.7%) | 14(33.3%) | 0(0%) | 42(100%) | | |
| Tertiary | 19(38.0%) | 21(42.0%) | 10(20.0%) | 50(100%) | | |
| Others | 2(25.0%) | 6(75.0%) | 0(0%) | 8(100%) | | |

Table 4 shows that there is no statistically significant association between socioeconomic statuses by gender

## 4. Discussion

In this systematic review we found that socioeconomic status (SES) was consistently associated with adherence to treatment among HIV infected patients. This study directly examined the association between SES and Adherence in patient with HIV/AIDS, we evaluated the available data regarding the possible association between the major separate determinants of SES (income, education, occupation, housing) and adherence. And we observed clear association between SES and adherence to treatment based on data available from the questionnaire, the responses fully support the existence of such an association in this patient population.

Research indicates that up to 45% of people living with HIV are unemployed [8]. This is not consistent with the findings of our study in which about 6.7% of respondents are unemployed. In this Environment, many HIV positive people tends to lose their jobs secondary to stigmatization and discrimination, inability to cope with stress of life secondary to immunodepression. Low-income individuals are not likely to have health coverage or receive optimal treatment and care for HIV/AIDS[8]. In our study, higher adherence was recorded in the low SES. Because ARVs in the studied clinic is free and the issue of need to purchase may not arise. Also low SES people may not be too busy in their daily engagement to take medications.

Domestically and internally, HIV is a disease that is embedded in social and economic inequity[9,10], as it affects those of lower socio-economic status at a disproportionately high rate. This reflected in our study in which a significant proportion of them are in the low socioeconomic class either by income or by occupation thus expressing inequity in distribution of wealth in the population. Research on SES and HIV/AIDS suggests that a person's socio-economic standing may affect his or her likelihood of contracting HIV and developing AIDS.[11]

Socio Economic Status is a key factor in determining the quality of life for individuals after they are affected by the virus[11]. Those with fewer resources are often left with limited treatment options.

A study on HIV/AIDS treatments adherence among socioeconomically better off women[12] shows that women in the lower socioeconomic class easily disclosed their status and adhered better unlike what was observed among the women in the upper socio-economic class who could not disclose their status because of the stigma associated with the disease, therefore had poor adherence. This agreed with our study in which greater percentages of the respondents were from lower socio-economic class and they had good adherence.

A lack of socio-economic resources is linked to the practices of risky health behaviors, which can lead to the contraction of HIV. These behaviors include earlier initiation of sexual activity and less frequent use of condoms[13]. Among women, lower social standing and the experience of life stress are associated with risky sexual practices. This finding suggests that while ethnicity is a critical factor in the HIV/AIDs epidemic for women, social class is also an important risk factor in HIV infection[13].

Unstable housing has been linked to risk for HIV infection, including intravenous drug use and unsafe sexual behaviors[14]. Individuals who are homeless or having unstable housing arrangements are significantly more likely to be infected with HIV compared to individuals in more stable housing environment [14].

There is an association between education and adherence to antiretroviral drugs as better adherence was observed among patients with at most primary education. However a study carried out in Kenya was not consistent with this finding. They observed that out of 37 Kenyan studied 52.1 percent of the respondent with good adherence had secondary and post secondary education [15].

There is also an association between gender and adherence to antiretroviral treatment in our study and this is also in keeping with the result of the study carried out in a low income country[16]. Adherence was observed to be better among women. A study also showed that women are seen to have better adherence in that they want to stay healthy in order to be able to continue to care for their children and family[13]. Furthermore, men are generally less likely to be opened about their status, less able to share their concerns or anxieties, and will often hide medication from their spouses. Partners in Brazil described this as being due to 'machismo' or 'male chauvinism', as well as the perceived link between AIDS and homosexuality which added another layer of stigma to the disclosure. A couple of respondents in Brazil also talk about the interplay of alcohol and drugs as affecting adherence, particularly in men[17]. There were a couple of exceptions to this trend, data from HIV/AIDS programmes in some countries indicates better adherence for men [18].

Adherence increases with age, except in the most elderly[19]. Often, the very elderly have more complex medical regimens and more co-morbities such as vision, hearing or memory impairment. In comparison, studies of medication adherence in patients aged less than 75 years with chronic or mental illness showed a positive correlation between age and adherence[20,21]. However, HIV infected individuals are typically not older than 50 years [22]. Thus associated with old age may not be a major issue.

## 5. Conclusion and Recommendation

Socioeconomic status has bearing on adherence to antiretroviral treatment. People of low socio-economic status are more likely to adhere in the absence of financial commitment on the part of patients. There were associations between socio-economic status and gender as well as educational status. Government should encourage more health education on HIV/AIDS management to address issue of stigmatization so that affected people can adhere to medications and be confident to come for help at any time.

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