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**Socio-economic Status and Barriers to the Use of Free
Antiretroviral Treatment for HIV/AIDS in Enugu State,
South-East Nigeria**

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OKLCHI001**

**A mini dissertation presented for the Degree of Masters in Public Health
(Health Economics) in the Department of Public Health and Family Medicine,
University of Cape Town**

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Supervisor: Dr Susan Cleary

DECLARATION

I declare that this thesis is my original work and has not been submitted for any academic or examination purpose at any other university. All the relevant sources of knowledge that I have used during the course of writing this dissertation have been cited/referenced.

Chijioke Okoli

Date

University of Cape Town

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ABSTRACT

Socio-economic Status and Barriers to the Use of Free Antiretroviral Treatment for HIV/AIDS in Enugu State, South-East Nigeria

Objectives

In Nigeria, free antiretroviral treatment (ART) centers are mainly located in urban and peri-urban areas despite higher HIV-prevalence in rural areas. This study investigated the socio-economic and socio-demographic characteristics together with the access barriers faced by the users of free ART in Enugu State, southeast Nigeria.

Design: Cross sectional study

Methods

The study was conducted in two purposively selected sites/facilities (one public and one private) administering free ART. In each of the two facilities, 120 patients living with HIV/AIDS (PLWHA) were interviewed. Information about socio-economic status, demographic characteristics, factors constraining access and coping mechanisms were elicited using interviewer-administered questionnaires as a patient came out of the doctor's consulting room (exit interview). Principal components analysis, frequencies and cross tabulations were used in analysis.

Results

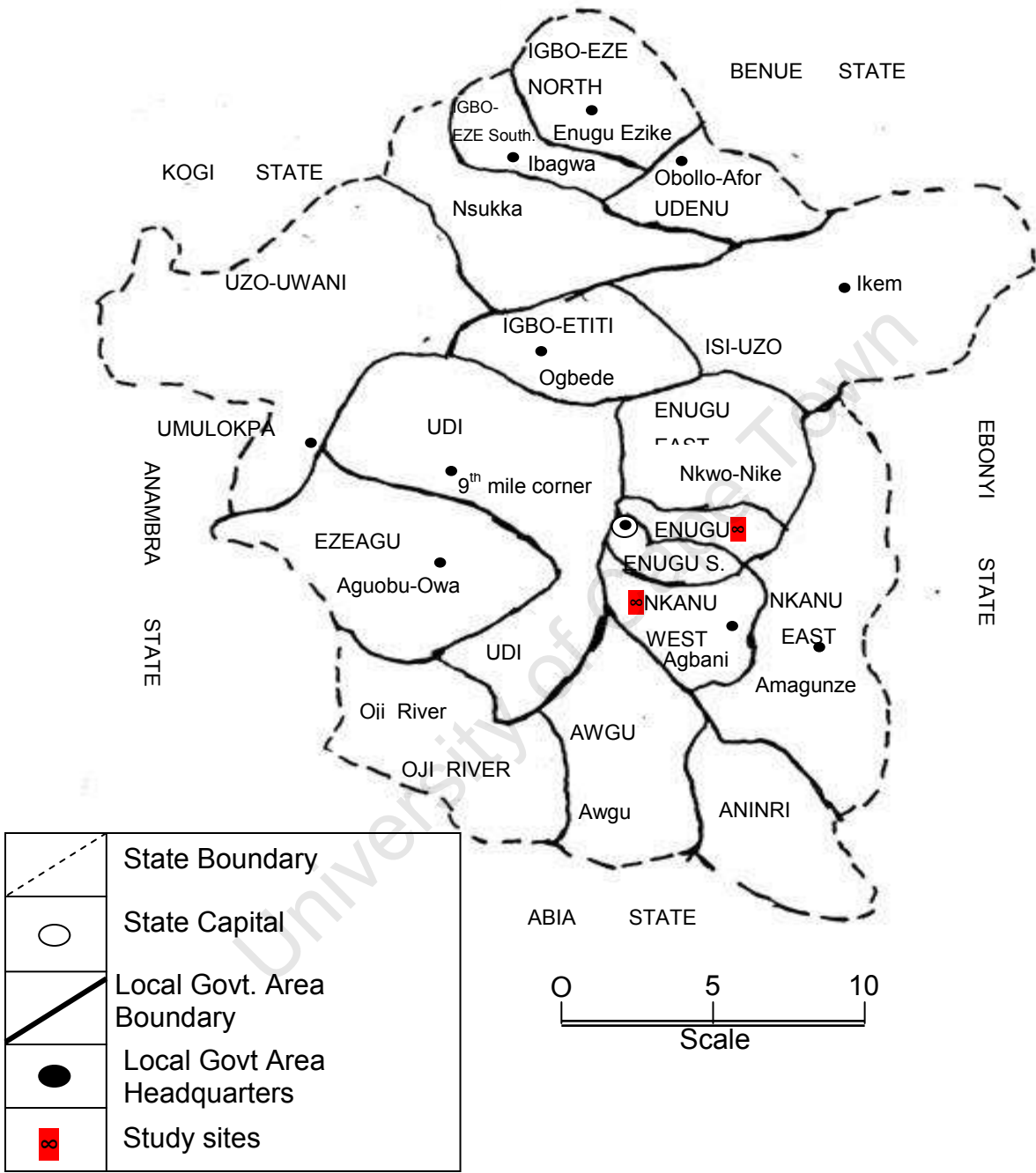
Of the 240 respondents, 67.5% were female. The mean age of the respondents was 36 years and 46.7% were within the age range of 30-41 years. The main occupations of the respondents were petty trading (21.3%), artisan (20.0%) and government worker (19.2%). High cost of transport (32.5%), stigma (31.7%) and long waiting hours (23.3%) were found to be major hindrances to accessing free ART. The mean cost of transport was US\$3.94 per visit although an SES analysis showed that the most poor incurred the highest cost of transport (US\$5.48) per visit. Stigma is clearly more of a barrier in Enugu metropolis (49%) compared to communities outside the Enugu metropolis (18.6%) and states apart from Enugu State (22.2%). PLWHA spent an average of 3.39 hours at the clinic during their monthly appointment. Own savings and financial support from relatives were the main coping mechanism used for accessing free ART. The most poor (under-privileged) bore a higher cost of transport while the effect of stigmatization appeared to be felt by all the socioeconomic groups.

Conclusion

Potential findings indicate that the poor bear the highest burden of transport costs while stigmatization affects all socio-economic groups although more on non poor than the poor. Advocacy against HIV and AIDS related stigma is crucial if HIV/AIDS interventions are to achieve their desired outcomes. Concerted effort is required from government, non-governmental agencies, communities and religious groups in the campaign against HIV/AIDS related stigma. The key finding of high traveling costs, particularly for the poor, suggests the need to consider mechanisms that might enhance access for the rural poor such as mobile ART clinics. It is also imperative to employ more medical personnel so as to address the issue of long waiting hours experienced by users of free ART.

Chijioko Okoli
August 2009

SCHEMATIC DRAWING OF ENUGU STATE, NIGERIA



Source: Dibua *et al.*, 2009

GLOSSARY

ART	Anti-Retroviral Treatment
ARV	Antiretroviral
CREHS	Consortium for Research on Equitable Health Systems
DFID	Department for Foreign and International Development
DPK	Development Policy Consult
FGD	Focus Group Discussion
FMoH	Federal Ministry of Health
FRN	Federal Republic of Nigeria
HERFON	Health Reform Foundation of Nigeria
HCT	HIV Counseling and Testing
HIV/AIDS	Human Immuno Virus/ Acquired Immune Deficiency Syndrome
GFTAM	Global Fund for AIDS, Tuberculosis
MCSH & M	Mother of Christ Specialist Hospital & Maternity
NACA	National Action on Control of AIDS
PCA	Principal Component Analysis
PEPFAR	President's Emergency Plan for AIDS Relief
PLWHA	People Living With HIV/AIDS
SES	Socio-Economic Status
UCT	University of Cape Town
UNAIDS	Joint United Nations Programme on AIDS

UNDP	United Nations Development Programme
UNICEF	United Nations Children’s Fund
UNTH	University of Nigeria Teaching Hospital
USAID	United States Agency for International Development
UNFPA	United Nations Population Fund
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

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PART A: PROTOCOL

1.1 Background

Human immune virus (HIV) was first reported in Nigeria in 1986 (Amanyeiwe, Laurel, Aneesa, Taye, Mehta-Steffen & Valdenebro *et al.*, 2008). Since then the trend in adult HIV-prevalence has increased more than three fold from 1.8% in 1991 to 5.8% in 2001, after which a slight decline is observed (from 5.0% in 2003 to 4.4% in 2005), with prevalence as high as 16% in some parts of the country (Kombe, Galaty & Nwagbara, 2004; Amanyeiwe *et al.*, 2008). According to the Nigeria Federal Ministry of Health (2005), HIV/AIDS is one of the leading causes of death in adults aged 15-49 and has been reported in all parts of the country (Kombe *et al.*, 2004).

Studies show that antiretroviral therapy (ART) reduces morbidity and mortality among HIV-infected individuals (Goldstein, Zivin & Thirumurthy, 2008). Although not a cure, antiretroviral drugs (ARVs) reduce the replication of the virus, thereby, allowing for a restoration of the immune system in the infected individual (Kombe *et al.*, 2004). As of 2006, about 3 million out of Nigeria's 140 million people are living with HIV/AIDS and only 10% of those in need of treatment have access to it (Kaiser Daily HIV/AIDS Report, 2007).

Officially selected public sector and faith-based organization (FBO) sites provide free ART (Amanyeiwe *et al.*, 2008). However, despite the national policy that antiretroviral treatment should be provided free of charge, between 18 and 24% of all the facilities still charge user fees for ART services (Amanyeiwe *et al.*, 2008). Free ART is aimed at reaching poor people living with HIV/AIDS, but studies demonstrate that many public health interventions designed to accommodate the poor are not reaching their intended targets, and it is common for the rich to crowd-out the poor (Kombe *et al.*, 2004; Uzochukwu & Onwujekwe, 2004a; Mackintosh,

2007). Also, there is limited commitment from many states and local governments in Nigeria to HIV/ AIDS, as evidenced by the low allocation of resources to treatment in their budgets despite the impact of HIV/AIDS on the populace (UNDP, 2004). In Enugu State, southeast Nigeria, the prevalence of HIV/AIDS rose from 1.3% in 1992, to 5.2% in 2001, and to 6.5% by 2005 (Enugu State, 2003; Federal Ministry of Health, 2005). Prevalence is higher in rural areas, with the sentinel sero-prevalence survey in Achi indicating a prevalence of 13.6% (Enugu State, 2003).

Currently, free ART centers are mainly located in urban areas in spite of higher prevalence in rural areas (Kombe *et al.*, 2007). This raises questions about whether the service is able to reach the poorer socio-economic groups given that distance to health facility acts as a significant barrier of access to the poor (Partnership for transforming health systems, 2006). Hence, this study intends to document the socio-economic and demographic characteristics of those using free ART as well as the challenges they face in accessing this care. The research findings may provide a platform for focused allocation of ART centers to under-served areas.

1.2 General objective

To investigate the socio-economic status, demographic characteristics and access barriers facing the users of free antiretroviral treatment (ART) in Enugu State, southeast Nigeria and to provide policy relevant information towards addressing them.

1.2.1 Objectives

- 1) To determine the socio-economic and demographic characteristics of those using ART in Enugu State, southeast Nigeria
- 2) To determine factors that may be constraining access to ART in Enugu State
- 3) To determine the coping mechanisms of patients on ART in Enugu State
- 4) To inform policy on equity in access and uptake of free ART in Enugu State based on research findings.

1.3 Justification

Governments often introduce free services to reach poor and vulnerable groups but even if these services may not charge user fees, their use still imposes costs such as transportation, food expenditure, accommodation and loss of time (Meessen, Damme, Tashobya & Tibouti, 2006). The ability to afford these participation costs is part of the reason why the rich may benefit more from free services than the poor (Meessen *et al.*, 2006). Given that the poor face higher indirect (Witter, Ensor, Jowett & Thompson, 2000) and direct non health care costs as a proportion of their overall income¹ (Cleary, McIntyre & Boulle, 2006) and that rural areas in Nigeria have a higher HIV/AIDS prevalence than urban areas (Kombe *et al.*, 2007), there is a rationale for decentralizing free ART centers to rural areas where the poor mostly live. Perhaps evidence-based research is needed to demonstrate in quantitative terms² the relevance of extending ART centers to rural areas. The findings of this study may provide such evidence to sensitize policy makers to the need for targeting interventions.

¹ for example patient travel and time costs

² to politicians, policy makers, programme managers and development partners

2.1 Literature review

2.1.1 Health system in Nigeria

Nigeria is a federation with three tiers of government³ and the provision of health services in the public sector is the responsibility of the three tiers (Chankova, Nguyen, Chipanta, Kombe, Onoja & Ogungbemi, 2006). Primary health care is run by local governments, secondary by the states, while the tertiary is run by the federal government (Arodiogbu, 2005). On the other hand, the private health care sector (including physician practices, clinics, hospitals, and faith-based organizations (FBOs) also provides primary and secondary care while traditional doctors/herbalists provide care outside the modern health care system (Chankova *et al.*, 2006).

The Nigerian health sector is characterized by poor quality, inefficiencies and lack of appropriate targeting approaches for reaching the poor and vulnerable populations (Federal Republic Nigeria, 2002). There are frequent drug shortages, limited human resources⁴, limited managerial capabilities and lack of an enabling environment (FRN, 2002). The proportion of households residing within 10 kilometers of a health centre, clinic or hospital is 87% in southeast Nigeria. However, the physical existence of health facilities does not mean that they function - most of them lack essential supplies and qualified staff (World Health Organization, 2002).

³ federal, state, and local government

⁴ Despite the fact that Nigeria has one of the largest stocks of human resources for health in Africa. There are about 35,000 doctors and 210,000 nurses registered in the country and this translates into 28 doctors and 170 nurses per 100,000 population (Chankova *et al.*, 2006).

2.1.2 HIV/AIDS in Nigeria

In Nigeria, the HIV/AIDS pandemic is mainly taking its toll on the young and productive age groups with the majority of new infections occurring in those aged 15-29 (UNDP, 2004). High morbidity and mortality among this age groups may cause profound changes in the population structure of the country (UNDP, 2004) if the trend is not contained. Nigeria, the most populous country in Africa, is responsible for 10 per cent of the global AIDS burden and 20 per cent of that in Africa (UNDP, 2004).

However, there is reluctance to undertake voluntary HIV test due to social stigma associated with HIV/AIDS. Consequently, over 70 per cent of infected Nigerians are unaware of their status (UNDP, 2004). Research shows that 80 per cent of the HIV transmission in Nigeria is through sexual intercourse, unscreened blood transfusion accounts for 5% while mother to child transmission accounts for 15% (UNDP, 2004).

2.1.3 Economic Impact of HIV/AIDS

HIV/AIDS has the potential to create severe economic impacts in any country (Bollinger, Stover & Nwaorgu, 1999). These can manifest themselves through affecting the labour supply through the loss of young adults in their most productive years, as well as through direct⁵ and indirect⁶ costs that need to be borne by the economy (Bollinger *et al.*, 1999).

Also, there are impacts on the health system, for instance, approximately 1-2 per cent of hospital beds in teaching hospitals in Nigeria are occupied by AIDS patients

⁵ Include expenditure for medical care, drugs, and funeral expenses.

⁶ Lost time due to illness, recruitment and training costs to replace workers as well as time require to care for orphans.

(Bollinger *et al.*, 1999). This is challenging given that public spending per capita for health in Nigeria is less than US\$5 and can be as low as US\$2 in some parts of the country (WHO, 2006).

Hopefully, antiretroviral treatment provides large and significant socio-economic benefits to treated patients as they become healthier and productive due to ART (Goldstein *et al.*, 2008). Also there would be improvement in household nutrition because resources that would have been used for continued care could be used by households for their upkeep or invested in productive ventures (Goldstein *et al.*, 2008).

2.1.4 Provision of ARV services in Nigeria

Access to antiretroviral drugs by the poor has generated much debate (Cook, 2006). In low-income countries like Nigeria, access to care is an ongoing challenge, as services often do not reach the poor in rural areas (Moatti, N'Doye, Hammer, Hale & Kazatchkine, 2003). The Nigerian government has demonstrated a commitment to combat the HIV-epidemic by implementing antiretroviral treatment programs (Kombe *et al.*, 2004). At inception, the program provided ART in 25 sites across the country at a subsidized price (Kombe *et al.*, 2004). Under the programme, 10,000 adults and 5,000 children were to be treated (Kombe *et al.*, 2004). However, this quota is small compared to the estimated 1.5 million in need of treatment (Kombe *et al.*, 2004). Furthermore, evidence indicates that rural facilities are 75% less likely to provide ART as urban facilities; this is a concern since the majority of the Nigerian population lives in rural areas (Amanyaiwe *et al.*, 2008), and HIV-prevalence is also higher in these areas.

2.1.5 Socio-economic status and HIV/AIDS

Socioeconomic status (SES) is used to identify groups of people who share similar positions with relation to access to economic resources and social status

(Kolenikov & Angeles, 2004; Doocy & Burnham, 2006). Indicators of SES include education, health, employment status, housing conditions, access to services such as water, sewerage, and electricity, income, wage, home ownership and asset possession amongst others (Murthy, 2008). Although evidence is mixed on the relationship between SES and HIV, some studies indicate that people with lower literacy and from poor families are exposed to a higher risk of contracting HIV and that poverty might increase the likelihood of people engaging in risky behaviour (Murthy, 2008). For instance, poor women may exchange sex for money and might be less likely to insist on condom use (Murthy, 2008). It is also argued that households affected by HIV/AIDS may face catastrophic health expenditures that could decrease their SES (Murthy, 2008).

2.1.6 Social barriers and stigmatization

In Nigeria, cultural norms make it difficult for government, religious, and community leaders to discuss sexual matters and use of condoms (Goldstein *et al.*, 2008). Cases of discrimination against people living with HIV/AIDS (PLWHA) are common and involve mandatory, non-consensual HIV testing upon registration in antenatal clinics, breach of confidentiality and denial of care in public as well as private health facilities (Enugu State, 2003). PLWHA who attend medical facilities are either refused care or put through inhumane treatment to ensure protection of health care personnel (Enugu State, 2003). As a result, HIV positive individuals often refrain from accessing ART services for fear that their HIV status may be revealed (Murthy, 2008). The practice of mandatory testing results in some women preferring to give birth in traditional institutions that do not require an HIV test, thereby resulting in increased maternal mortality, infant mortality and increased risk for traditional birth attendants (Enugu State, 2003). It is argued that even where ART services are available, fear, and stigma associated with HIV/AIDS and human rights abuses of PLWHA contribute to ongoing reluctance for testing and treatment (Stewart, Padarath & Bamford, 2004)

2.1.7 Coping mechanism of HIV/AIDS patients

In low-income settings, coping with AIDS-related adult morbidity is challenging especially among households facing high levels of health and economic risk and limited ability to cope and maintain minimum levels of food consumption and well-being (Goldstein *et al.*, 2008). One of the consequences of HIV/AIDS on households is on household earnings (Murthy, 2008). Poor families have less financial capacity to deal with effects of morbidity and mortality than the rich families with saving and other assets to cushion impact of illnesses (Kyomuhangi, 2005). Often poor families resort to extreme measures like partial or full withdrawal of children from school and reductions in food consumption for household members (Goldstein *et al.*, 2008). Moreover, households in which adult members fall sick and become less able to work may be forced to rely on children to cope with the loss of income (Goldstein *et al.*, 2008).

Poor families rarely recover to their initial standard of living when productive household members fall sick or die especially when assets are sold to meet health related expenses and funeral costs (Kyomuhangi, 2005). At times to avoid sale of valuable resources like land or jewellery, debt is incurred and could lead to vicious cycle of social deprivation (Murthy, 2008).

3.1 Methods

3.1.1 Study area

The study will be conducted in Enugu State. The state is located in southeastern Nigeria with a population of 3,257,298 and a total area of 7,618 sq. km. (Federal Republic of Nigeria, Official Gazette 2007; <http://www.onlinenigeria.com/>). Enugu State was chosen for the study because, of the five southeastern states, Enugu

State has the highest HIV prevalence⁷ (Enugu State Health Strategy, 2008- 2013). The state is made up of 17 local government areas (LGAs). The administrative capital and metropolitan city is Enugu, which is made up of Enugu north, Enugu south and Enugu east LGAs. Most of the urban dwellers are civil servants, traders, transporters and artisans (Onwujekwe, Onoka, Uzochukwu, Obikeze & Ezumah, 2009a). On the other hand, most of the rural dwellers are subsistence farmers and petty traders (Ichoku and Fonta 2006). Enugu State is of Igbo ethnic group. English and Igbo are the common languages spoken (<http://www.onlinenigeria.com/links/enuguadv.asp?blurb=254>).

3.1.2 Study setting

In Enugu State, as of 2008, five public and four private hospitals provide ART (see list of ART centers in appendix 1). Of these, two facilities were purposively selected - one public (University of Nigeria Teaching Hospital (UNTH) and one private (Mother of Christ Specialist Hospital and Maternity (MCSH & M). UNTH was chosen because among the public hospitals, it is the only teaching hospital. UNTH⁸ is located at Ituku-Ozalla in Nkanu West LGA, about 30 kilometers outside the state capital. MCSH & M was chosen because it is the most centrally situated of the four private hospitals⁹ within the Enugu metropolis.

3.1.3 Data collection, ethic approval and analysis

Within each of these facilities, 120 patients will be interviewed about their socio-economic and demographic characteristics, factors constraining access and their coping mechanisms using interviewer-administered questionnaires. This is because one-on-one interviews are better for socially sensitive topics like

⁷ Abia [4.0], Anambra [4.2], Ebonyi [4.5], Enugu [6.5] and Imo [3.9] (FMoH, 2005)

⁸ UNTH was relocated from Enugu metropolis to its permanent site at Ituku-Ozalla in 2007.

⁹ MCSH & M is located near Ogbete Main Market in Enugu metropolis.

HIV/AIDS (Mack, Woodsong, MacQueen, Guest & Namey, 2005). The process will be an exit interview as patients come out of consultation room.

All patients will be provided with a brief introduction to the study, and a written information sheet. After this, written/signed informed consent will be obtained from patients willing to participate in the study. The interview will be administered in the language (English or Igbo) of the patient's choice.

Ethical approvals for the study was obtained from both the University of Cape Town (UCT) and the UNTH research ethics committees. For the MCSH & M, UCT ethical approval and a motivation letter will be used to secure a go-ahead from the management of MCSH & M. This is adequate since the hospital is private and may not require much protocol.

For objective 1¹⁰, in order to determine the socio-economic status of those using ART, principal component analysis (PCA) will be used to generate the asset-based index of socio-economic status (SES) (Filmer & Pritchett, 2001; Kolenikov & Angeles 2004). The standard economic measure of SES is based on monetary information such as income or consumption expenditure (Vyas & Kumaranayake, 2006). However, collection of accurate income and consumption data is problematic and can exclude income in kind (Uzochukwu & Onwujekwe, 2004b; Vyas & Kumaranayake, 2006). For this reason, the PCA approach will be used. PCA is a useful procedure in SES estimation and one of the traditional ways to aggregate several indicators into a single measure (Kolenikov & Angeles 2004). Information will be collected on ownership of household assets such as refrigerator, motorcar, air-conditioner, television (Filmer & Pritchett, 2001; Onwujekwe, Ojukwu, Uzochukwu, Dike Ikeme & Shu, 2005), and characteristics of household facilities (e.g toilet facilities and source of drinking water) (Kolenikov &

¹⁰ To determine the socio-economic and demographic characteristics of those using antiretroviral (ARV) treatments in Enugu State, southeast Nigeria

Angeles 2004; Filmer & Pritchett, 2001). The household assets will be changed into dichotomous variables before the factor score of each asset and the asset index of each sampled household will be computed (Tisayatikom et al undated). Households will be categorized into four quartile (most poor, very poor, poor and least poor) using the asset index (Onwujekwe, Uzochukwu, Eze, Obikeze, Okoli, & Ochonma, 2008). This methodology is coherent because average asset ownership differs across the households (Filmer & Pritchett 2001). In addition, World Bank has used the approach to assess socioeconomic status of household (Kolenikov & Angeles 2004).

Algebraically, the selected variables will be expressed as linear combinations of a set of components for each household (Filmer & Pritchett 2001) Then the asset index for individual i can be defined as:

$$A_i = \sum_k f_k \left[\frac{(a_{ik} - \overline{a_k})}{s_k} \right] \quad \text{Equation 1 (O' Donnell, Doorslaer, Wagstaff & Lindelow, 2008)}$$

Where:

f_k is the first score on the variable derived from the principal components analysis

a_{ik} is the value of asset k for household i

$\overline{a_k}$ is the sample mean

s_k is the sample standard deviation

STATA version 10.1 will be used in the analysis. STATA offers the user the opportunity of deriving eigenvectors (i.e weights) from either the correlation matrix or the co-variance matrix of the data (Vyas & Kumaranayake, 2006).

For the objectives 2¹¹ and 3¹², based on data collected, frequency and cross tabulation analysis will be carried out. Cross-tabulation involves taking two or more

¹¹ to determine factors that may be constraining utilization of antiretroviral treatment in Enugu State

¹² to determine coping mechanisms of ARV patients in Enugu State

variables and tabulating the results of one variable against the other variable. <http://www.csse.monash.edu.au/~smarkham/resources/crosstab.htm>. Finally, based on the findings from objectives 1, 2 & 3, objective 4 that involves informing policy on the equity in access and uptake of free ART in Enugu State will be addressed.

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PART B: LITERATURE REVIEW

1.1 Literature Review

This part reviews theoretical/conceptual, methodological and empirical literature of relevance to the general objectives of this thesis. Key issues explored include equity in health and the dimensions of access to health care, the potential coping mechanisms of HIV/AIDS patients, the measurement of socio-economic status and the socio-economic and demographic characteristics of HIV/AIDS patients in Nigeria.

1.1.1 Introduction

It is often argued that health is a basic human need which enables people to be productive members of society and to lead lives they have reason to value (Marmot, 2007). Health is therefore an important contributor to development and growth (Mackintosh, 2007). While the health care system is not the only contributor to health status or health outcomes, an important area of focus in the health equity literature is on access to health care. This draws attention to the minimum relevant range and quality of health services that ought to be available to the population, and the maximum levels of inconvenience and cost to be borne by patients in securing these services (Oliver & Mossialos 2004).

1.1.2 Equity in health or health care

In essence equity is about fairness in the distribution of goods, welfare, services etc (Mooney, 2007; Loeffler, 2006). In the health economics literature, equity is often defined in relation to health outcomes or the use of or access to health care services.

While there is a great deal of debate about how equity should be defined (McIntyre, 2007a), the literature identifies two important attributes of equity as:

- Equal opportunity of access to services; and
- Unequal distribution of services to meet unequal need (Almond, 2002)

These attributes conform to the principle that equals should be treated equally, and unequals treated unequally based on the relevant inequalities (Almond, 2002). This brings to focus the two approaches to equity: horizontal and vertical¹³ equity. Vertical equity has the potential to address inequalities¹⁴ while horizontal equity has potential to prevent inequalities occurring if conscientiously adhered to (Almond, 2002). Therefore, equity in health is aimed at addressing variations in health status by targeting resources where needs are greatest (Eaves, 1998).

Equity as a concept appeals to those who recognize that individuals and communities are disadvantaged not through choice¹⁵, but as a result of structural inequalities such as housing, employment, income and education (Almond, 2002). Equity in health care requires that all people benefit equally from health care services, irrespective of their socioeconomic status (SES), and place of residence (Chuma, Gilson & Molyneux, 2007). This study has therefore focused on the socioeconomic status of the users of ART services. However, while focusing on service users, the study is also concerned about how accessible the service is. Hence, given that equity depends on access to and uptake of the services provided (Eaves, 1998), a clear understanding of the concept of access to health care is necessary.

¹³ horizontal equity means equal treatment of equals while vertical equity, is the unequal but equitable treatment of unequals (Mooney & McIntyre, 2007)

¹⁴ vertical equity aims at improving health of the worst off in society at a faster rate than the rest of the population (Almond, 2002)

¹⁵ For instance people of lower socioeconomic status mostly live in rural/underserved areas and depend on publicly funded services (McIntyre *et al.*, 2007a; Onwujekwe *et al.*, 2009b; Panos, 2006)

1.1.3 Access to health care

In the earlier literature, access was seen in terms of two factors- money fees at the point of use, and distance¹⁶ (Mooney, 2009). More recently, access to health care has been defined as the ability to secure a specified set of healthcare services, at a specified level of quality, subject to a specified maximum level of personal inconvenience and cost, while in possession of a specified amount of information (Oliver & Mossialos 2004). Hence, access can be viewed as the ability, freedom or opportunity to use health care if it is needed (Ricketts & Goldsmith 2005; Thiede, Akweongo & McIntyre, 2007; McIntyre, Chitah, Mabandi, Masiye, Mbeeli & Shamu, 2007b; Mooney, 2009).

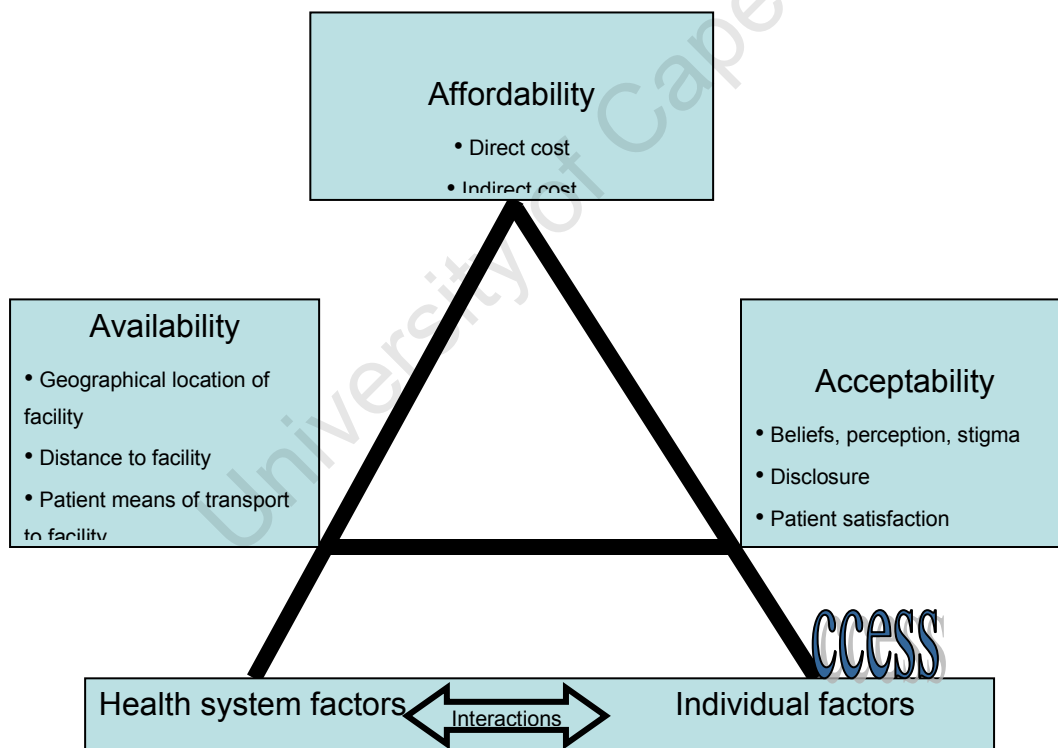
The definition above draws attention [of policy makers¹⁷] towards relevant factors for consideration such as range and quality of health care services, their convenience, time costs, financial costs of securing those services and information required to take advantage of those services (Oliver & Mossialos 2004). This acknowledges that there is a set of circumstances that allow for the use of appropriate health services (Thiede *et al.*, 2007). Access to appropriate health services requires empowerment and freedom to make informed decisions about use of health service (Thiede *et al.*, 2007; McIntyre *et al.*, 2007b; Mooney, 2009). Emphasis should be on the idea that promoting access as freedom to use health services equitably can only be realized if adequate information on health, information on appropriate health care responses and on the opportunities to use health services is effectively communicated across to users/communities (Thiede *et al.*, 2007).

¹⁶ These factors (user fees and distance) create inequalities in the use of health care services (McIntyre, 2007b).

¹⁷ Policy makers can shape access to suit specific circumstance (Oliver & Mossialos 2004)

Consequently, access to health care indicates “degree of fit” between the patient’s needs and the health system’s ability to meet those needs (Ricketts & Goldsmith, 2005). This “fit” could be measured across three dimensions¹⁸ and each of the dimensions captures specific interactions between the health system and individuals (Thiede *et al.*, 2007). These dimensions are argued to act as a starting point for empirically investigating access in a comprehensive way within specific country contexts and for developing health policy strategies that can address the access dimensions (Thiede *et al.*, 2007). The dimensions could be illustrated in three points of a triangle as an ‘A-frame’ (Thiede *et al.*, 2007) as shown in figure 1 below:

Figure 1: Conceptual framework for access dimensions to health care services



Source: Adapted from Thiede *et al.*, 2007; McIntyre *et al.*, 2007b

¹⁸ Availability, affordability and acceptability [these dimensions are referred to as physical access, financial access and cultural access respectively] (Thiede *et al.*, 2007)

The base or linkage lines below the triangle show that the dimensions are interrelated although dealing with distinct issues (Thiede *et al.*, 2007). Hence, the overall improvement of access to health care services using the 'A-frame' depends on the interaction between the health system and its patients/populace. For instance, one can assess whether availability constraints are due to the location of the facility relative to the distribution of the population or due to the type of services provided at the facility relative to the health needs of the local populace (Thiede *et al.*, 2007). Each of the above dimensions is further unpacked below.

1.1.3.1 Availability

Availability as an access dimension deals with the question of whether or not appropriate health services are available in the right place and at the time that they are needed. It includes physical location of and/or travel distance to the health facilities, relevant personnel, and ease of use of health services such as organizational factors like staffing, physical amenities, or opening hours¹⁹ (Akweongo, 2005; Ricketts & Goldsmith 2005; Thiede *et al.*, 2007).

Evidence shows that physical distance or location of health facilities constitute a barrier to health service use especially among the poor (Hamer, 2004; Goudge, Russell, Gilson, Molyneux & Hanson, 2009a). This is because people who live far away from facilities suffer greater disadvantage regarding use of services especially if they are poor and transport is expensive (Onwujekwe, 2005). In Nigeria, distance has not only been found to decrease utilization of health services, it is also a strong determinant of where people first seek for treatment (Onwujekwe *et al.* 2005; Onwujekwe *et al.*, 2008). Geographical location of health services in Nigeria appears to have followed the pattern of colonial administrative headquarters (Onwuchekwa, Uwowa & Ejenma, 2007). This means that health

¹⁹ Facility opening hours might be a major barrier to people in full-time employment (Cleary *et al.* 2008)

services in existence are physically out of reach of the rural areas and implies that health care services are not accessible to the bulk of the Nigerian population (Onwuchekwa *et al.*, 2007). For instance, empirical evidence shows that rural facilities are 75% less likely to provide ART²⁰ as urban facilities and this calls for concern since majority of the population lives in rural areas and coupled to that, the rural HIV-prevalence is higher (Kombe *et al.*, 2007; Amanyeiwe *et al.*, 2008). Further studies show that long waiting time is another problem patients face in accessing ART, for instance in Tanzania, Botswana and Uganda, the average waiting time spent by patient on ART at public facility were six, four and five hours respectively (WHO, 2006; Hardon, Dave, Gerrits, Hodgkin, Irunde, Kgatlwane *et al.*, 2006). In Uganda, the findings further indicate that ARV users may miss one working day per month in order to get ARV refills. This can be a problem especially for ARV users whose employers are unaware that they are HIV positive (Hardon *et al.*, 2006)

Therefore in order to bridge the gap in availability there is a need to address these constraining factors preventing users especially the poor from accessing public services (Castro-Leal, Dayton, Demery & Mehra, 1999). For instance in most countries health care facilities and practitioners are concentrated in urban areas where they provide tertiary level care but are relatively scarce in rural areas (Castro-Leal *et al.*, 1999). As such, it requires incentives to encourage practice in rural areas. Also targeting poor people or area-based programs should be considered especially where vulnerable groups are geographically concentrated. Obviously this is the most direct way of reducing disparities in health (Tamburlini, 2004).

²⁰ In Nigeria, as of 2006, there were about 74 treatment sites for HIV/AIDS and ART is delivered free to patients at the centers (Uzochukwu, Onwujekwe, Onoka, Okoli, Uguru & Chukwuogo, 2009).

1.1.3.2 Affordability

Affordability dimension is concerned with the cost of health care services in relation to the socioeconomic characteristics of the population seeking care (Akweongo, 2005). It encompasses costs of seeking care, households' ability to manage these costs and their impacts on household livelihoods (Gilson, 2007). Thus, affordability involves factors that are peculiar to both the household and the health system such as financing and capacity to use health care services (Akweongo, 2005).

Capacity to use and/or cost burdens differ between socio-economic groups and the poorer SES groups face a higher burden than the better-off group in relation to their ability to pay (Patcharanarumol, Mills & Tangcharoensathien, 2009; Panos, 2006). Studies in southeast Nigeria have found that even in the context of free ARV drugs, the cost of transportation and financial constraints constitute barriers such that treatment fails to reach the poor (Uzochukwu *et al.*, 2009; Onwujekwe *et al.*, 2009b). In the same vein, Panos (2006) observed that even if diagnosis, drugs and tests are free, poor people may not be able to access ART because of their inability to afford cost of transport to and from the treatment centre.

Poorest households are the most affected given that they have difficulties in accessing health care and when they do they often spend relatively more of their income on treatment than wealthier groups (Chuma & Molyneux 2009). This occurs not only because of income disparity but also because of location of health facilities. In Nigeria, for instance a higher proportion of the HIV positive individuals live in rural areas while treatment centres are mainly located in urban areas (Onwujekwe *et al.*, 2009b). This results in high cost of transport and accommodation since treatment at times involves overnight stay (Onwujekwe *et al.*, 2009b). In other developing countries like Ethiopia, India and Nepal treatment centers are so far from villages that it takes some people a week to access therapy and return home (Panos, 2006). In Malawi, for instance the poorest 20% of the

population travels a longer distance and incur higher transport costs to reach a treatment facility (WHO, 2008).

1.1.3.3 Acceptability

The acceptability dimension refers to the nature of service provision and how it is perceived by individuals and the populace (Thiede *et al.*, 2007). According to McIntyre *et al.* (2007a), acceptability refers to the attitudes of the providers and patients towards one another and how these attitudes interact. On a different perspective, Gilson (2007) views acceptability as the social and cultural distance between health care systems and their users. This implies patient-provider trust, that is the patient's judgment or belief that the provider acts in the patient's interest (Gilson, 2007).

However, acceptability may vary in response to cultural beliefs and the nature of the illness. The key issue is existence of mutual respect between health care providers and users of health services (Thiede *et al.*, 2007). Thus, the acceptability dimension influences the patient's decision to seek health care (Gilson, 2007). For instance, in Nigeria stigmatization associated with HIV and AIDS remains a formidable barrier (Health Reform Foundation of Nigeria, 2007). It not only affects the individual's access to health services but also their treatment by community, social, and religious groups (Adeokun, Okonkwo & Ladipo, 2006). Empirical evidence shows that some PLWHA travel from one state to another for ART, despite high costs of transport and accommodation mainly because of stigma and perhaps insufficient treatment facility (HERFON, 2007). This is also evident in a study of limitations to access and use of ART among HIV positive persons in Lagos, Nigeria, where about 25.6% were unwilling to seek ART at the nearest hospital because of fear of stigmatization (Adeneye, Adewole, Musa, Onwujekwe, Odunukwe, Araoyinbo *et al.*, 2006). Also in another study in 14 ART sites and five selected HIV Counseling and Testing (HCT) centres across the six geopolitical

zones of Nigeria only 36% of the respondents disclosed their status to their partners (HERFON, 2007). As such PLWHA are not only apprehensive of seeking care but also of taking their drugs in public for fear of being stigmatized (Uzochukwu *et al.*, 2009).

In a country like Niger republic, the government has funds to provide free ARV drugs for 4000 people but only 350 had come forward to receive the drugs (Panos, 2006). The issue is that people don't turn up at the treatment centers because of HIV-related stigma. Also in a three country study of Botswana, Tanzania and Uganda, users of ARV often decide to hide their HIV status from colleagues, friends and others due to fear of stigmatization (Hardon *et al.*, 2006). People merely avoid ART free centers/clinics because they fear that if they register others will learn they are living with HIV (Panos, 2006).

The challenge is a change of attitudes in communities in order to encourage PLWHA to seek care (UNDP, 2004). In Nigeria the predominant impression is that HIV infection is the result of deviant and/or stigmatized behavior such as sex work, sex outside marriage and promiscuity (Adeokun *et al.*, 2006). Therefore, there is need to involve religious and cultural²¹ groups in the campaign against the pandemic as they have significant influences in people's lives, decisions and actions they take (UNDP, 2004; Bariagaber, 2001). In addition given the peculiar characteristics of sub-Saharan African society, care for PLWHA in Africa requires the involvement of all members of the family and of community in which patients live (Filippi, Codazzi, Mbula, Rico, Klock & Caretta, 2002). This is because of existence of extended family system (Akukwe, 2005) and the fact that stigma is culturally specific and operates at multiple levels (Nyblade & Carr, undated). Hence, meeting with influential people, community leaders, faith-based leaders, health care workers, media, police, judiciary (Nyblade & Carr undated; Filippi *et al.*, 2002) are important to boost sensitization. There is also need to mobilize the

²¹ Nigeria citizens have diverse religious and cultural backgrounds (Nasidi & Harry 2006)

community to combat stigma and discrimination through education and information. Studies indicate that HIV related stigma is best tackled through community mobilization, advocacy, and by encouraging the HIV positive community to actively oppose stigmatization (WHO, 2002; Porter, Chuma & Molyneux, 2009). This was demonstrated in Tanga, Tanzania where about 500 people marched against stigma on people with HIV (<http://stories.usaid.gov>). Therefore, there is need to act where we can (Coburn & Coburn 2007) at least to encourage uptake of free ARV by PLWHA.

1.1.4 Impact and coping mechanisms of HIV/AIDS patients

An adult with AIDS within a family has the potential to compromise the household's resources as the income generating capacity is reduced, medical expenses increase and the income of both the infected individual and caregiver is lost (Chuma *et al.*, 2007; Okorosobo, 2000). Thus, expenditure on health affects household's budget and often leads households to adjust their consumption (Russell, 2005). As such people in lower SES suffer more and the situation could lead to poverty, deprivation, vulnerability and adverse coping mechanisms such as selling of assets (Onwujekwe *et al.*, 2009b).

In sub Saharan Africa, the low and irregular income of poorer households and lack of a safety net results in a greater catastrophic impact on poorer households than on richer families (Prakongsai, Palmer, Uay-Trakul, Tangcharoensathien & Mills, 2009). This is because their incomes are usually seasonal and linked to subsistence farming and petty trading (Onwujekwe *et al.*, 2009a). Further, treatment costs are unpredictable and coupled with other associated barriers. Households' resilience can be adversely affected thereby limiting their ability to cope (Porter *et al.*, 2009).

Coping strategies often adopted by households may be classified as cost prevention²² and cost management²³ (Patcharanarumol *et al.*, 2009). The cost prevention strategy, however, can result in health outcomes of death and disability (Patcharanarumol *et al.*, 2009) particularly in the case of HIV/AIDS. Studies show that the most common strategies for coping with direct²⁴ medical care costs are through using savings, borrowing²⁵ from friends or relatives, reducing household expenditure²⁶, sale of assets, sale of livestock, ornaments, contributions and gift from known persons (Kabir, Rahman, Salway & Pryer, 2000; Vaishnavi & Dash 2009; Patcharanarumol *et al.*, 2009). Literature further indicates that social networks including family, neighbours, and friends are important means of coping although they provide limited amounts of funds and are not a reliable source (Onwujekwe *et al.*, 2009a). In many cases, the individuals turned to are of a similar SES to those seeking support (Chuma & Molyneux, 2009). Moreover, there is fear that asking for help will lead to gossip and loss of self dignity (Chuma & Molyneux, 2009). As a result, households turn to other sources of support such as Rotating Savings and Credit Association, social networks²⁷, moneylenders etc (Chuma & Molyneux 2009). Generally, the ease with which households cope with illness

²² not seeking care, delayed treatment, care without cost

²³ use of savings, sale of assets, non-cash payment, borrowing, get support from kin and neighbours, delay payment to providers i.e temporary arrangement which allows one time to earn cash and pay later without interest (Patcharanarumol *et al.*, 2009)

²⁴ Direct illness costs are defined as all expenditure linked with treatment seeking including transport (Goudge, Russell, Gilson, Gumede, Tollman & Mills, 2009b)

²⁵ Households try to cope with costs by borrowing on a short-term basis but get into debt traps in the long run, (Vaishnavi & Dash, 2009)

²⁶ Poorer households cut back expenditure for food and education for children - withdraw children from private school to public one because the tuition fees in public are cheaper (Prakongsai *et al.*, 2009)

²⁷ Membership of voluntary groups, often highly vulnerable households may only access small amounts of money from their networks because most are either in the same situation or are worse off economically (Chuma & Molyneux 2009).

costs is determined in part by their resilience and/or vulnerability²⁸ (Porter *et al.*, 2009).

1.1.5 Defining and measuring socio-economic status

Studies show that socio-economic status determines many individual and household decisions such as health seeking, family planning, number of children, relocation decisions, etc (Kolenikov & Angeles 2004). Therefore understanding and/or determining the effects of socioeconomic status on health is important for policy makers especially in developing countries, where limited resources constrain use of existing health care services (Fotso & Kuate-Defo, 2005).

Socio-economic status (SES) has been defined as “the relative position of a family or individual on a hierarchical social structure, based on their access to or control over wealth, prestige and power” (Shavers, 2007, p. 1013). Alternatively, it has also been defined as “a broad concept that refers to the placement of persons, families and households with regards to the capacity to create or consume goods that are valued in society.” (Shavers, 2007, p. 1013).

SES is a multi-faceted concept that is believed to capture many of the aspects of relative position and achievements of an individual or a household in the society (Kolenikov & Angeles 2004). The crux of socio-economic status in many studies of health economics is based on differences or inequalities that reflect or are the consequences of an underprivileged position (Coburn & Coburn 2007). As such socioeconomic position is measured based on educational attainment, occupational characteristics, income/expenditures capacity, accumulated wealth/living conditions, health insurance, or residence in geographic areas with particular social or economic conditions (Braveman, 2006). These indicators

²⁸ Household vulnerability is seen as the capacity to cope with illness costs without long term damage to assets and impoverishment (Chuma & Molyneux 2009)

strongly influence health of individuals and populations (Arredondo & Orozco, 2007). Thus, SES concept is an attempt to capture an individual's or group's access to basic resources required to achieve and maintain good health (Shavers, 2007; Kolenikov & Angeles, 2005).

Although some might argue that household income or expenditure is the best proxy of SES, there are several methodological difficulties inherent in obtaining accurate financial data from respondents (Shavers, 2007; Worrall, Basu, & Hanson, 2002). Often people may be unwilling to disclose financial data and what they do disclose may be biased (Worrall *et al.*, 2003). Also collecting detailed income or expenditure information may be prohibitively time consuming and costly, and results may be influenced by seasonal income flows (Worrall *et al.*, 2002).

Consequently, a more recent approach to ascertaining socio-economic status is the use of an asset index²⁹ because it is less subjective or prone to recall bias in comparison to other approaches³⁰. For instance asking people about the assets they own is not as sensitive and/or invasive as asking them how much income they earn (Akweongo, 2005; Worrall *et al.*, 2002). Further, because in developing countries subsistence farming forms bulk of staple food and data on cash incomes is not common and even if available they are often unreliable as it is subject to recall bias (Akweongo, 2005).

In this study asset index approach was chosen for determination of study subject SES since the majority of the Nigerian population belongs to the informal sector and so does not earn salary (Onwujekwe, 2005). Further data for asset indices are easy to collect and are also an indication of long-term command over resources (O'Donnell *et al.*, 2008; Okorafor, 2009). Therefore, the use of asset index in this study is appropriate. However, while the asset index approach might be useful,

²⁹ based on household assets ownership

³⁰ Like income, expenditure and consumption.

there is little guidance in the literature as to which variables to include. Often choice of variable is dependent on importance of the indicator/variable for the populations and outcomes under study (Shavers, 2007).

The next section further develops these ideas through a review of the empirical literature on the SES and demographic characteristics in relation to HIV/AIDS in Nigeria.

1.1.5.1 Socio-economic and demographic characteristics of HIV/AIDS patients in Nigeria

In Nigeria it is argued that poverty plays a major role in the spread HIV (Ezeokana, Nnedum & Madu, 2009; UNDP, 2004). Poverty creates circumstances that make people more vulnerable to HIV and drastically worsen the conditions of people already infected (Ezeokana *et al.*, 2009). For example, lower socioeconomic groups are the most adversely affected by HIV/AIDS due to illiteracy, poverty, poor access to health care, and poor access to mass media information or sex education (Ezeokana *et al.*, 2009; UNDP, 2004; Development Policy Consult, undated). Indeed, people who are income-poor are also health-poor (Deaton, 2003).

In Nigeria, HIV prevalence rates differ among various age groups and in the different geographical regions (Entonu & Agwale, 2007). However, the pandemic is taking its greatest toll on the young and productive age groups with the majority of new infections occurring in those aged 15-29 (UNDP, 2004). Of this age group, women are more vulnerable than men and constitute the most vulnerable group (UNDP, 2004). This could be attributed to certain social and cultural practices, fear, stigma, low access to education, and their lower-income generating capacity (UNDP, 2004; Nasidi & Harry 2006; Onwuliri & Jolayemi, 2006). Overall, the pandemic strikes adults aged between 25 and 45, the years in which adults tend to

have the greatest role as family breadwinners (UNDP, 2004). Obviously, the high morbidity and mortality among these age groups will cause profound changes in the population structure of the country (UNDP, 2004), if the trend is not contained.

1.1.6 Conclusion

Access to health care is the ability, freedom or opportunity to seek care as and when necessary notwithstanding economic or place of residence. Socio-economic status determines and/or influences access to health care services and by implication engenders disparity in health care seeking. Therefore, in order to ensure equity in access to health care services especially to underserved areas, the most direct way may be through targeting or area-based programs. Evidently, SES is not the only fault line of health care inequity. There are other dimensions that influence access to health care services such as gender, religion, level of education, medical schemes status etc, although they are beyond the scope of this study.

PART C: MANUSCRIPT OF AN ARTICLE FOR A PEER REVIEWED JOURNAL

Socio-economic status and barriers to the use of free antiretroviral treatment for HIV/AIDS in Enugu State, southeast Nigeria

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Among Nigeria's 140 million people, about three million are living with HIV/AIDS and only 10% of those in need of antiretroviral treatment (ART) have access to it. Free antiretroviral treatment centers are mainly situated in urban areas in spite of the higher prevalence of HIV and AIDS in rural areas. This study examined socioeconomic status, demographic characteristics and the access barriers faced by the users of free antiretroviral treatment in Enugu State.

The study was cross sectional and descriptive. The study sites were purposively chosen. Data were collected from 240 people living with HIV/AIDS (PLWHA) using an interviewer administered questionnaire. Information on socioeconomic and demographic characteristics, barriers to and coping mechanism for accessing free ART were obtained.

High cost of transport, stigma and long waiting hours were found to be major hindrances to accessing ART. PLWHA spend an average of 3.39 hours at the clinic during their monthly appointment. Own savings and financial support from relatives were the main coping mechanism used for accessing free ART. Access to ART amongst SES group shows higher transport cost burden on the most poor while the effect of stigmatization appeared to be felt by all socioeconomic groups.

In order to ensure equity in access to ART, there is a need to consider mechanisms that might enhance access for the rural poor such as mobile ART clinics. Advocacy against HIV and AIDS related stigma is crucial if HIV/AIDS interventions are to achieve their desired outcomes. Concerted effort is required from government, non-governmental agencies, communities and religious groups in the campaign against HIV/AIDS related stigma.

Keywords: access, AIDS, antiretroviral treatment, barriers, Enugu, HIV, Nigeria, socioeconomic status

University of Cape Town

Introduction

The first case of human immune-deficiency virus (HIV) was reported in Nigeria in 1986 and as of 2006, 2.9 million people from age 0-49 are living with HIV (Ojini & Coker, 2007; Amanyeiwe, Laurel, Aneesa, Taye, Mehta-Steffen, Valdenebro *et al.*, 2008). According to the Nigeria Federal Ministry of Health (2005), HIV/AIDS is one of the leading causes of death in adults aged 15-49 and has been reported in nearly all parts of the country (Kombe, Galaty & Nwagbara, 2004). Of Nigeria's 2.9 million HIV-positive people, only 10% of those in need of antiretroviral treatment have access to it (Kaiser Daily HIV/AIDS Report, 2007).

It is often argued that health is a basic human need, which enables people to participate in society and to lead lives they have reason to value (Marmot, 2007). Health is therefore an important contributor to development and growth (Mackintosh, 2007). While the health care system is not the only contributor to health status, an important area of focus in the health equity literature is on access to health care. This draws attention to the minimum relevant range and quality of health services that ought to be available to the population, and the maximum levels of inconvenience and cost to be borne by patients in securing these services (Oliver & Mossialos, 2004). Equitable access to health care services therefore suggests that all in need should benefit equally from health care services, irrespective of their socioeconomic status (SES), and place of residence (Chuma, Gilson & Molyneux, 2007).

In the earlier literature, access was primarily viewed in terms of two factors - money fees at the point of use, and distance¹ (Mooney, 2009). More recently, access to health care has been viewed as the “degree of fit” between the patient’s needs and the health system’s ability to meet those needs (Ricketts & Goldsmith, 2005). This “fit” could be measured across three dimensions² and each of the dimensions captures specific interactions between the health system and individuals (Thiede, Akweongo & McIntyre, 2007). These dimensions are argued to

act as a starting point for empirically investigating access especially for developing health policy strategies that can address these access barriers (Thiede *et al.*, 2007), including with reference to their socioeconomic dimensions.

In Nigeria, poverty plays a major role in the spread of HIV because conditions of poverty create circumstances that make people more vulnerable to HIV and the socioeconomic status of those who are infected can also be worsened (UNDP, 2004; Ezeokana, Nnedum & Madu, 2009). For example, lower socioeconomic groups are the most adversely affected by HIV/AIDS due to illiteracy, poverty, poor access to health care, poor access to mass media information or sex education (UNDP, 2004; Ezeokana *et al.*, 2009; Development Policy Consult., undated).

Officially selected public sector facilities and faith-based organizations (FBO) provide free antiretroviral treatment (ART) mainly in urban areas in Nigeria despite the higher prevalence in rural communities (Amanyeiwe *et al.*, 2008, Kombe *et al.*, 2007). The limited numbers of facilities in urban areas also raises questions of their accessibility, particularly to the poor.

Given this background, this study focused on determining the socio-economic and demographic characteristics of those using free ART and challenges they face. Findings from the study may provide evidence to assist in better targeting ART to those in need.

Methods

Study area

The study was conducted in Enugu State. The state is located in southeastern Nigeria with population of 3,257,298 and total area of 7,618 sq. km. (Federal Republic of Nigeria, Official Gazette, 2007). Enugu State was chosen for the study because, of the five southeastern states, Enugu State has the highest HIV prevalence³ (Enugu State Health Strategy, 2008). The state is made up of 17 local government areas (LGAs). The administrative capital and metropolitan city is Enugu, which is made up of Enugu north, Enugu south and Enugu east LGAs. Most of the urban dwellers are civil servants, traders, transporters and artisans (Onwujekwe, Onoka, Uzochukwu, Obikeze, & Ezumah, 2009). On the other hand, most of the rural dwellers are subsistence farmers and petty traders (Ichoku & Fonta, 2006). Enugu State is of Igbo ethnic group. English and Igbo languages are the popular means of communication (<http://www.onlinenigeria.com/links/enuguadv.asp?blurb=254>).

Study design

The study design was cross-sectional. Cross-sectional is adequate for this study because it is most convenient⁴ in assessing the health care needs of population and suitable for collecting personal and demographic characteristics (Bonita, Beaglehole, Kjellstrom, 2006).

As of 2008, five public and four private mission hospitals provide free ART in Enugu State (see list of ART centers in appendix 1). The study was conducted in one public - University of Nigeria Teaching Hospital (UNTH) and one private - Mother of Christ Specialist Hospital and Maternity (MCSH & M). Both hospitals were purposively selected. UNTH was chosen because among the public hospitals, it is the only teaching hospital. UNTH⁵ is located at Ituku-Ozalla in Nkanu

West LGA, about 30 kilometers outside the state capital. MCSH & M was chosen because, of the four private hospitals, it is more centrally situated⁶ within Enugu metropolis than others. Each of the chosen sites administers free ART to HIV-positive patients.

Data collection method and ethics approval

Pilot study was conducted to refine the questionnaire. 120 patients (PLWHA) were interviewed in each of the two facilities using interviewer administered questionnaires⁷. This is because one-on-one interviews are better for socially sensitive topics like HIV/AIDS (Mark et al., 2005). HIV/AIDS patients on ART willing to participate in the study were interviewed until the desired sample size of 120 in each facility was reached. English and Igbo questionnaires were used depending on the choice of respondent.

At UNTH, HIV/AIDS patients were interviewed as they came out of doctor's consulting room. Selecting patients at MCSH & M was more complex given that the facility does not have a separate clinic day or ART unit or specific doctor for HIV/AIDS patients. According to the management, this approach has been taken to make it difficult for people to determine who is on ART therapy due to the stigma attached to HIV/AIDS. The exit interview was therefore conducted as patients came out from nurse's section where they register and have their routine medical checks. Nurses on duty check patients' CD4 count and record other vital signs of the patient. Patients who have complaints or want to see the doctor were asked to wait otherwise patients were directed to the pharmacy to collect their drugs.

During the interview, data on socio-economic, demographic characteristics, factors constraining use, and coping mechanisms were elicited from the users of free antiretroviral treatment at both study sites.

All patients were provided with a brief introduction to the study, a written information sheet and gave written informed consent. The interview was also administered in the language (English and Ibo) of the patient's choice by the principal researcher, who is also fluent in both languages. On average, each interview lasted for 20 minutes over a two week period at each hospital. The questionnaires were checked daily for wrong entry and omission by principal researcher at the close of day before embarking on another interview on the next day. Ethical approvals for the study were obtained both from the University of Cape Town (UCT) and the UNTH research ethics committees. For the MCSH & M, UCT ethical approval and motivation letter were used to secure a go-ahead from the management of MCSH & M. This is adequate since the hospital is private and does not need much protocol.

Data management and analysis

The questionnaires were crosschecked daily for wrong entry or omission at the close of each day. EpiData software was used to capture data from the questionnaires. EpiData was chosen because it is user friendly and can export data in formats readable by most statistical database or spreadsheet packages (Bennett, Myatt, Jolley & Radalowicz, 2001).

Data from both sites (UNTH and MCSH&M) were pooled together. Socioeconomic status (SES) was measured using an asset index approach as described by Filmer & Pritchett (2001). While some might argue that the gold standard proxy for SES would be household income or consumption expenditure (Vyas & Kumaranayake, 2006), the collection of these data is problematic (Vyas & Kumaranayake, 2006) and may exclude income in kind (Uzochukwu & Onwujekwe 2004). Hence, SES asset index was chosen in preference to standard economic measure.

This was computed using principal components analysis to summarize the common variation across asset/facilities data collected during the exit interview

(radio, TV, car, motorcycle, flush toilet, pit toilet etc)⁸ (Filmer & Pritchett, 2001; Kolenikov & Angeles, 2004). In the PCA analysis, assets that are correlated and unequally distributed between households are given more weight while assets with low deviations receive low weight (Vyas & Kumaranayake, 2004). Thus, assets/variables that capture inequality between respondents are included so that problems of clumping and truncation⁹ could be avoided (Vyas & Kumaranayake, 2004).

First principal components with eigenvalue greater than one (see appendix B) were used to generate SES asset index (Onwujekwe, Uzochukwu, Eze, Obikeze, Okoli, & Ochonma, 2008; Vyas & Kumaranayake 2006). The SES was categorized into quartiles (4) - most poor, very poor, poor and least poor using the asset index¹⁰ (Onwujekwe, 2005). The resulting index achieved equally spaced quartiles and a respectable 30% of the common variation in SES was explained by the first component.

The factors constraining access to ART and the coping mechanisms employed by users of ART were then assessed relative to socioeconomic status using frequency and cross tabulations. All analysis was conducted in STATA version 10.1 (STATA Corporation, 2008).

Results

Of the 240 respondents, 67.5% were female (Table 1a). The mean age of the respondents was 36 years, 46.7% were within the age range of 30-41 years, and 50.4% were married. In terms of schooling, 44.2% had secondary school education and 27.1% had primary school education. The main occupations of the respondents were petty trading (21.3%), artisan (20.0%) and government worker (19.2%). Radio (81.7%) was their most common portable household asset followed by TV (53.7%) and fridge (31.7%). See appendix A.

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Table 1a: Demographic and socioeconomic characteristics of respondents

	n(%) n=240
Gender of respondents	
Male	78 (32.5)
Female	162 (67.5)
Age of respondents [mean (sd)]	
Age category of respondents	
18-29	62 (25.8)
30-41	112 (46.7)
42-53	55 (22.9)
54-65	11 (4.6)
Marital status	
Married	121 (50.4)
Never married/single	66 (27.5)
Divorced	6 (2.5)
Widowed	47 (19.6)
Highest education level attained	
Primary	65 (27.1)
Secondary school	106 (44.2)
University	60 (25.0)
No formal education	9 (3.8)
Occupation of respondents	
Government worker	46 (19.2)
Employed in private sector	16 (6.7)
Petty trading	51 (21.3)
Big business	25 (10.4)
Farmer (subsistence)	14 (5.8)
Unemployed	40 (16.7)
Artisan	48 (20.0)

Using an SES index computed for the entire sample, it was possible to compare the SES of the users of ART in the different facilities. At MCSH&M ART center in Enugu metropolis, the least poor group (i.e. the wealthiest) comprised 27.5% of the sample in comparison to 24.2% in the most poor group, while in UNTH ART center, 30 kilometers away from Enugu metropolis, this pattern was reversed with the most poor and least poor comprised 25.8% and 22.5% respectively. The analysis of SES was also conducted according to the place of residence of the respondent. Patients coming from Enugu metropolis were more likely to be

wealthy, with the least poor SES group comprising 40% of the sample while the most poor were 5.1%. The reverse is the case for respondents living in Enugu State but outside Enugu metropolis where 5.1 times more respondents were from the most poor group in comparison to the least poor group. Overall, the chi-square test shows that the means of the quartiles were statistically significant: $\chi^2 = 54.099$ (p-value = 0.000) see table 1b.

Table 1b: Socio-economic status by facility and place of residence

	Most poor Q1 (60)	Very poor Q2 (60)	Poor Q3 (60)	Least poor Q4 (60)	Ratio of Q1/Q4
SES by facility					
MCSH&M	29(24.2)	30(25.0)	28(23.3)	33(27.5)	0.9
UNTH	31(25.8)	30(25.0)	32(26.7)	27(22.5)	1.1
Place of residence by SES					
Enugu metropolis	5(5.1)	21(21.4)	33(33.7)	39(39.8)	0.1
Communities within Enugu	41(42.3)	29(29.9)	19(19.6)	8(8.3)	5.1
States apart from Enugu State	14(31.1)	10(22.2)	8(17.8)	13(28.9)	1.1
Chi-square(p-value) 54.099(0.000)					

Table 2a, shows that the majority of respondents (86.3%) come to the clinic by public transport with a mean transport cost of US\$3.94 per visit. These transport costs were highest for the most poor at US\$5.48 per visit (table 2c). On average respondents spent 3:39 hours at the clinic during each visit. On availability and/or affordability constraints, 32.5% and 23.3% of respondents indicated that the high costs of transport and long waiting hours were their major concerns (Table 2a). The majority of the respondents (80.4%) thought that the clinics needed to employ more medical personnel (doctors/nurses) in order to reduce waiting time (Table 2a).

The coping mechanism for accessing ART by the respondents were mainly own saving (44.2%), financial support from relatives (31.7%) and salary (18.3%) see table 2a.

Table 2a: Availability/affordability constraints to use of free ART

	N (%) n=240
Mode of transport to clinic	
Public transport	207 (86.3)
Personal vehicle	7 (2.9)
Chartered taxi	0 (0.0)
Okada(motorcycle transport)	18 (7.5)
Walked	6 (2.5)
Friend/relative car	2 (0.8)
Waiting hours at the clinics-Mean(SD)	3.39 (1.6)
Major hindrance to receiving ART treatment	
High cost of transport	78 (32.5)
Stigmatization	76 (31.7)
Long waiting hours	56 (23.3)
Traveling long distance	21 (8.8)
Weakness	1 (0.4)
Permission from office	3 (1.3)
Nothing	5 (2.0)
Coping mechanism	
Own saving	106 (44.2)
Salary	44 (18.3)
Loan	9 (3.7)
Sold household asset	5 (2.1)
Sold family land	0 (0.0)
Financial support from relatives	76 (31.7)
Employer's financial support	0 (0.0)
Others	0 (0.0)
Patient's file is often misplaced –mean (SD)	4 (1.7)
Employ more medical personnel-mean (SD)	193 (80.4)

Table 2b further unpacks these hindrances by place of residence. As would be expected, high costs of transport are particularly problematic for those traveling from outside Enugu state to access ART while the long waiting hours are viewed as more of a barrier by those living in Enugu metropolis. Interestingly, stigma is clearly more of a barrier in Enugu metropolis (49%) compared to communities outside the Enugu metropolis (18.6%) and states apart from Enugu State (22.2%).

Table 2b: Hindrance by place of residence

	Enugu metropolis	Communities within Enugu	States apart from Enugu State
Hindrance by place of residence			
High cost of transport	13(13.3)	44(45.4)	21(46.7)
Stigmatization	48(49.0)	18(18.6)	10(22.2)
Long waiting hours	28(28.6)	23(23.7)	5(11.1)
Traveling long distance	4(4.1)	10(10.3)	7(15.6)
Weakness	1(1.0)	0(0.0)	0(0.0)
Permission from office	2(2.0)	0(0.0)	1(2.2)
Nothing	2(2.0)	2(2.0)	1(2.2)

When analyzing the coping mechanisms by SES, the use of own savings showed no pattern, however, the most poor (30.3%) depended on financial support from relatives more than the least poor (19.7%) see table 2c.

Table 2c: Availability/affordability constraints to use of free ART

	Most poor (60)	Very poor (60)	Poor (60)	Least poor (60)	All
Mean cost of transport by SES (one-way)	₦406(US\$2.74)	₦279(US\$1.89)	₦205(US\$1.39)	₦274(US\$1.85)	₦291(US\$1.97)*
Mode of transport by SES					
Public transport	56(27.1)	51(24.6)	51(24.6)	49(23.7)	
Personal vehicle	0(0.0)	0(0.0)	1(14.3)	6(85.7)	
Chartered vehicle	0(0.0)	0(0.0)	0(0.0)	0(0.0)	
Okada (motor cycle transport)	2(11.1)	6(33.3)	5(27.8)	5(27.8)	
Walked	2(33.3)	2(33.3)	2(33.3)	0(0.0)	
Friend/relative car	0(0.0)	1(50.0)	1(50.0)	0(0.0)	
Hindrance by SES					
High cost of transport	30(38.5)	26(33.3)	11(14.1)	11(14.1)	
Long waiting hours	12(21.4)	11(19.6)	17(30.4)	16(28.6)	
Traveling long distance	5(23.8)	4(19.1)	5(23.8)	7(33.3)	
Weakness	0(0.0)	0(0.0)	0(0.0)	1(100.0)	
Permission from office	1(33.3)	0(0.0)	1(33.3)	1(33.3)	
Nothing	0(0.0)	1(20.0)	2(40.0)	2(40.0)	
Coping mechanism by SES					
Own saving	25(23.6)	27(25.5)	28(26.4)	26(24.5)	
Salary	8(18.2)	6(13.7)	15(34.1)	15(34.1)	
Loan	1(11.1)	5(55.6)	0(0.0)	3(33.3)	
Sold household asset	3(60.0)	0(0.0)	1(20.0)	1(20.0)	
Financial support from relatives	23(30.3)	22(28.9)	16(21.1)	15(19.7)	

* Exchange rate of ₦148/US\$1 as at June, 2009

From the view point of acceptability as one of the access variables, the results show that 91.3%, and 31.7% of respondents indicated long queues to see doctors at the clinics and stigmatization respectively as the major hindrances to the use of free ART (Table 2a & 3a). Further analysis shows that stigmatization affects the non-poor [i.e. least poor (28.9%) and poor (31.6%)] more than the poor [i.e. most poor (15.8%) and very poor (23.7%) see table 3b]. One finding of interest is that those with higher SES were more likely to list stigma as their major hindrance to accessing ART while those in lower SES were more likely to list high cost of transport as their major hindrance. However, this does not mean that stigma does not affect the poor; one needs to bear in mind that this question asks for only the major hindrance. However, 92.9% and 76.7% of the respondents agreed that patient information is kept confidential and that they are treated with respect. This was confirmed by more than half of the respondents (62.9%) who agreed that they are satisfied with service at the clinic.

Table 3a: Acceptability constraints to free ART

	n(%)n=240
Long queue to see doctor/nurse at the clinic	
Agree	219(91.3)
Disagree	18(7.5)
Don't know	3(1.2)
Patient information is kept confidential	
Agree	223(92.9)
Disagree	2(0.8)
Don't know	15(6.3)
Satisfaction with service at the clinic	
Very satisfied	73(30.4)
Satisfied	15(62.9)
Neither satisfied nor dissatisfied	5(2.1)
Dissatisfied	1(0.4)
Very dissatisfied	0(0.0)
Don't know	10(4.2)
Some staff Do Not treat patient with sufficient respect	
Agree	42(17.5)
Disagree	184(76.7)
Don't know	14(5.8)
Comments on the ART clinic experience by respondents	
Some nurses are harsh on patient	0(0.0)
Some doctors are harsh on patient	0(0.0)
Hospital workers are not friendly to patient	1(0.4)
ARV drug is not always available	0(0.0)
Treatment/drug is effective	18(7.5)
Create awareness for ART	5(2.1)

Table 3b: Acceptability by SES/facility

	Most poor (60)	Very poor (60)	Poor (60)	Least poor (60)
Stigmatization	12(15.8)	18(23.7)	24(31.6)	22(28.9)
Satisfaction of ART service by SES				
Very satisfied	17(23.3)	20(27.4)	17(23.3)	19(26.0)
Satisfied	42(27.8)	38(25.2)	38(25.2)	33(21.8)
Neither satisfied nor dissatisfied	1(20.0)	1(20.0)	2(40.0)	1(20.0)
Dissatisfied	0(0.0)	0(0.0)	0(0.0)	1(100.0)
Very dissatisfied	0(0.0)	1(10.0)	3(30.0)	6(60.0)
Patient information is confidential by SES				
Agree	57(25.6)	58(26.0)	54(24.2)	54(24.2)
Disagree	1(50.0)	0(0.0)	0(0.0)	1(50.0)
Don't know	2(13.3)	2(13.3)	6(40.0)	5(33.3)
Patient information is confidential by facility	MCSH&M	UNTH		
Agree	107(48.0)	116(52.0)		
Disagree	0(0.0)	2(100.0)		
Don't know	13(86.7)	2(13.3)		
	Chi2(p-value) 10.429(0.005)			

Discussion

From this cross sectional study of 240 respondents (PLWHA) in two ART clinics in Enugu State southeast Nigeria, high cost of transport, stigma and long waiting hours were identified as the major barriers to accessing antiretroviral treatment (ART). SES analysis shows that the burden of transport cost is higher for the most poor while the effect of stigmatization is higher on the non poor than the poor, particularly those living in Enugu metropolis. The finding is further highlighted by geographic disparity in access to ART centers between the most poor and least poor socio-economic groups. SES analysis by facility shows that a higher proportion of the relatively wealthier group (least poor) had access to services at the facility located within Enugu metropolis and respondents from communities outside of the metropolis were far more likely to be poor than those from within the metropolis. The least poor/better off groups have more advantage of access as most of the ART centers are in urban and peri-urban areas while a large number of HIV positive individuals reside in rural communities (Onwujekwe, Dike, Chukwuka, Uzochukwu, Onyedum, Onoka & Ichoku 2009b).

In Nigeria HIV/AIDS is a stigmatized disease and the perception is that the infected person has lived a deviant lifestyle (Adeokun, Okonkwo & Ladipo 2006; Hilhorst, Van Liere, Ode, DeKoning 2006; HERFON, 2007). In some communities or villages in Nigeria local leaders deny cases of AIDS because of stigma, so that their community/village would not be derided (Hilhorst *et al.*, 2006). Consequently, fear of stigma hinders uptake of free ART (Hilhorst *et al.*, 2006). Some studies have argued that PLWHA travel farther to access ART in order to hide their identity. Even if ART were locally available, the high cost of transport could still pose a sizeable barrier to the most poor. The average monthly cost of transport incurred by respondents is quite high especially given that more than two thirds (64.4%) of the Nigerian population lives below the poverty line of US\$1 per day (Hagopian, Ofosu, Fatusi, Biritwum, Essel, Hart *et al.*, 2005; Adedigba, Naidoo, Abegunde, Olagundoye, Adejuyigbe & Fakande, 2009).

The main strength of this study is the finding that the burden of transport costs is higher for the poor than the non poor while stigmatization affects the non poor more than the poor. The transport cost burden is not surprising as the poor live farther from ART centers. In terms of stigmatization, studies show that stigma is perpetrated in diverse ways - at home, community, work place, even by religious organizations (Skinner & Mfecane, 2004; Nyblade & Carr, undated). Stigma affects health by threatening an individual's psychological and physical well-being (Carr & Gramling, 2004). The fear of stigma is overwhelming, that on diagnosis, the infected person is more concerned with psycho-social issues that accompany the disease which often affect access to health care (Carr & Gramling, 2004). Although stigma may not be perceived as a health-system problem, health systems can reduce stigma depending on the provider's approach to patients (Travis, Bennett, Haines, Pang, Bhutta, Hyder *et al.*, 2004; Skinner & Mfecane, 2004).

A further key finding in this study is the respondents' satisfaction with ART services and their affirmation that patient information is kept confidential. This could indicate changing attitudes of health care workers in comparison to earlier findings of reluctance and hesitation to have direct contact with AIDS patients for risk of infection on the part of health workers and fear that medical personnel will divulge confidential information on the part of patients (Adebajo, Bamgbala & Oyediran, 2003; Holzemer & Uys, 2004; Skinner & Mfecane, 2004). However, this may be treated with caution, as acceptance by one ART clinic may not guarantee the same from others (Carr & Gramling, 2004).

The study confirms that PLWHA spend long hours at clinics and that the vast majority of the respondents were of the view that the facilities should hire more staff. This finding highlights the perennial health system problem in Nigeria: employment and remuneration. Inadequate numbers of medical personnel and use of part time medical practitioners especially by private not-for profit/faith-based organization providers in Enugu State and Nigeria in general contribute to weak service and patients waiting for long hours at clinics (Amanyeiwe *et al.*, 2008). A

study in Uganda reported similarly that users of ART miss one working day per month in order to get ARV refills which constitutes a barrier to ongoing adherence to lifelong treatment (Hardon, Dave, Gerrits, Hodgkin, Irunde, Kgatiwane *et al.*, 2006; Posse, Meheus, vanAsten, vanderVen & Baltussen, 2008). On the other hand, poor remuneration makes medical personnel unwilling to take up appointment from public or private not-for profit providers. This finding points to a need to increase the salaries of health workers (Lerberghe, Conceicao, Damme, & Paulo, 2002). This is necessary, as poorly remunerated workforce is unlikely to be a productive one (Schneider, Blaauw, Gilson, Chabikuli & Goudge, 2006).

In this study two key coping mechanism adopted by respondents were the use of their own savings and financial support from relatives. In interpreting these findings, it should be borne in mind that the latter in particular can be unreliable and of limited amounts (Onwujekwe *et al.*, 2009b). The use of salary is negligible as the respondents are mainly artisan, petty trader and unemployed, which by rule of thumb places them among the two-thirds of Nigerians living below the poverty line (Adedigba *et al.*, 2009). It is not surprising that loans are not often used as stigmatization affects HIV patient's chances of borrowing (Adedigba *et al.*, 2009). For instance in one community in Benue State Nigeria, many people thought it would be unreasonable to lend money to someone living with HIV/AIDS, since they are faced with much expenditure and unlikely to pay back the loan before they die (Hilhorst *et al.*, 2006). This calls for financial/economic empowerment of the populace as sustainable sources of income are vital to improving access to ART (Sangowawa, Owoaje, Faseru, Uchendu, Ekanem, & Ebong, 2005).

In this study, there are more females than males, which is consistent with findings that women in sub-Saharan Africa access antiretroviral treatment more than men perhaps due to preponderance of heterosexual transmission in Africa (Ojini and Coker, 2007; WHO, 2008; Keiser, Anastos, Schechter, Balestre, Myer, Boule *et al.*, 2008). This is also in keeping with studies that have argued that because women are more likely than men to seek care for reproductive and child health at

clinics, their access to HIV-testing and ART could be better than men (Muula, Ngulube, Siziya, Makupe, Umar, Prozesky *et al.*, 2007; Braitstein, Boulle, Nash, Brinkhof, Dabis, Laurent *et al.*, 2008 ; Keiser *et al.*, 2008; WHO, 2008; Onwujekwe *et al.* 2009b). In addition, it may be because men are more economically empowered than women and prefer to seek treatment in private facilities (Keiser *et al.*, 2008, Onwujekwe *et al.*, 2009b)

This study has some limitations, among which is the inability to support the study with qualitative data (specifically focus group discussions with respondents). This could not be achieved because respondents do not live close to the facilities and are always in haste to leave the ART centers as soon as possible. It was difficult to collect respondents weekly food expenditure as most complain eating more due to ARV drug induced hunger and as such may not give coherent account of their expenditure. Another limitation is the small sample size.

Qualitative research is required to tease out issues that could not be covered in this study due to the use of quantitative close-ended questionnaire. In future research in depth interview with key health workers will be vital. There is also need to explore why men lag behind women in accessing free ART. This will ensure that both genders have fair access to treatment programs.

Policy Implications

- There is need for advocacy against stigma. It may entail context specific initiatives that involve traditional rulers, communities, religious groups etc in the campaign against stigma (Dimbundu, Nduhura, Hadjipateras & Bajenja, 2004; Thomas, 2006).
- Targeted delivery of ART services based on estimates of HIV disease burden is necessary especially to rural or underserved areas in order to increase access for people of lower socioeconomic status. This may be achieved by providing functional basic health care facilities to accommodate ART services (Onwujekwe *et al.*, 2008; Onwujekwe *et al.*, 2009b).
- Employment of more medical personnel is necessary to reduce long waiting times at the ART clinics. It would also be beneficial to address financial and non-financial (e.g housing allowance, preferential training opportunities) and other incentives for improving retention and morale of health workers. Such incentives should be structured to attract health workers even to rural areas (HERFON, 2007; McIntyre *et al.*, 2007a McIntyre, 2007b; Fried, 2007).
- Given the high cost of transport and the length of time spent at the clinic, consideration should be given to reducing the frequency of visits to the clinics for patients who are stable and responding well to treatment.

Conclusion

It is important to recognize and embrace antiretroviral treatment of HIV-infected people as a critical prevention strategy if the demographic, economic, geographic, and social consequences of the pandemic are to be contained (Amoroso, Davis, & Redfield, 2002). Factors influencing access to ART are diverse and context specific; however much can be done now to keep the epidemic from getting worse (Posse, Meheus, VanAsten, VanderVen & Baltussen 2008; Bollinger, Stover & Nwaorgu, 1999). Unless stigma is conquered, HIV and AIDS interventions may not achieve their desired outcomes (Holzemer & Uys, 2004).

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Endnotes

1. These factors (user fees and distance) create inequalities in the use of health care services (McIntyre, 2007b).
2. Availability, affordability and acceptability [these dimensions are referred to as physical access, financial access and cultural access respectively (Thiede *et al.*, 2007)]
3. Abia [4.0], Anambra [4.2], Ebonyi [4.5], Enugu [6.5] and Imo [3.9] (FMoH, 2005).
4. Relatively easy and inexpensive to conduct.
5. UNTH was relocated from Enugu metropolis to its permanent site at Ituku-Ozalla in 2007.
6. MCSH & M is located near Ogbete Main Market, Enugu. For clarity, both sites are not a proxy for rural-urban assessment/comparison of ART access rather the thesis examines access to free ART using the A-frame-availability, affordability and acceptability as shown in the literature review.
7. The principal researcher/investigator administered the questionnaires hence there was no need for further training in questionnaire administration as he is already conversant with the questionnaire.
8. Radio, TV, phone, fridge, gas cooker, iron, fan, motorcycle, car, lantern, flush toilet, pit toilet, bush, safe water, stream and well. Collecting asset and housing facility data is easier and offers a more feasible way of assessing living standards (O'Donnell *et al.*, 2008).
9. Clumping arises when households are grouped in small number of different clusters while truncation makes it difficult to distinguish between poor and the very poor (Vysa & Kumaranayake, 2004).

10. Asset index is a proxy measure for assessing living standards or socioeconomic status with reference to long-term command over resources (O'Donnell *et al.*, 2008:80).

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Appendix A: PCA/Asset index

```
. pca etricity radio tv phone fridge iron fan car lantern genset tricfan sfwater
stream kero firewood kitchen ftoilet pitoilet bush, mineigen(1)
```

```
Principal components/correlation      Number of obs   =      240
                                      Number of comp. =        5
                                      Trace            =       19
Rotation: (unrotated = principal)     Rho              =    0.6658
```

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	5.74025	3.33298	0.3021	0.3021
Comp2	2.40727	.522046	0.1267	0.4288
Comp3	1.88522	.426536	0.0992	0.5280
Comp4	1.45868	.300833	0.0768	0.6048
Comp5	1.15785	.162539	0.0609	0.6658
Comp6	.995312	.115954	0.0524	0.7181
Comp7	.879358	.223201	0.0463	0.7644
Comp8	.656158	.0493719	0.0345	0.7990
Comp9	.606786	.076227	0.0319	0.8309
Comp10	.530559	.0271313	0.0279	0.8588
Comp11	.503427	.0427569	0.0265	0.8853
Comp12	.46067	.0665261	0.0242	0.9096
Comp13	.394144	.0292342	0.0207	0.9303
Comp14	.36491	.0670511	0.0192	0.9495
Comp15	.297859	.0301011	0.0157	0.9652
Comp16	.267758	.0749486	0.0141	0.9793
Comp17	.192809	.021839	0.0101	0.9894
Comp18	.17097	.140962	0.0090	0.9984
Comp19	.0300086	.	0.0016	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
etricity	0.2647	-0.1852	-0.0485	-0.0864	-0.0128	.4997
radio	0.1374	-0.1829	0.3341	0.0128	0.2352	.5363
tv	0.2828	-0.1470	0.2691	0.0385	0.1395	.3276
phone	0.2419	-0.1841	0.1489	-0.0629	0.3061	.4265
fridge	0.2646	0.0626	0.1687	0.1744	-0.0735	.4843
iron	0.3039	-0.1576	0.1158	0.0356	0.1069	.3698

fan		0.2884	-0.2070	0.0707	0.0277	0.2110		.3572
car		0.1880	0.3352	0.1765	0.0795	-0.1977		.4134
lantern		-0.1617	-0.3603	0.0162	0.4095	0.0244		.2916
genset		0.1689	0.3960	0.1538	-0.3671	0.0695		.212
tricfan		0.1382	0.3566	0.0649	-0.3089	0.2126		.3848
sfwater		0.2530	-0.0592	-0.3787	-0.1004	-0.2119		.2871
stream		-0.2108	0.0472	0.3677	0.1122	0.2735		.3797
kero		0.2851	-0.0805	-0.3593	-0.0078	0.1250		.2563
firewood		-0.3069	0.0409	0.3332	0.0257	-0.1145		.23
kitchen		0.1829	0.2950	0.1799	0.3358	-0.1468		.3478
ftoilet		0.2345	0.2162	0.0063	0.4704	-0.2102		.1977
pitoilet		-0.0387	-0.3018	0.2995	-0.4347	-0.4049		.1375
bush		-0.2098	0.2005	-0.2109	0.0619	0.5497		.2112

predict f1

(score assumed)

(4 components skipped)

Scoring coefficients

sum of squares(column-loading) = 1

Variable	Comp1	Comp2	Comp3	Comp4	Comp5
electricity	0.2647	-0.1852	-0.0485	-0.0864	-0.0128
radio	0.1374	-0.1829	0.3341	0.0128	0.2352
tv	0.2828	-0.1470	0.2691	0.0385	0.1395
phone	0.2419	-0.1841	0.1489	-0.0629	0.3061
fridge	0.2646	0.0626	0.1687	0.1744	-0.0735
iron	-0.3039	-0.1576	0.1158	0.0356	0.1069
fan	0.2884	-0.2070	0.0707	0.0277	0.2110
car	0.1880	0.3352	0.1765	0.0795	-0.1977
lantern	-0.1617	-0.3603	0.0162	0.4095	0.0244
genset	0.1689	0.3960	0.1538	-0.3671	0.0695
tricfan	0.1382	0.3566	0.0649	-0.3089	0.2126
sfwater	0.2530	-0.0592	-0.3787	-0.1004	-0.2119
stream	-0.2108	0.0472	0.3677	0.1122	0.2735
kero	0.2851	-0.0805	-0.3593	-0.0078	0.1250
firewood	-0.3069	0.0409	0.3332	0.0257	-0.1145
kitchen	0.1829	0.2950	0.1799	0.3358	-0.1468
ftoilet	0.2345	0.2162	0.0063	0.4704	-0.2102
pitoilet	-0.0387	-0.3018	0.2995	-0.4347	-0.4049
bush	-0.2098	0.2005	-0.2109	0.0619	0.5497

```

. xtile assetindex=f1, nq(4)
. label define assetindex 1"most poor" 2"very poor" 3"poor" 4"least poor"
. label values assetindex assetindex
. tab assetindex
4 quantiles |
      of f1 |      Freq.      Percent      Cum.
-----+-----
most poor |          60       25.00       25.00
very poor |          60       25.00       50.00
   poor |          60       25.00       75.00
least poor |          60       25.00      100.00
-----+-----
      Total |         240      100.00

```

Appendix B: Household asset ownership

	n(%)n=240
Household asset ownership	
Radio	196(81.7)
TV	129(53.7)
Gas cooker	5(2.1)
Motorcycle	32(13.3)
Car	17(7.1)
Fridge	76(31.7)
Air conditioner	0(0.0)
Generator	13(5.4)
Household toilet facility	
Flush toilet	53(22.1)
Traditional pit toilet	85(35.6)
Ventilated pit toilet	36(15.0)
Bush	66(27.5)

PART D: POLICY BRIEF

Socioeconomic status and barriers to the use of free antiretroviral treatment for HIV/AIDS in Enugu State, southeast Nigeria

1.1 Background

In Nigeria, the HIV/AIDS pandemic is taking its greatest toll on the young and productive age groups (UNDP, 2004). As of 2006, 2.9 million people from age 0-49 are living with HIV, and AIDS has claimed about 220,000 lives (Amanyewe *et al.*, 2008). The federal ministry of health (2005) affirmed that HIV/AIDS is one of the leading causes of death in adults aged 15-49 and has been reported in all the 36 states and federal capital territory (Kombe *et al.*, 2004).

In Enugu State the prevalence rate of HIV/AIDS rose from 1.3% in 1992, to 6.5% in 2005 (FMoH, 2005). Enugu State has the fourth highest prevalence in Nigeria and the highest out of the southeastern states³¹ (Enugu State, 2003, FMoH, 2005). A situation analysis of HIV/AIDS in Enugu State puts the prevalence of HIV in Achi, a rural community in Enugu State at 13.6% (Enugu State, 2003), thus confirming higher prevalence of HIV/AIDS in rural communities in Nigeria (Kombe *et al.*, 2007).

Government has recently committed to the fight against the pandemic by providing free antiretrovirals to people living with HIV/AIDS (Kombe *et al.*, 2004). Although governments often claim to provide services to reach the poor or underserved, in reality it is often the rich that benefit (Gwatkin *et al.*, 2004). In Enugu State there are about nine free ART centers, most of which are located in urban and peri-urban areas (Onwujekwe *et al.*, 2009) (see appendix 1). This study focused on

³¹ Abia (4.0), Anambra (4.2), Ebonyi (4.5), Enugu (6.5) and Imo (3.9) [FMoH., 2005]

determining the socioeconomic status, demographic characteristics and the access barriers faced by the users of free antiretroviral treatment in Enugu State.

1.2 Purpose of the study

1. To determine the socio-economic and demographic characteristics of those using antiretroviral (ARV) treatment in Enugu State, southeast Nigeria
2. To determine factors that may be constraining use of antiretroviral treatment (ART) in Enugu State
3. To determine coping mechanisms of patients on ART in Enugu State
4. To inform policy on equity in access and uptake of free ART in Enugu State based on research findings.

1.3 Major findings

- High cost of transport, HIV/AIDS related stigma and long waiting hours were major constraints faced by PLWHA in Enugu State.
- The most poor group bears higher costs of transport while the effects of HIV/AIDS related stigma are more on the least poor
- The use of household savings and financial support from relatives were the main coping mechanisms used by PLWHA in accessing free ART.
- There is a need to improve geographical access/availability of ART centers to rural communities in order to bridge the inequality gap in access between the poorest and the richest.

1.4 Policy recommendations

1.4.1 Stigma

- There is need for political and community involvement in advocacy against HIV and AIDS related stigma. Advocacy could start from state governor, state house of representatives, judiciary, local government chairmen, traditional rulers and presidents of town unions. It is envisaged that advocacy emanating from these quarters could lead to a change of attitude towards HIV and as such create an enabling environment for uptake of free ART even at nearer centers. The strategy may control some PLWHA traveling from one state to another for ART because of stigma (HERFON, 2007)
- It is also important to involve religious and cultural groups in advocacy against HIV and AIDS related stigma since religion and culture have significant influences on people's lives, decisions and actions they take (UNDP, 2004, Bariagaber, 2001, Nasidi & Harry, undated)

1.4.2 Human resource shortages

- There is a need to employ more medical personnel to address the problem of long waiting times at clinics by patients. Obvious solutions could be to increase remuneration and other financial incentives in order to attract and retain medical personnel.
- There is a need to explore the possibility of delivery of ART via mobile clinics³² to rural communities (WHO, 2004), pending availability of basic infrastructure³³ to sustain its delivery in rural health facilities.

³² Study shows that mobile health clinics have reduced geographical barriers to accessing health services for people living in underserved areas (CREHS policy brief July, 2009).

1.4.3 Access barriers for the poor

- Essentially, if access to health services were distributed according to need, the poor would come first (Gwatkin *et al.*, 2004). Therefore, given that high costs of transport constrain access to ART services especially to the poor, there is need to direct ART intervention towards the poor rather than the entire population (Population Reference Bureau, 2004; Gwatkin, Bhuiya & Victora, 2004).
- Government and/or policy makers should recognize that individuals and/or communities are disadvantaged not through choice³⁴, but as a result of structural inequalities such as housing, employment, income and education (Almond, 2002). Hence, in view of equity in health, people ought to benefit from health interventions irrespective of their socioeconomic status (SES), and place of residence (Chuma *et al.*, 2007).

In conclusion, the fight to reduce HIV related stigma in Enugu State and Nigeria in general is necessary in order to encourage uptake of free ART otherwise other efforts will have limited effect. With national and international support and environment responsive to effective HIV/AIDS treatment there should be no barriers to access to ART for those who need it most (Mukherjee *et al.* 2003)

It is also important to note that HIV/AIDS pandemic in the Enugu State/Nigeria cannot be contained without free ART services reaching the poor.

³³ such as qualified medical personnel and physical facilities

³⁴ For instance people of lower socioeconomic status mostly live in rural/underserved areas and depends on publicly funded services (McIntyre *et al.*, 2007a, Onwujekwe *et al.*, 2009, Panos, 2006)

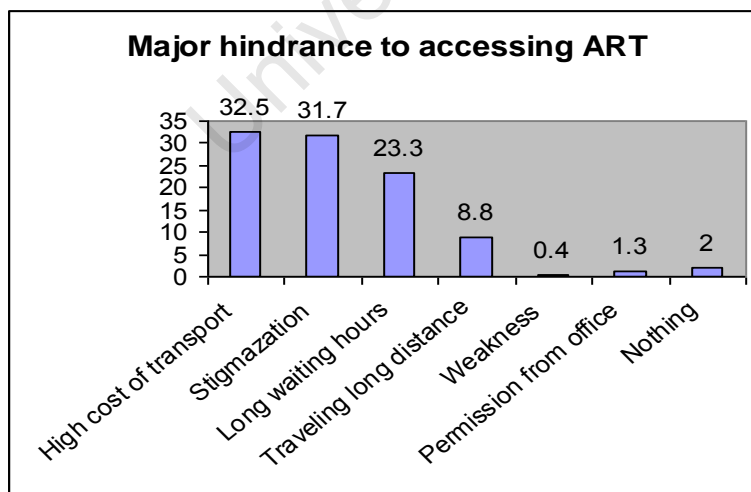
APPENDICES

Appendix 1: ART centers in Enugu State

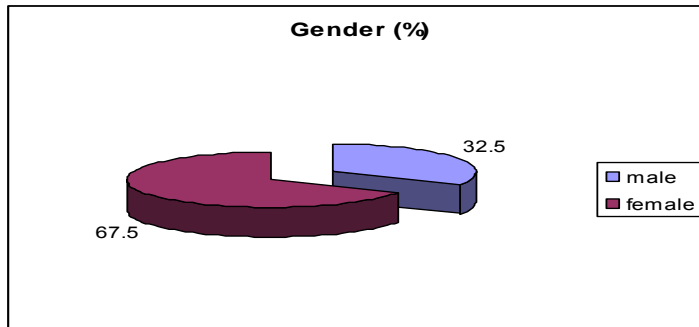
	Name of facility	Location	LGA	Address	Type
1	Annunciation Specialist Hospital	Emene	Enugu East	Emene, Enugu	Private
2	University of Nigeria Teaching Hospital, Nsukka	Ituku	Nkanu West	Ituku-Ozalla	Public
3	Bishop Shanahan Hospital	Nsukka	Nsukka	Nsukka	Private
4	Ntasi Obi Ndi No n'Afufu Specialist Hospital	Enugu	Enugu East	Trans-Ekulu, Enugu	Private
5	District Hospital, Agbani	Agbani	Nkanu West	Agbani	Public
6	District Hospital Enugu Ezike	Enugu Ezike	Enugu Ezike	Enugu Ezike	Public
7	82 Div Nigerian Army Hospital Enugu	Enugu	Enugu North	Enugu North	Public
8	District Hospital Udi	Udi	Udi	Udi	Public
9	Mother of Christ Specialist Hospital and Maternity	Enugu	Enugu North	Ogbete Enugu	Private

Source: NACA ,2000-2008.

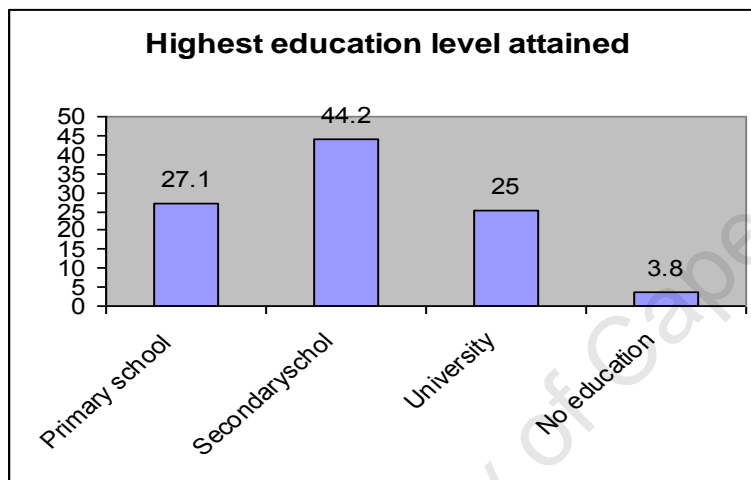
Appendix 2: Major hindrance to accessing ART in Enugu State



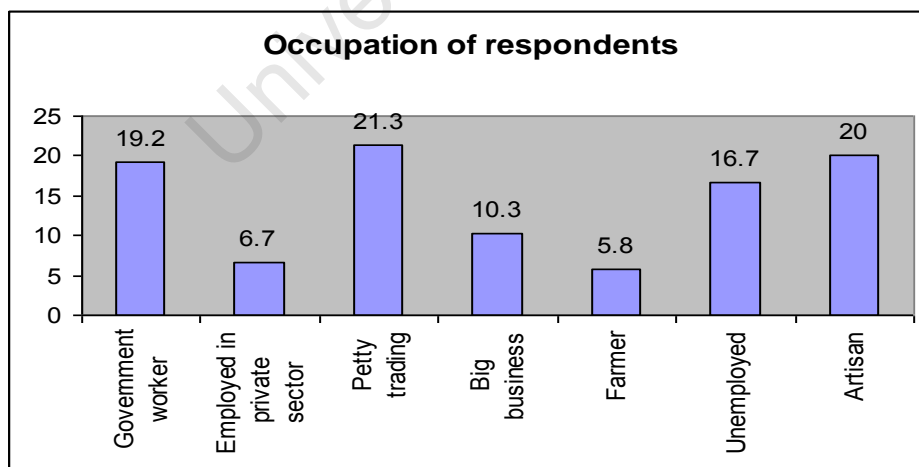
Appendix 3: Gender of respondents



Appendix 4: Highest education level attained



Appendix 5: Occupation of respondents



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PART E: QUESTIONNAIRE/DATA CAPTURE INSTRUMENTS

Appendix A: Ethical considerations

1.1 Ethics Clearance

A number of steps were taken to ensure the study meets key ethical principles in health research and practice. Obviously some are generic while others pertain to the specific nature of this particular study.

1.2 Fair selection of participants

This study used an exit interview process to select participants as they come out of the doctor's consultation room. This is to ensure that equal opportunity is given to patients since the researcher/principal investigator does not determine who goes into the consultation room.

1.3 Informed consent and voluntary participation

Participation in the study was voluntary. All participants were informed (verbally and through the written consent form) that participation is voluntary. Thereafter, informed consent was obtained in writing from each participant. In addition, participants have right to withdraw from the study at any time without any reprisals whatsoever.

Participants were provided with general description of the study both verbally and in writing as part of the consent form. All written information (informed consent and participant information leaflet) were in English since it is the most commonly understood language beside Ibo. However, questionnaire was also translated into Ibo language in case any participant may not be fluent in English. After explanation, participant was given the opportunity to ask questions. After which signed authorization was obtained.

1.4 Benefit versus risks

There is no known risk which participants may be exposed to by participating in the exit interview. In addition, information obtained from participants was in confidence and will not be used against participants in any form. Code numbers was used on all the questionnaires to assure participants of resolve to maintain anonymity and confidentiality as much as possible. In addition, data analysis and presentation from the survey will be aggregate and will not reveal participant's identity. Furthermore, the principal investigator will manage and secure all the data.

The interviewer also explained to participants that the study is not only meant for academic purposes but will help in finding ways to address the challenges faced by people living with HIV/AIDS in accessing ART.

1.5 Independent review

Permission to conduct the study was sought from the University of Cape Town and University of Nigeria Teaching Hospital, research ethics committee.

Appendix B: Motivation letter

Request to conduct study on socio-economic status and barriers to the use of free antiretroviral treatment for HIV/AIDS in Enugu State, southeast Nigeria

My name is Chijioke Ifeanyi Okoli, a student at the University of Cape Town, South Africa. I am pursuing a Masters degree in Public Health specializing in Health Economics.

I wish to conduct study on socio-economic status and barriers to the use of free antiretroviral treatment for HIV/AIDS in Enugu State, southeast Nigeria. This is in fulfillment of the requirements for award of the Masters in Public Health (MPH) at the University of Cape Town, South Africa. However, the study may be helpful to policy makers, since it is aimed at investigating barriers/challenges users of free antiretroviral treatment face in Enugu State, southeast Nigeria and to provide policy relevant information toward addressing them.

This letter therefore seeks your permission to allow me access to patients using free antiretroviral treatment in the hospital.

I undertake to ensure confidentiality and anonymity of all participants. I will not use Information obtained against any participant. In addition, data analysis and publication from this study will be in aggregate and will not reveal the identity of any participant. Patient participation will be voluntary and participants have right to withdraw at any point.

Attached is my study protocol.

Thank you in advance.

Yours faithfully,
Chijioke Ifeanyi Okoli

Appendix C: Exit interview information sheet for patient on free ART

Introduction: I am a student of the University of Cape Town, South Africa. I am conducting study on socio-economic status and barriers to the use of free antiretroviral treatment for HIV/AIDS in Enugu State, southeast Nigeria. This is in fulfillment of the award of a Masters in Public Health (MPH). In addition, the study may provide relevant information to enable policy makers understand and address challenges/barriers users of antiretroviral treatment face in Enugu State.

Voluntary nature of participation: It is totally up to you whether or not you are interviewed. It is your right to refuse to be interviewed and this will not impact on the care that you receive in any way. I am not a staff of this hospital and so if you do not agree to be interviewed I will not be able to influence the care that you get in any way.

If you do agree to be interviewed, you are free to stop the interview at any time. If you don't want to answer any of the questions that you are asked you can just tell me and that will not be a problem in any way. The interview will take between 15 to 20 minutes.

Study procedure: You will be asked questions about your socio-economic status, demographic characteristics, challenges/barriers you encounter while receiving the treatment and your coping mechanisms. You will be interviewed using an interviewer- administered questionnaire.

Risks: There is no known risk, which you will be exposed to by participating in the study.

Confidentiality: The information that you give in the interview will be kept confidential. I am not a staff of this hospital/clinic, will not report what you said to anyone who works at the hospital/clinic.

At the end of the research project I will write up a report. This report will include information that you have given to me, but your name will not be used. No one, apart from me (the researcher) will know that it was you who gave information that you did.

Do you have any question about this?

Would you agree to be interviewed today?

If YES:

I am very pleased that you have agreed to be interviewed. Although answering this questionnaire will not provide you with any immediate benefit, I expect that the information you provide will inform future decisions to improving access to ART in Enugu State and Nigeria in general.

You now need to sign a consent form, which states that I have explained to you the purpose of this research, that you have understood this, and that you agree to be interviewed.

Feedback: You can always reach the researcher/interviewer: Mr Chijioke Ifeanyi Okoli on +27 78 173 2229 or at the University of Cape Town, School of Public Health and Family Medicine, Health Economics Unit, Anzio Road, Observatory. 7925, South Africa.

Appendix D: Exit interview consent form for patients on free ART

I have been informed about the project: ***Socio-economic status and barriers to the use of free Antiretroviral treatment for HIV/AIDS in Enugu State, southeast Nigeria*** and I understand that it is up to me whether or not to be interviewed.

I understand that there will be no consequences of any kind through my responding to this questionnaire; in particular, there will be no impact on the care that I receive in this hospital.

I understand that I can ask the interviewer to stop the interview at any time.

I understand that the information that I give will be treated in confidence and that my name will not be used when the data are analyzed.

Yes, I give my permission for the interview

Respondent's signature

Date


Interviewer's name (please print)

Interviewer's signature

Date

Appendix E: UCT Ethics approval letter

UNIVERSITY OF CAPE TOWN



Health Sciences Faculty
Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • Facsimile [021] 406 6411
e-mail: lamees.emjedi@uct.ac.za

3 November 2008

REC REF: 434/2008

Mr CI Okoli
Health Economics Unit
Public Health & Family Medicine

Dear Mr Okoli

PROJECT TITLE: SOCIO-ECONOMIC STATUS AND BARRIERS TO THE USE OF ANTIRETROVIRAL TREATMENT FOR HIV/AIDS IN ENUGU STATE, SOUTHEAST NIGERIA: AN EXPLORATORY STUDY.

Thank you for submitting your study to the Research Ethics Committee for review.

It is a pleasure to inform you that the Ethics Committee has **formally approved** the above-mentioned study.


Approval is granted for one year till the 15th November 2009.

Please submit an annual progress report if the research continues beyond the expiry date. Please submit a brief summary of findings if you complete the study within the approval period so that we can close our file.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the REC. REF in all your correspondence.

Yours sincerely



PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS

Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

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4. What is your major source of income (occupation)? [yes = 1 no = 0]

- 4a. Government worker []
- 4b. employed in private sector []
- 4c. farmer (subsistence) []
- 4d. petty trading []
- 4e. big business []
- 4f. unemployed []
- 4g Artisan []

5. What is your current marital status? [yes = 1 no = 0]

- 5a. married []
- 5b. never married []
- 5c. divorced []
- 5d. widowed []

SECTION 3 Factors constraining use of free antiretroviral treatment

This section is designed to help understand challenges you face while receiving the antiretroviral treatment (such as transport, distance, long waiting hours, stigma).

6. Where is your place of residence? (Interviewer record as applied) [yes=1 no=0]

- 6a Enugu metropolis []
- 6b Communities within Enugu State []
- 6c States apart from Enugu State []

7. How did you get here today? [yes = 1 no = 0]
- 7a. public transport []
 - 7b. personal vehicle []
 - 7c. chartered tax []
 - 7d. okada (motorcycle transport []
 - 7e. walked []
 - 7f. friend/relative car []
8. How much do you spend on transport (one-way) to keep today's appointment? [] naira
9. How long did you spend at the clinic last time you came to collect your ARV drugs/appointment? [] hours
10. What is your major hindrance to receiving the antiretroviral treatment?[yes=1 no=0]
- 10a high cost of transport []
 - 10b stigmatization []
 - 10c long waiting hours []
 - 10d traveling long distance []
 - 10e weakness []
 - 10f permission from office []
 - 10g nothing []

Sub-section 3: Hospital experience

This section is designed to help understand your experience about the hospital and the treatment. For each statement, please tell me the extent to which you agree or disagree:

11. The queues to see doctor or nurse are too long at this hospital [yes = 1 no = 0]
- 11a. agree []
- 11b. disagree []
- 11c. don't know []
12. Patient information is kept confidential in this hospital [yes = 1 no = 0]
- 12a. agree []
- 12b. disagree []
- 12c. don't know []
13. Some staff DO NOT treat patients with sufficient respect [yes = 1 no = 0]
- 13a. agree []
- 13b. disagree []
- 13c. don't know []
14. How satisfied are you with the service? [yes = 1 no = 0]
- 14a. very satisfied []
- 14b. satisfied []
- 14c. neither satisfied nor dissatisfied []
- 14d. dissatisfied []
- 14e. very dissatisfied []
- 14f. don't know []

SECTION 4 Coping mechanisms

This section is designed to help understand how you manage or deal successfully with the antiretroviral treatment

16. How do you cope financially with any expenses you might incur owing to the antiretroviral treatment (excluding the free ARV drugs)? [yes = 1 no = 0]
- | | | |
|---------------------------------------|---|---|
| 16a. own savings | [|] |
| 16b salary | [|] |
| 16c. loan | [|] |
| 16d. sold household asset | [|] |
| 16e. sold family land | [|] |
| 16f. financial support from relatives | [|] |
| 16g. employer's financial support | [|] |
| 16g. others | [|] |

SECTION 5 Household asset information

This section is designed to help understand ownership and use of some household assets

17. Does your household have [yes = 1 no = 0]
- | | | |
|-----------------------------|---|---|
| 17a. electricity | [|] |
| 17b.radio | [|] |
| 17c. television | [|] |
| 17d. telephone/mobile phone | [|] |
| 17e. refrigerator | [|] |
| 17f. gas cooker | [|] |
| 17g. iron | [|] |
| 17h. fan | [|] |

18. Does any member of your household own?[yes = 1 no = 1]
- 18a. a bicycle []
- 18b. a motorcycle []
- 18c. a car []
19. What does your household use during power outage especially in the night?
[yes = 1 no = 0]
- 19a. lantern []
- 19b. candle []
- 19c. rechargeable fluorescent []
- 19d. generator []
- 19e. other [] please specify -----
20. During hot weather/conditions which of following does your household use?
[yes = 1 no = 0]
- 20a. electric fan []
- 20b. hand fan []
- 20c. air conditioner []
- 20d. nothing []
- 20e. other [] please specify -----
21. What is the main source of drinking water for members of your household?
[yes = 1 no = 0] (Interviewer record accordingly)
- 21a safe water (tap water, bottle water,) []
- 21b stream []
- 21c well []

22. What is the main source of energy for cooking in your household?
 [yes = 1 no = 0]
- 22a. cooking gas []
- 22b. kerosene stove []
- 22c. firewood []
23. Were there times when you or your household had to skip meals due to lack of food/money in the last month? [yes = 1 no = 0]
- 23a. Yes []
- 23b. No []
24. What is the type of toilet facility used by members of your household?
 [yes = 1 no = 0]
- 24a. flush toilet []
- 24b. pit toilet []
- 24c bush []
25. Do you have anything else that you would like to tell us about your experience of seeking or receiving care at this hospital? [yes = 1 no = 0]
- 25a some nurses are harsh on patients []
- 25b some doctors are harsh on patients []
- 25c hospital workers are not friendly to patients []
- 25d often, there is drug stock out []
- 25e treatment/drug is effective []
- 25f patient's file is often misplaced []
- 25g employ more doctors/nurses to reduce waiting time []
- 25h create awareness for ART []
- 25i nothing/no comment []