Effect of anti-retroviral therapy on work productivity of HIV patients in Abia State, Nigeria

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ABSTRACT

Objectives: Recent advances in Anti-Retroviral Therapy (ART) reduce morbidity and mortality in HIV/AIDS patients with marked improvement in their work productivity. The objective of this research was to investigate the extent to which ART improves work productivity of HIV/AIDS patients in Abia State, Nigeria.
Methodology and results: A total of 235 HIV/AIDS patients (aged 20 - 54) out of which 124 (52.8%) were on ART were recruited into this study and used as morbidity indicators. The work productivity of patients on ART was compared to that of patients not on therapy using independent sample T-test. The mean number of restricted activity days, bed disability days, and work days lost due to illness for patients who were not on ART were more than for those on treatment by 3.88, 2.31, and 3.10, respectively. There were significant differences on these parameters between the two groups of patients at 95% confidence interval: $t(194.34) = -824$; $t(151.762) = -7.40$; $t(151.084) = -9.35$.
Conclusion and application of findings: It was therefore concluded that ART considerably ($p > 0.05$) improves the work productivity of HIV/AIDS patients. Further research is however required to quantify the economic gains of this improvement.

Key words: Acquired immunodeficiency syndrome, antiretroviral therapy, psychosocial support

INTRODUCTION

The acquired immunodeficiency syndrome (AIDS) was first reported in homosexual patients suffering from hitherto rare diseases such as *Pneumocystis jiroveci* (formerly *P. carinii*) and Kaposi's sarcoma in May, 1981. In 1983, the disease was again reported in injection drug users in New Jersey and New York, USA. That same year, it was discovered that the causative agent of the disease could also be transmitted through heterosexual route (CDC, 1981a,b,c; CDC, 1983c; Hoffman *et al.*, 1989). It however took two years from the discovery of AIDS to define and characterize the causative agent of the disease as the human immunodeficiency virus (HIV). By 1984 the disease had become the leading cause of death among haemophiliacs (Barre –Sinousi *et al.*, 1983; Broder and Gallo, 1984; Gallo *et al.*, 1984; Woods and Dietrich, 1990).

AIDS has serious debilitating effects on its patients, manifesting most of the time in loss of more than 10% of the usual body weight, diarrhoea, febrile conditions, generalized

weakness, generalized lymphadenitis, Kaposi's sarcoma, herpes zoster, various forms of dermatitis and thrush, among others. These conditions of morbidity impact negatively on the performance of those living with HIV/AIDS, especially on work productivity. AIDS-related morbidity has the potential to cause serious disruption of the lives of individuals, families, and nations through increased absenteeism, lower productivity, job loss, and premature death (Bain, 2002). In many countries, including Nigeria, HIV/AIDS has pushed people deeper into poverty as it erodes human security and productivity, undermines economic development, and threatens social cohesion (WHO, 2003).

There is currently no cure for HIV/AIDS, and specific vaccine protection is also not yet available. However the development of the life-saving anti-retroviral drugs (ART) has brought new hope for patients (WHO, 2005), even though the drugs do not cure the disease but only assist in preventing further destruction of the immune system and its associated morbidity and mortality (USDHHS, 2005).

Some of the most commonly administered ART include Zidovudine or Azidothymidine (AZT), Lamivudine (ZTC), Didonosine (DDI), Zalcitabine (DDC), Stavudine, Saquinavir, Indinavir and Ritonavir (NIAID, 2003). These drugs, which were initially administered as single drugs, can currently be given in higher doses as a combination of drugs in anti-retroviral treatment regimens described as highly active anti-retroviral therapy (HAART). These drugs achieve their objective by interference with reverse transcriptase activity of the virus as well as inhibition of its protease and integrase enzyme activities (WHO, 2002).

It is twenty six years since the first case of AIDS was reported, within which HIV infection has changed from a fatal condition to a manageable chronic illness, and in which the development of anti-retroviral therapy has become one of the most dramatic advances in the history of medicine (Kamps *et al.*, 2006).

This study was designed to determine the impact of ART on the work productivity of AIDS patients in Aba and Umuahia, two major cities in Abia State, Nigeria.

MATERIALS AND METHODS

The study population: The study was carried out between March and September 2007. HIV patients were recruited from the network of people living with HIV/AIDS (NEPWHA) in Aba and Umuahia cities, Abia State, Nigeria. Each of the patients was receiving psychosocial support from Presbyterian Community Services and Development, an Abia State home-based care project at the time of the study. Each received micronutrients and drugs against opportunistic infections from that project. A total of 124 (52.8%) of the patients were also on ART, while the remaining 111 (47.2%) were not. The 111 were not on ART because at the time of this study they could not afford the fees required to establish a baseline laboratory data before starting them on ART.

The first group (control) was made up of HIV/AIDS patients who were on ART, while the second was made up positive cases who were not on drugs. The purpose of the study was explained to them (and the Support Group coordinators) and their informed

consents obtained prior to the study as recommended by the World Health Organization (TDR, 2002).
Support groups of people living with HIV/AIDS were chosen instead of a hospital because most HIV/AIDS patients were taken care of at home in the two selected study cities and they join the support group, Presbyterian Community Services and Development, Abia State home-based care project, for psychosocial support. All selected patients were within the age range of 20 - 54 and had been on ART for at least 6 months.
Sampling procedure: The study group comprised of all HIV/AIDS patients on ART who attended support group meeting on the days of interview while the control group included all cases that were not on ART who also attended the same support group meeting on the same days of interview. Meeting/interview days were Tuesdays of every week. Interviews were held once a month throughout the six months duration of the study. Questionnaires were administered to both cases by trained interviewers. The questionnaire used in the study was structured as shown in Appendix 1.

RESULTS

The group sampled for the study had 103 (43.8%) males with 44 (18.7%) on treatment while 59 (25.1%) were not; and 132 (56.2%) females with 80 (34.0%) on treatment and 52 (22.1%) were not (Table 1). Majority of the population were between 25 and 37.5 years with the highest number on treatment were in the age group averaging 30 years (10.2%) while the largest number not on treatment were in the age group averaging 32.5 years (7.7%) (Table 2). There were equal numbers (50 = 21.3%) of married and unmarried respondents, followed closely by the widowed (48 = 20.4%), the separated (44 = 18.7%), and the divorced (43 = 18.3%) (Table 3).

Table 1: Sex of HIV positive respondents in a study in Abia State, Nigeria.

Sex	Frequency	No. on ART	No. not on ART
Male	103 (43.8)	44 (18.72%)	59 (25.10%)
Females	132 (56.2)	80 (34.04%)	52 (22.13%)
Total	235 (100)	124 (52.7%)	111 (47.2%)

Table 2: Age distribution of HIV positive respondents in a study in Abia State, Nigeria (figures in parenthesis are %).

Age	Frequency	Respondents on treatment	Respondents not on treatment
20.0	10 (42.6)	5 (2.13)	5 (2.13)
22.5	12 (5.11)	5 (2.13)	7 (2.98)
25.0	15 (6.38)	8 (3.40)	7 (2.98)
27.5	10 (4.26)	5 (2.13)	5 (2.13)
30.0	40 (17.02)	24 (10.21)	16 (6.81)
32.5	38 (16.17)	20 (8.51)	18 (7.66)
35.0	40 (17.02)	23 (9.79)	17 (7.23)
37.5	20 (8.51)	14 (5.96)	6 (2.55)
40.0	10 (4.26)	7 (2.98)	3 (1.28)
42.5	7 (2.98)	2 (0.85)	5 (2.13)
45.0	8 (3.40)	2 (0.85)	6 (2.55)
47.5	8 (3.40)	3 (1.28)	5 (2.13)
50.0	7 (2.98)	2 (0.85)	5 (2.135)
52.5	10 (4.26)	4 (1.70)	6 (2.55)
Total	235 (100.0)	124 (52.8%)	111 (47.2%)

Table 3: Marital status of HIV positive respondents in a study in Abia State, Nigeria.

Marital status	Frequency	Percentage (%)
Never married	50	21.3
Married	50	21.3
Separated	44	18.7
Divorced	43	18.3
Widowed	48	20.4
Total	235	100

As at the time of data collection, the number of respondents who were gainfully employed were 61 (26%) with all respondents being on treatment; 59 (25.10%) had been employed but were not working at the time of this study with 10 (4.26%) of them being on treatment while 49 (20.85%) were not on drugs; 58 (24.68%) had never been employed of whom 12 (5.11%) were on treatment and 46 (19.57%) were not; while 57 (24.25%) described their occupation to be housewives, and among them 41 (17.45%) were on treatment and 16 (6.81%) were not.

There was a significant difference between the restricted activity days for HIV positive respondents on ART (Mean = 2.13, SD = 1.94) and HIV positive cases

not on therapy (mean = 6.01, SD = 4.61) at 95% confidence interval (C.I) t (194.34) = -824. The magnitude in the means was very large (Eta Squared = 0.226) (Table 5).

There was a significant difference between the bed disability days of HIV positive patients on ART (mean = 1.26, SD = 1.402) and those of HIV positive patients not on ART (Mean = 3.57, SD = 3.011) at 95% C.I; t (151.726) = -7.40. The magnitude of the

difference in the means was large (Eta squared = 0.190).

There was a significant difference between the work-days lost due to illness of HIV patients on ART (Mean = 1.06, SD = 1.516) and those of HIV patients not on ART (Mean = 4.16, SD = 3.282) at 95% CI; t (151.084) = -9.135. The magnitude of the difference in the means was also very large (Eta squared = 0.264).

Table 4: Employment status of HIV positive respondents in a study in Abia State, Nigeria.

Employment status	Frequency	Group on ART (%)	Group not on ART (%)
Working now[a]	61 (26.00%)	61 (26.00%)	Nil (0.00%)
Worked before	59 (25.10%)	10 (4.26%)	49 (20.85%)
Seeking first employment	58 (24.68%)	12 (5.11%)	46 (19.57%)
Housewife	57 (24.25%)	41 (17.45%)	16 (6.81%)
Total	235 (100.0)	124 (52.8%)	111 (47.2%)

[a] = at time of the study.

Table 5: Group statistics of restricted activity days, bed disability days, and workdays lost due to illness of HIV positive respondents in a study in Abia State, Nigeria.

	Whether respondent is on ART	N	Mean	Standard Deviation	95% Confidence Interval (CI)
Restricted activity Days	Yes	124	2.13	1.94	t (194.34) = -824
	No	111	6.01	4.61	
Bed disability days	Yes	124	1.26	1.402	t (151.726) = -7.40
	No	111	3.57	3.011	
Work days lost due to illness	Yes	124	1.06	1.516	t (151.084) = -9.135
	No	111	4.16	3.282	

DISCUSSION

The demographic characteristics of the HIV positive respondents in this research exhibited a classic HIV/AIDS pattern with more women (56.2%) in Abia State suffering from the scourge than men (43.8%). This pattern is indeed typical of HIV/AIDS infections (about 1.28:1) in Sub-Saharan Africa (UNFPA, 2003). HIV/AIDS in Abia State, like elsewhere, is therefore also a gender problem. It was also observed that the largest number of cases in the State occurred in the 20 - 40 years age group, with the most affected group being between 30 – 35 years age. These age brackets are made up of people considered to be in the prime of their reproductive and productive years (Boyseen, 2003), and our results confirm earlier findings that

HIV/AIDS in Abia State, like in other places in the world, affects more young people in the prime of their life (UNAIDS, 2006).

The reason for the higher prevalence of HIV/ AIDS among the married (21.3%) may be as a result of failure to observe fidelity as recommended by various stakeholders. The high number of cases among those who have never been married was within expectation since they are considered to be at most risk of contracting the infection, partly due to non adherence to advice to abstain or stick to one sexual partner. The high number observed of patients in the widowed category is indeed typical of HIV/AIDS and most of them (20.4%) had already lost their spouses to the

disease. Among the separated and the divorced there were those whose marriages broke down upon discovery, by one partner, that the other had become positive in the course of their marriage.

The high percentage of HIV positive cases in Abia State who were gainfully employed may have been as a result of compliance by employees to government directives not to discriminate on the basis of HIV status. However, those who lost their jobs did so due to long absence from work as a result of HIV-related illness. The psychosocial care, micronutrients, and drugs against opportunistic infections may have contributed immensely to the reduction in morbidity as the group that was not on ART also showed marked reduction in morbidity. There were still, however, significant differences in this improvement between the ART and non-ART groups as evidenced by the morbidity indicators of restricted activity days, bed disability days and workdays lost due to illness.

A significant difference was observed between the restricted activity days, bed disability days, and workdays lost due to illness of HIV/AIDS patients who were on ART and those who were not on the therapy. While it is clear that ART improves work productivity by reducing HIV/AIDS-related morbidity, it is far from normalizing work productivity of the patients (Supakankuti *et al.,* 2004).

The mean monthly loss of workdays of 4.16 due to illness by each of the HIV/AIDS patients not on ART was indeed significant, as it would amount to an annual workday's loss of about 50 days. Being on ART was observed to reduce this to just about 12.72 workdays lost in a year, which is a remarkable improvement.

When the effects of restricted activity days and bed disability days are added to those of work days lost due to illness then the impact of HIV/AIDS-related morbidity on work productivity may be much higher than the indicated 50 working days in a year. This however is difficult to quantify without the help of econometrics and should therefore form the subject of another research. The findings of this study are in agreement with those of previous workers showing that ART reduces the negative effect of HIV/AIDS on the microeconomic and macroeconomic profiles of affected people (Rosen *et al.,* 2000; Policy project, 2003; WB, 2003; UNFPA; ILO 2005; Memfih, 2005; ECA, 2006).

Since this study has shown that ART considerably improves the work productivity of HIV/AIDS patients, it is necessary that anti-retroviral drugs be made available, accessible, and affordable to all those in need. Furthermore since HIV/AIDS in Abia State, Nigeria, was observed to be a gender problem, as well as affecting mostly the poor and the less educated, there should be a shift from voluntary to routine counseling and testing such that every patient who visits a health center, clinic, or hospital would be counseled and tested for HIV, and if positive, monitored for CD4 level for a possible initiation of early ART. Even though this research has strongly established the importance of ART in the management of HIV/AIDS morbidity, current efforts being made to prevent emergence of new infections through education and creation of public awareness should be sustained.

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APPENDIX 1
QUESTIONNAIRE FOR THE RESEARCH ON EFFECT OF ANTI-RETROVIRAL THERAPY ON WORK PRODUCTIVITY OF HIV PATIENTS IN ABIA STATE, NIGERIA.

Dear Respondent,

I bring you greetings in the name of our Lord, Jesus.

Below is a questionnaire to determine the effect of Antiretroviral Therapy on work productivity of HIV patients in Abia State, Nigeria. The usefulness of the research is to contribute to the knowledge of the effect of anti-retroviral drugs on People Living With HIV/AIDS (PLWHA).

I appeal to you to give an honest and accurate answer to each of the questions. No answer to each of the questions shall be linked to you nor can any of them be used against you. As you can see, there is no column for your name or address.

Note:
1.   Only people who are between the ages of 15-59 years are eligible to fill the questionnaire. Please if you are below 15 years or above 60 years of age, you do not need to participate in this research.
2.   Please tick   in the box provided which category of options best fits you.
1.   Sex: [1]. Male; [2]. Female
2.   Age: …………………….. years
3. Marital Status [1] Never married; [2]. Married; [3]. Separated; [4]. Divorced; [5]. Widowed
4. In respect of the last 12 months which of these applies to you?
        [1]. Working now (Including unpaid, farm or business); [2]. Worked before but not now
        [3]. Seeking first work ever; [4]. Student / Dependent / Retired; [5]. House worker / House wife
5. What is your HIV status?   [1]. Positive; [2].   Negative; [3].   Unknown
6.   Are you on anti-retroviral therapy (ART)?
        [1].Yes   [2]. No; [3]. HIV negative therefore not necessary
NOTE: If you are HIV positive please answer question 6. If you are negative please go to questions 9 - 13

7. If your answer to no. 6 is yes, how long have you been on ART?
        [1].6-7 months; [2].8-9 months; [3].   10-11 months; [4]. 12 months
8a.   which of the conditions do you have now (if you are not on ART)
     OR did you have before you started taking ART?
        (You can tick more than one)
        [1].Weight loss; [2].Fever; [3]. Diarrhoea; [4]. Swelling at the groin, armpit, neck etc.
        [5].General weakness; [6]. Rashes; [7]. White coating in the mouth; [8]. Cough
        [9]. Others (Please specify)…………………………
8b. which of the conditions do you have after starting ART (You can
     tick more than one)
        [1]. Weight loss; [2]. Fever; [3]. Diarrhoea; [4]. Swelling at the groin, armpit, neck etc.
        [5]. General weakness of the body most of the times; [6]. Rashes; [7]. White coating in the mouth; [8].
Cough; [9].   Others (Please specify)…………………………….
Please use the calendar provided to help you answer questions 9-12
9. How many days within the past one month did you not complete your task due to illness?
        ……..days
10. How many days within the past one month were you in bed most of the time due to illness?……..days
11. How many days within the past one month were you absent from work or school due to illness?……..days
12. How many times within the past one year have you been reprimanded or queried at job due to absenteeism?
        …………………………..days