Original Article

Assessment of Level of Adherence to Antiretroviral Therapy among Human Immune Deficiency Virus/acquired Immune Deficiency Syndrome Patients at Imo State University Teaching Hospital, Orlu, Nigeria

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Abstract

Background: Antiretroviral therapy (ART) is not a cure for human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS), but rather it is used for optimal suppression of the viral load to an undetectable serum level, hence it remains a palliative measure to improve the quality of life and longevity by impeding the rate of disease progression. **Objective:** The objective was to evaluate the level of adherence, the prevailing contributory factors to adherence as well as nonadherence of HIV/AIDS patients to ART at Imo State University Teaching Hospital (IMSUTH), Orlu, Nigeria. **Methodology:** A descriptive cross-sectional study of HIV/AIDS patients receiving anti-retroviral drugs at IMSUTH, Orlu. It was carried out using interviewer – administered questionnaire involving 400 respondents. The collected data was analyzed manually using electronic calculator and results were presented in frequency tables. **Results:** The result showed a high level of adherence of HIV/AIDS patients to anti-retroviral drugs as 383 (96.2%) were adherent, while 15 (3.8%) were not adherent. Some reasons given for nonadherence to treatment were self-discouragement, toxicity of the drugs especially skin rashes, attitude of health workers, stigma, and distance to the hospital hence they may not be able to access their medications as and at when due. **Conclusion:** There is a significant high level of adherence of HIV/AIDS patients to ART at IMSUTH, Orlu, probably due to their high level of formal education as majority of the respondents 333 (83.0%) achieved at least a secondary level of education.

Key words: Adherence, antiretroviral therapy, assessment, human immune deficiency virus/acquired immune deficiency syndrome, Imo State University Teaching Hospital

Introduction

Antiretroviral therapy (ART) is not a cure for human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS), but is rather used for optimal suppression of the viral load to an undetectable level.[1] Many studies have also documented that combination of antiretroviral drugs can inhibit replication, thus leading to a significant decline in HIV associated mortality.[2]

Appropriate use of ART has improved the health of many HIV positive individuals, who otherwise would have died. It should be noted however that the efficiency of any treatment depends on sustained high levels of adherence to ART.[3] ART, at present, is a lifelong treatment and its effectiveness depends critically on both the therapeutic efficacy of the antiretroviral drugs and high level of adherence (>95%) to the medications.[4,5]

A patient's ability and willingness to follow a prescribed regimen directly influences the effectiveness of that therapy. In general, the factors that influence adherence to ART are categorized into (a) Patient-related factors (psychosocial and educational) (b) patient-provider factors (interaction with physicians and other health workers and access to medications), and (c) clinical factors (pill burden, dosing frequency and adverse effects of medications, duration of medications, presence of comorbidity, etc).[6]

Medication adherence is the term used to describe the patient's behavior of taking drugs correctly, the right drug in the right dose, with the right frequency, and at the right time.[7,8] Adherence to ART is defined as the ability of the HIV infected patient to be involved in choosing, starting,

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managing a given therapeutic combination medication recognized to control HIV replication and improve immune functions. It involves a partnership between the patient and the health care team.[9]

Nonadherence is the term used to describe the patient's inability to take their drugs in the prescribed manner. Factors contributing to it are patient-related factors, provider related, disease-related, and environmental-related factors.[9] Various methods exist for the assessment of drug adherence in a clinical setting. There is however, complicating evidence on which measures generate the best estimate of a patient's drugs adherence level. As a result, there may not be a gold standard for the assessment of level of adherence.[10]

Methods used in clinical practice are typically simple assessments of medication refill history or a patient-recall assessment.[11] These methods are easy to perform; however, they are cruder and their accuracy is limited. Although some suggest that the patient-recall and refill history assessments are accurate enough, especially when performed in combination,[11] these methods are generally regarded to substantially overestimate medication adherence.[11] In addition, the ability of the patient-recall and refill history to detect changes in adherence is unknown. In comparison, pill counts are laborious and rely upon the assumption that medications missing from the pill bottle were taken.[11] They also rely upon accurate reporting dates for starting prescriptions but can be more precise when carefully performed. This study adopted the use of patient-recall assessment (through patient questionnaires) to determine the level of adherence to ART among the respondents.

Adherence to ART has been strongly correlated with HIV viral suppression, reduced rate of resistance, an increase in survival rate and an improved quality of life.[12] Efforts to maximize the patient's adherence will be crucial to the prevention of the emergence of drug – resistant virus strains.[9]

This study is aimed at evaluating the level of adherence, the prevailing contributory factors to adherence as well is nonadherence of HIV/AIDS patients to ART at Imo State University Teaching Hospital (IMSUTH), Orlu, Nigeria.

Methodology

Study area

It was conducted in IMSUTH, Orlu, South East Nigeria. Orlu is located at the intersection of latitude 5°48' North and longitude 7°0' East. The hospital provides Tertiary Health Care services as well as being a training center for both undergraduate and post graduate medical and allied health sciences programs. Its catchment areas include the surrounding states such as Anambra, Rivers, Abia, Delta, and Enugu.

Study population

It included all the HIV/AIDS patients receiving antiretroviral treatment at IMSUTH, Orlu, irrespective of age, gender and parity.

Study design

A descriptive cross-sectional study of HIV positive patients receiving antiretroviral drugs at IMSUTH, Orlu. The study instrument used was interviewer – administered questionnaire containing both open-ended and closed-ended questions that were distributed to the respondents.

The questions covered include: Sociodemographic data of respondents, knowledge of ART, service reviewed among others.

Inclusion and exclusion criteria

Inclusion criteria

This includes all HIV positive patients attending ART clinics in IMSUTH, Orlu during the study period.

Exclusion criteria

Non-HIV positive patients in IMSUTH, Orlu.

Sample size calculation

The minimum sample size for the target population desired for this study was calculated using this formula:

$$N = \frac{Z^2PQ}{D^2}$$

Where:

Z = Standard deviation = 1.96 (at 95% confidence level),

Q = I – P (proportion or the probability of opposition P),

D = Degree of accuracy = 0.02,

P = Prevalence in target population for the purpose of this work using the prevalence of 96.2% which is equal to 0.962,

Using $P = 0.962$,

Q = 1 – 0.962 = 0.038,

Therefore the minimum sample size (N) is calculated thus.

$$N = \frac{\left(1.962^2 \times 0.962 \times 0.038\right)}{\left(0.02\right)^2}$$

$$= \frac{\left(3.842 \text{ x } 0.962 \text{ x } 0.038\right)}{0.0004}$$

$$= \frac{0.1404}{0.0004}$$

$$= 351$$

To take care of nonresponse and attrition 10% of the above calculated minimum sample size was added to it to give a study sample of 381.

However, for the purpose of this work, a sample size of 400 was used.

Data collection, analysis and presentation

Data was collected from the respondents using interviewer-administered questionnaires and information

sourced from their medical records. The question on the questionnaire was grouped into six subsections via:

Section A: Sociodemographic data; Section B: Knowledge of HIV/AIDS and ART; Section C: Level of adherence to ART; Section D: The most common cause of nonadherence; Section E: Relationship between nonadherence/adherence and formal education; Section F: The male – female ratio to level of adherence.

The collected data were manually analyzed with an electronic calculator and results presented in frequency tables.

Ethical considerations

Written consent for the study was obtained from the Research and Ethics Committee of IMSUTH, Orlu prior to the commencements. Furthermore, verbal consents were obtained from the respondents with the assurance of confidentiality given.

Results

Following a cross-sectional survey of 400 patients in the study site, the result obtained is itemized below, with tables.

Table 1 shows that respondents were predominantly between the ages of 21–55 years; 300 (75%) while 5 (1.3%) were below the age of 12 years. Majority of the respondents were females 264 (66%) while 136 (34%) were males. Two hundred and seventeen (54.3%) of the respondents are senior secondary certificate examination holders while 116 (29%) are First School Leaving Certificate holders. Two hundred (50%) of the respondents earn 1–10,000 naira per month while 20 (5%) earn more than 100,000. Two hundred and fifteen (53.8%) of the respondents are married while 118 (29.5%) are single. Furthermore, majority 147 (36.8%) of the respondents are traders while farmers were least in number (not shown in table).

Table 2 indicates that 396 (99%) are aware of the HIV virus while 4 (1%) were ignorant of the virus. Majority 358 (40.5%) are knowledgeable that the virus is contacted through sexual intercourse while 100 (11.3%) know that it can be transmitted from mother to child.

In Table 3, 72 (52.6%) of the male respondents were adherent to ART, while 147 (56.3%) female respondents were adherent giving a total adherence of 219 (54.8%) meaning that nonadherence was 181 (45.2%). The difference in adherence between the male and female respondents is however not statistically significant ($P > 0.5$).

Table 4 shows that self-discouragement for being infected with HIV/AIDS 137 (34.2%) was the most common reason for nonadherence followed by ARV being out of stock at the hospital 88 (22.0%).

Table 1: Sociodemographic variables of respondents

Sociodemographic variables	Frequency	Percentage
Age (years)		
<12	5	1.3
13-20	38	9.5
21-25	300	75.0
>56	57	14.2
Total	400	100
Gender		
Male	136	34
Female	264	66
Education		
Primary	116	29.0
Secondary	217	54.3
Tertiary	44	11.0
Others (none)	23	5.7
Marital status		
Single	118	29.5
Currently in marriage	215	53.8
Widow/widower	51	12.9
Divorced	6	1.3
Separated	10	2.5
Monthly income (naira)		
1-10,000	200	50.0
11,000-50,000	135	33.8
51,000-100,000	45	11.2
>100,000	20	5.0

Table 2: Respondents' awareness/knowledge of HIV

Awareness/knowledge items	Frequency	Percentage
Heard about HIV		
Yes	396	99
No	4	1
Total	400	100
Knowledge of route of transmission (multiple response)		
Unprotected sex	358	40.5
Blood transfusion	189	21.4
Sharp objects/razor	236	26.8
Mother to child	100	11.3

Table 3: Respondents' adherence to therapy

Subjects	Frequency	Frequency of adherence	Percentage adherence	χ^2/P
Males	136	72	52.6	0.35
Females	264	147	56.3	$P>0.5$
Total	400	219	54.8	

Discussion

Adherence is the "active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result".[13] Strict adherence to ART is key to sustained HIV suppression, reduced risk of drug resistance, improved overall health, quality of life, and survival,[14-16] as well as decreased risk of HIV transmission[16] This study shows that there is a high level of awareness of both HIV/AIDS and ART among the respondents. There was also a fairly high level of adherence to ART by the respondents. The

Table 4: Major reason for nonadherence to therapy

Reason	Frequency	Percentage
Drug finished (out of stock) at the hospital	88	22.0
Distance to hospital	36	9.0
Side effects	37	9.3
Attitude of health workers	51	12.7
Stigma	51	12.7
Self-discouragement	137	34.3
Total	400	100

level of nonadherence, on the other hand was high 181 (45.2%) but not as high as that reported by Golin *et al.*,[17] who had a 75% level of nonadherence in their study. It was also at variance with the findings of Walsh *et al*.,[18] who obtained a high level of 95% adherence and only 5% nonadherence. Adherence to ART can be influenced by a number of factors, including the patient's social situation and clinical condition; the prescribed regimen; and the patient-provider relationship.[19] It is critical that each patient receives and understands information about HIV disease including the goals of therapy (achieving and maintaining viral suppression, decreasing HIV-associated morbidity and mortality, and preventing sexual transmission of HIV), the prescribed regimen (including dosing schedule and potential side effects), the importance of strict adherence to ART, and the potential for the development of drug resistance as a consequence of suboptimal adherence. However, information alone is not sufficient to assure high levels of adherence; patients must also be positively motivated to initiate and maintain therapy.[20]

The most common cause of nonadherence was respondent based rather than hospital based; this was also similar to the findings of Golin *et al*.[17] The reasons for poor medication adherence are often multifactorial. Nonadherence to medications can be intentional or nonintentional. Intentional nonadherence is an active process whereby the patient chooses to deviate from the treatment regimen.[21] This may be a rational decision process in which the individual weighs the risk and benefits of treatment against any adverse effects. Unintentional nonadherence is a passive process in which the patient may be careless or forgetful about adhering to the treatment regimen. Most deviations in medication taking are due to omissions of doses or delays in taking doses. In addition, it is common for patients to improve their medication-taking behavior shortly before and after an appointment with a healthcare provider.[22]

On the other hand, the moderately high level of adherence among responds in this study may be attributed to their high level of education as they can easily access health information from the internet using modern technology. This finding was similar to that of Mariya *et al*.,[23] in Kano, North Western Nigeria. The moderately high level of adherence in this study may also be explained from the point of view of female gender preponderance, in which females constituted 66% of the respondents and given that more females than males adhered to their ART, even though the difference was not statistically significant. Nevertheless, it is known that females are much more self-caring and less occupied with other activities than males who may easily forget their drugs.[24]

Our finding however was in contrast to that of Hogg *et al*.,[25] in which females had a very low level of adherence to antiretroviral drugs due to higher frequency of side effects like urticaria, lactic acidosis, dyslipidemia, liver toxicity, etc., Our finding was also different to that of the United Nations AIDS 2008 report on the global AIDS pandemic in which low adherence was observed in females due to preponderance of side effects on them.[26]

This study also suggests that the socioeconomic status of the patient had little or no effect on the level of adherence since the drug is being supplied free of charge. However, low socioeconomic status may raise mortality rate from HIV/AIDS as reported by Palella *et al*.[27] It was observed during the review of folders that many of the patients have been on treatment for over 5 years with a normal lifestyle and an increasing CD4 count. It is therefore only natural to assume that the moderate level of adherence has contributed greatly in reducing the level of progression of HIV to AIDS in our study population. This agreed with the finding of Bangsbery *et al*.,[28] who asserted that reduction in level of progression made the patients feel stronger, happier, and healthier.

Conclusion

The level of adherence of patients to ART in IMSUTH, Orlu is moderately high and could be linked to the high level of awareness of ART and HIV/AIDS also shown by respondents in the study population. Nevertheless, the nonadherence rate is equally high and slightly more among the males than females.

Some of the causes of nonadherence were self-discouragement by many of the respondents on account of their HIV/AIDS status, out of stock syndrome of ART at various treatment centers, side effect of drugs, attitude of health workers, stigmata, etc.

Recommendations

Although research is continuing to enable us to better understand medication adherence, there is an urgent need to improve current rates of nonadherence. One of the first steps is a broader recognition of the problem of medication nonadherence, given that it is frequently unrecognized. The government should ensure regular supply of antiretroviral to ensure continuity of treatment while patients should be positively motivated and encouraged by caretakers to initiate and continue with their treatment and not to despair on account of their status.

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