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ANTI-RETRO VIRAL MEDICATION ADHERENCE AMONG PREGNANT WOMEN LIVING WITH HIV IN A NIGERIAN TERTIARY HOSPITAL: EVALUATION OF BARRIERS

A. A. Mgbahurike[1]* and I. C. Onah[2]

[1,2]Department of Clinical Pharmacy and Management, Faculty of Pharmaceutical Sciences, University of Port Harcourt, Nigeria.

***Corresponding Author: A. A. Mgbahurike**
Department of Clinical Pharmacy and Management, Faculty of Pharmaceutical Sciences, University of Port Harcourt, Nigeria.

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ABSTRACT
Background: Strict adherence to antiretroviral therapy (ART) is needed to achieve viral suppression especially among pregnant women. Virological and clinical success depends critically on elevated adherence to ART, without which maternal disease can develop, with its attendant increase in the risk of vertical mother-to-child transmission. This study aimed to examine the factors affecting medication adherence among pregnant women living with HIV, in the University of Port Harcourt Teaching Hospital (UPTH). Method: The study adopted a cross-sectional study. Prevalence rate was used to calculate the sample size. A total of 163 pregnant women living with HIV was obtained, and recruited. The study was carried out between August and November 2023. A structured questionnaire was used to collect the necessary data during the study period. The questionnaire consist of four (4) parts: Demographic data; Adherence level; Barriers (factors) to adherence; and Reasons/Need for adherence. Statistical package for Social Sciences (SPSS) V22 was used for data analysis. Student T- test and Chi-square test were used for test of significance at p- value of < 0.05. Results: The results showed that out of 163 respondents 59(36.2%) reported poor medication adherence while, 104 (63.8%) reported 100% adherence which was considered good. The result further showed that the most common reason for non-adherence to medication were food requirement of the drug; 10(17.0%) reported drug out of stock; 9(15.2%) claimed feeling tired or sleepy, while 8(13.5%) reported lack of finance to go to clinic; 7(11.9%) feared stigmatization and 5(8.5%) reported forgetfulness. Socio-demographic variables found to be significantly associated with adherence were marital status 44.2% and age 47.8%, with married women and younger women were more likely to adhere to ART instructions, while the major reason for adherence was to be alive and healthy. Conclusion: The study showed that a good number of pregnant women living with HIV achieved good adherence level, and the main driving force was to be healthy and alive. However, there is the need for more comprehensive awareness program on ART adherence and on other possible constraints to adherence to achieve the adherence rate of 100% recommended by the Federal Ministry of Health, Nigeria.

KEYWORDS: Antiretroviral therapy, pregnant women, medication adherence, University Teaching Hospital.

INTRODUCTION
Adherence to antiretroviral drugs poses unique challenges to HIV infected persons particularly among pregnant women.[1] Improving adherence among pregnant women therefore requires knowledge of the factors that influence adherence. Several methods have been used to measure adherence, but no gold standard has been established.[2] Each of these methods has its respective strengths and weaknesses. Available methods include pill counts, self-report, prescription refills, medication event monitoring system (MEMS), biological markers, and assays.[3] Though several studies in Nigeria have evaluated the factors associated with non-adherence to antiretroviral therapy among HIV-positive adults[4], only one from literature search studied antiretroviral adherence issues in HIV-positive pregnant women.

Poor adherence to antiretroviral drugs during pregnancy can lead to suboptimal viral suppression, development of viral resistance, higher risk of mother-to-child transmission, and mother-to-child transmission of resistant HIV strains.[5] Interrupting medication permits the virus to resume rapid replication and as many as thousands viral particles will be produced per day.[1] This

allows resistant mutant strains to be generated which are no longer responsive to available antiretroviral drugs, posing a public health danger.[1]

In the case of ART, adherence to treatment implies taking the drugs in their right quantities, at the right time, for life-long. It has been established by several studies that adherence to ART is a problem in Nigeria.[6] In their review on pregnant women living with HIV/AIDS in Nigeria, it was reported that there is poor knowledge of HIV/AIDS among pregnant women living with HIV/AIDS and this affects adherence. Another study conducted[7] in three private clinics in Botswana found self-reported and provider assessment adherence rates of 54% and 56%, respectively. In another study done in Dakar, Senegal[8], the authors found that 78% of the patients were adherent while the optimal level of adherence was set at 80% (which is a lower cut-off, since typically 95% adherence is recommended). A relatively lower adherence level of 66% was reported in a study conducted in Uganda.[9] Although pregnant women in Nigeria were heavily affected by HIV/AIDS and many of them use antiretroviral therapy, but based on another research[6] there is limited information on the challenges pregnant women face with retaining in care and adherence to antiretroviral treatment. This study, therefore, seeks to evaluate the factors affecting ARV medications adherence among HIV pregnant women in the University of Port Harcourt Teaching Hospital (UPTH).

MATERIALS AND METHODS

Study design/ area

The study employed a cross-sectional design. The study was carried out at the antenatal clinic (ANC) of the Obstetrics and Gynaecology Department in the University of Port Harcourt Teaching Hospital, Port Harcourt Rivers State. The Preventive Mother to Child Transmission (PMTCT) Program at the ANC started in 2002; it works to ensure the well-being of the mother and fetus. The hospital has about 800-bedded capacity and serves as a referral center being the largest hospital in the Niger Delta region. Many of the HIV patients that attend the clinic come from different parts of the region to fill their prescriptions. Port Harcourt is the capital city of Rivers State in the Niger Delta region and is very rich in the nation's oil and gas resources which attracts many migrant and international workforce with commercial workers following the various camps in Rivers State, which is part of South-South zone. Rivers State ranked third in HIV infection in the country with a prevalence rate of 3.8% which is higher than the national prevalence of 1.4%.[10]

The study adopted a cross-sectional study. In order to determine the sample size, the number of pregnant women in UPTH was ascertained, the number of pregnant women living with HIV who visited the Obstetrics and Gynaecology department from January to December. 2023, who access the PMTCT services of the antenatal Clinic of the hospital was also obtained from the records unit, from which the sample size was calculated. The study was carried out between August and November 2023. A structured questionnaire was adopted to collect the necessary data during the study period. The questionnaire consist of four (4) parts: Demographic data; Adherence level; Barriers (factors) to adherence; and Reasons/Need for adherence.

Inclusion Criteria

Pregnant women who received PMTCT services from UPTH and have been on ART for at least 3 months before the time of study.

Exclusion Criteria

Women who are not Nigerians; who are under 18 years; who are not pregnant; who are HIV negative; and who are living outside Rivers states and also severely ill pregnant mothers.

Validity/Reliability of Instrument

The study instrument was subjected to reliability testing by the test-re-test method as follows; the questionnaire was administered to 20 pregnant women within the target population and the responses were collated and relevant modification was made. Then the same questionnaire was issued to 15 persons after 7 days and the responses were collated. The collated responses were assessed using the Chronbach Alpha test and a response correlation coefficient of ≥0.7 was reliable.

Sample size/Sampling: The sample size was calculated using prevalence rate in the formula by Araoye 2004.[11] Random sampling was used to obtain the calculated size

Study Procedure/Data collection Process

On the days for data collection, those present at the time of the study for their routine PMTCT services at UPTH were recruited. The principal investigator and the nurses on duty addressed the significance of the study. Written informed consent was obtained from those willingly to participate in the study before the interview. Each participant was assigned an identifiers to avoid repetition of the interview.

Assessment of adherence

The study assessed adherence to ART, and dose adherence was the primary outcome. Adherence status of the participant was the main outcome variable. A participant was said to be adherent if she had not missed taking any of the doses over the four -day period before the survey day. Non- adherence is if she had missed at least one dose over the four days prior to the study. The 4- day recall was employed because it has a short time-span so the participant will easily remember the history of her medication intake. This also agrees with the Adult AIDS Clinical Trials Group (AACTG) 4-day recall being used. Self-report was used to assess adherence level and the following formula was equally used. Adherence (%) =Number of pills (doses) taken /Number of pill prescribed or supposed to be taken X 100.[12]

Adherence level was classified into good adherence for persons with 100% level of adherence and poor adherence for those with <100%.[13] For those reported to have missed their dose, reasons for missing were extracted. Additionally, four self-report inquiries were used for adherence assessment, and a score of 25% was attached to each question. Those who answered all the questions correctly were said to have good adherence while those who responded incorrectly to less than the four were said to have poor adherence.

Ethical considerations

The Ethics and Research Review Board of the University of Port Harcourt, gave approval for the study. Approval was also obtained from the Ethics Committee of University of Port Harcourt Teaching Hospital. Written Consent was obtained from each participant and they were informed that they were at liberty to withdraw from the study at any time.

Statistical Analysis

Data was validated with Microsoft Excel for completeness, cleaned and analyzed with Statistical Package for Social Sciences (SPSS) IBM version 22. Frequency and percentages were calculated. Tables and figures were used for data presentation.

RESULTS

Socio-demographic profile of the study participants

The result presented in Table 1 below shows the socio-demographic characteristics of the respondents. The result revealed that majority of the women 78 (47.8%) were aged 30-34 years, 87(53.4%) were married and living with their partner, 72 (44.2%) had received secondary school education, 69(42.3%) were self-employed while 60(36.8%) of the respondents were from Ikwerre ethnic group.

Table 2 represents ART medication adherence profile. The results indicate that 94(57.7%) of the respondents reported a stable health status since commencement of the drugs, whereas, 104(63.8%) of the women reported never to have missed a dose.

Table 1: Socio-demographic variable of Respondents (women living with HIV)

Variable	Frequency (N=163)	Percentage (%)
Age (years)		
20-24	16	9.8
25-29	30	18.4
30-34	78	47.9
35-39	28	17.2
40 and above	11	6.7
Marital Status		
Single but living with partner	10	6.1
Single and not living with partner	55	33.7
Married and living with partner	87	53.4
Married and not living with partner	11	6.7
Level of Education		
No formal education	19	11.6
Primary	48	29.4
Secondary	73	44.2
Tertiary	24	14.7
Employment Status		
Unemployed	61	37.4
Employed	8	4.9
Civil servant	6	3.7
Self employed	69	42.3
Private institution employed	19	11.6
Ethnicity		
Ikwerre	60	36.8
Yoruba	17	10.4
Igbo	34	20.8
Others	52	31.9

Field survey, 2023

Table 2: ART medication Adherence.

Variables	Frequency (N=163)	Percentage (%)
Condition of health since after ART commencement		
Worse	0	0.0
Stable	94	57.7
Better	46	28.2
Don't know	23	14.1
Missed taking a dose of your antiretroviral therapy in the last four days Never	104	63.8
Once	36	22.1
Twice	15	9.2
Greater than twice	8	4.9

Field survey, 2023

Table 3 shows that `104 (63.8%) of the respondents had good ART medication adherence whereas 59 (36.2%) had poor medication adherence.

Table 3: Respondent's level of ART medication Adherence.

Adherence Behaviour	Frequency (N=163)	Percentage (%)
Good adherence	104	63.8
Poor Adherence	59	36.2
Field survey, 2023		

Figure 1 shows the barriers (factors) affecting compliance to medication among HIV pregnant women in the University of Port Harcourt Teaching Hospital. The result indicated that the most common reasons for non-adherence to medication were food requirement of the drug 10 (17.0%), drug out of stock 9(15.2%), feeling tired or sleepy 8(13.5%), lack of finance to go to clinic 7(11.9%), fear of stigmatization 5 (8.5%) and forgetfulness 4 (6.8%).

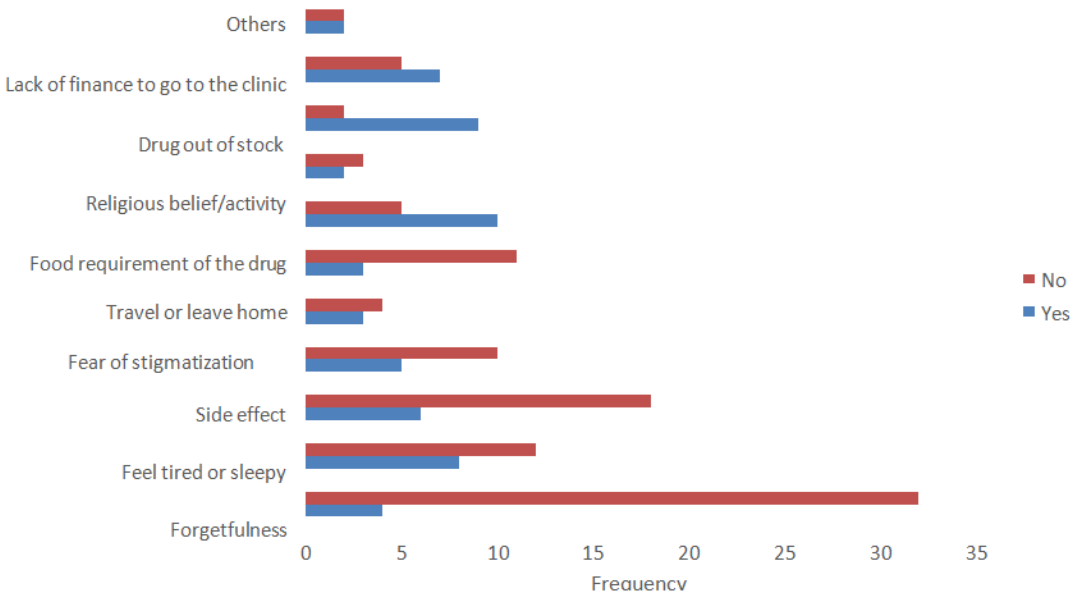

Figure 1: Barriers (Factors) to medication Adherence among HIV Pregnant women.

The factors that facilitate adherence among pregnant women is presented in figure 2. The result indicated that 52(32.0%) adhered to ART drugs to stay healthy and alive, 47 (28.8%) want viral load to be suppressed, 29 (17.8%) to protect my unborn child, 17(10.4%) was encouraged to do so by their counselors, 15(9.2%) were informed by previous PMTCT experience while 3(1.8%) indicated other reasons.

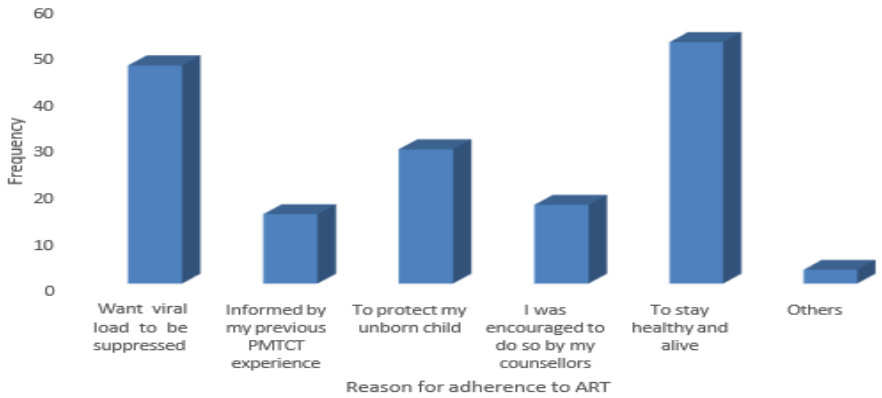

Figure 2: Factors that facilitate medication adherence among HIV pregnant women.

DISCUSSION

In this study, the mean age of the pregnant women living with HIV was 32 years ± 26.6 years. Majority of the pregnant women 78 (47.8%) were within 30-34 years. The 2012 National HIV- AIDS Reproductive and Health found HIV to be prevalent among the 25- 39year age group.[14] This is somewhat in accordance with the submission of this study as age group of 30-34 years were more predominant in the study.

In this study, 72 (44.2%) of the respondents were secondary school certificate holders and showed better adherence than those with lower qualification. However, the result of this study does not collaborate with a similar work[15] that found out that those with lower educational background adhered more than the college graduates. The findings of this study showed that 69(42.3%) of the pregnant women surveyed were self- employed. However, Zacharius et al[16] in their work identified those in informal sector having an 8% chance of adherence than those in formal sector. While the unemployed had lower adherence. The present study revealed that majority of the respondents were from Ikwerre ethnic group. Although Rivers State is the home of many ethnic group, there was greater proportion of Ikwerreans probably because the hospital is situated in Ikwerre community. This may be the reason why more of this group had higher adherence than other ethnic groups.

In this study, 63.8.% of the HIV positive pregnant women self-reported 100% dose adherence to ART over a recall period of four days, whereas 36.2% had missed at least one dose within the same time frame. These results show a good level of adherence to ART during pregnancy in this study population. This is in line with a previous work[17] done in South Eastern part of Nigeria where 80.6% of adherence rate was reported. Our result also corresponds with works[18] in Ebonyi and[19] in Nnewi that reported similar rate of 89.2% and 86% respectively. Similarities of these is findings might be as a result of the socio-demographic features and use of similar study design. However, adherence rate in South-West Nigeria as reported by Oginni et al.,[20] was significantly lower, 47%, when compared to this study. This low adherence level could be because they relied on secondary data. This study identified some important patient-related barriers to treatment adherence among a sample of pregnant HIV patients attending the ART clinic of the University of Port Harcourt Teaching hospital. Adherence to ART has been poorly reported as a result of different obstacles.[17] An interesting finding of this study is that the most common reason for non-adherence to medication were food requirement of the drug 10(17.0%); drug out of stock 9(15.2); feeling tired or sleepy 8(13.5%); lack of finance to go to clinic 7(11.9%), fear of stigmatization 5(8.5%) and forgetfulness 4(6.8%). The link between food insecurity and ART non-adherence has been reported and the lack of food worsens ARV side effects.[7] Participants' narratives show that side effects are the least reported reason for non- adherence. This finding is in contrast with previous studies[21], [22]; where side effects of the medications were the most reported reason for non-adherence. However, another study reported that experiencing symptoms after starting treatment was not a barrier to adherence to ART[23] Findings also revealed that feeling tired or sleepy, forgetfulness, busy work schedule, and travel or leave home were not important factors affecting respondents' adherence behavior. The assumption that patients use reminders like alarms may have helped reduce forgetfulness. Studies in Nepal[24] and South-South Nigeria[25] reported the use of text messages and calls as reminders to enhance adherence. On the other hand, other studies identified forgetfulness,[12]; side effects[26] and pill burden[14] were factors in their studies that affected patients' adherence negatively. Factors affecting adherence to the regimen is therefore multifaceted and should be addressed holistically.

CONCLUSION

A high level of anti-retoviral medication adherence of 63.8% obtained in this study is essential for achieving treatment goals. This is an indication that the many barriers to adherence identified in this study are surmountable. Just like every other protracted health issue which requires drugs, adherence is the key. Quite a

lot of factors such as busy work schedule and tiredness, forgetfulness, religious belief, side effects of drugs, stigma, and food requirement have been linked to the low rate of adherence. However, adherence rate observed in this study is good but more efforts need to be taken. In conclusion, this study has shown that good ART adherence is achievable during pregnancy, however, more has to be done to achieve adherence rate of 99% reported elsewhere.

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