



International Journal of Research Publication and Reviews

Journal Homepage: www.ijrpr.com ISSN 2582-7421

Adherence to Antiretroviral Therapy (ART) among HIV-Positive Pregnant Women in Nnamdi Azikiwe University Teaching Hospital (Nauth), Nnewi, Anambra State, Nigeria

Okoli, Chigozie Eunice

Africa Centre for Public Health and Toxicological Research, University of Port Harcourt, Rivers State, Nigeria

ABSTRACT

Adherence to antiretroviral therapy (ART) during pregnancy is central to maternal health and the prevention of mother-to-child transmission of HIV. This study investigated adherence to ART among HIV-positive pregnant women receiving care at Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Anambra State, Nigeria. A descriptive cross-sectional survey design was used. From a target population of 688 HIV-positive pregnant women receiving ART, 250 respondents were selected by random sampling. Data were collected with a structured questionnaire and analysed using descriptive statistics, including means and percentages. The findings showed a high overall level of ART adherence (grand mean = 3.51 on a four-point scale). Socioeconomic factors were also rated highly (grand mean = 3.70), with financial circumstances, support systems, accessibility of care, and cultural or religious influences identified as important considerations. The perceived impact of ART on maternal and infant health had a grand mean of 2.80, while health-system factors had a grand mean of 3.87. Psychological factors also exceeded the criterion mean (grand mean = 2.98). Reported barriers included ART side effects, transport and access difficulties, stigma, and medicine stockouts. The study concludes that ART adherence among pregnant women at NAUTH is shaped by interacting socioeconomic, health-system, psychological, and social-support factors. Continuous adherence education, culturally sensitive counselling, peer support, flexible appointments, reliable drug supply, and measures that reduce financial and stigma-related barriers are recommended.

Keywords: antiretroviral therapy; ART adherence; HIV; pregnant women; PMTCT; NAUTH; Nigeria

1. Introduction

Human immunodeficiency virus (HIV) infection among women of child-bearing age and mother-to-child transmission (MTCT) remain important public-health concerns in Nigeria. The source dissertation identifies Nigeria as one of the countries carrying a substantial burden of HIV among pregnant women and emphasizes the importance of prevention of mother-to-child transmission (PMTCT) services. Adherence to ART is a central component of PMTCT because consistent treatment promotes viral suppression and reduces the likelihood of transmission to the infant (Iwegbu et al., 2024; Weichseldorfer et al., 2021).

The dissertation notes that the effectiveness of ART depends not only on the pharmacological properties of the medicines but also on patients' ability to take them as prescribed. Poor adherence can contribute to incomplete viral suppression, treatment failure and drug resistance, while sustained adherence supports immune reconstitution and reduction of MTCT. The literature reviewed in the study also identifies stigma, economic constraints, healthcare accessibility, treatment-related side effects, and inadequate social support as important barriers to adherence (Adejumo et al., 2015; Ndukwe et al., 2022; Oku et al., 2014).

Evidence cited in the dissertation suggests that pregnancy can motivate adherence because women may be strongly concerned about protecting their unborn children. At the same time, adherence may be undermined by fear of disclosure, financial hardship, transportation problems, mental-health challenges and difficulties accessing services. The local context is therefore important. The present study focused on HIV-positive pregnant women attending the ART unit of NAUTH, Nnewi, with the aim of assessing their level of adherence and identifying socioeconomic, maternal-infant, health-system and psychological factors associated with treatment use.

1.1 Objective

The study aimed to investigate adherence to antiretroviral therapy among HIV-positive pregnant women in Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Anambra State, Nigeria. Specifically, it assessed the level of adherence; socioeconomic factors affecting adherence; perceived impact of ART on maternal and infant health; health-system factors; and psychological factors.

2. Materials and methods

2.1 Study design and setting

A descriptive cross-sectional survey design was used. The study was conducted at the antiretroviral therapy unit of Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Anambra State, Nigeria. The dissertation describes NAUTH as a tertiary hospital providing PMTCT services in addition to adult and paediatric HIV/AIDS services.

2.2 Population, sample and sampling

The target population comprised 688 HIV-positive pregnant women receiving ART at NAUTH. A sample of 250 women was selected using random sampling. Eligible participants were HIV-positive pregnant women receiving ART at NAUTH who consented to participate; HIV-negative pregnant women and women who did not consent were excluded.

2.3 Data collection and analysis

Data were obtained using a structured questionnaire covering ART adherence, socioeconomic influences, maternal and infant health, health-system factors, and psychological factors. The dissertation reports questionnaire-based analysis using descriptive statistics, including means, percentages and charts, with a four-point response scale and a criterion mean of 2.5. It also reports regression analyses for socioeconomic, health-system and psychological factors. The dissertation contains an additional methodological note referring to medical-record extraction and SPSS version 25, whereas its abstract and results describe questionnaire data and SPSS version 22.0. This paper therefore follows the questionnaire-based methods that correspond directly to the reported results.

2.4 Validity and reliability

Content validity was assessed by the researcher's supervisors and experts in public health and toxicological research. Test-retest reliability was conducted with 20 respondents outside the study setting, and a Pearson Product Moment correlation coefficient of 0.89 was reported.

2.5 Ethical considerations

Ethical approval was obtained through the relevant University of Port Harcourt and hospital ethical processes described in the dissertation. Participation was based on consent.

3. Results

3.1 Participant characteristics

Table 1. Selected characteristics of respondents (N = 250).

Characteristic	Category	Percentage (%)
Age	20–25 years	25
	26–30 years	45
	31–35 years	20
	36 years and above	10
Marital status	Single	10
	Married	80
	Divorced	5
	Widowed	5
Religion	Christianity	85

Characteristic	Category	Percentage (%)
	Islam	10
	Other	5
Ethnicity	Yoruba	35
	Igbo	55
	Hausa	10

3.2 Level of ART adherence

Table 2. Selected ART-adherence indicators.

Indicator	Mean	SD
Take ART as prescribed	2.65	0.774
Use an alarm to remember medication	3.98	1.225
Challenges taking ART regularly	2.58	2.497
Medication side effects make adherence difficult	3.96	1.176
Daily routine/work affects timely dosing	2.94	1.628
Stigma/fear of disclosure affects adherence	2.60	1.192
Financial/transport difficulties	2.64	1.192
Family support for medication use	3.53	1.837
Provider counselling/reminders	2.94	2.884
Overall adherence score	3.51	0.147

The overall mean of 3.51 was above the criterion mean of 2.5, and the dissertation therefore classified the level of ART adherence as high. Use of medication reminders and family support received particularly high ratings.

3.3 Socioeconomic and maternal-infant factors

Table 3. Socioeconomic and maternal-infant factors influencing ART adherence.

Domain/item	Mean	SD
Lack of stable income affects adherence	3.50	0.85
Financial situation affects access/adherence	3.90	0.35
ART-related costs make adherence difficult	3.50	0.92
Family/partner support	3.80	0.66
Other support systems	3.90	0.75
Healthcare facility accessibility	3.70	0.64
Cultural/religious background influence	3.70	0.64

Domain/item	Mean	SD
Socioeconomic domain grand mean	3.70	—
Maternal-infant health domain grand mean	2.80	0.54

Socioeconomic factors had a grand mean of 3.70, indicating a high level of influence according to the study's criterion. The maternal-infant health domain had a grand mean of 2.80. Respondents reported ART side effects affecting adherence, support from family and healthcare providers, perceived changes in energy or wellbeing, and provision of breastfeeding and infant-care guidance.

3.4 Health-system and psychological factors

Table 4. Health-system and psychological factors.

Domain/item	Mean	SD
Difficulty accessing ART/services	3.90	0.42
Transport cost/distance affects adherence	3.80	0.38
Feeling stigmatized/judged by healthcare workers	3.10	0.33
ART stockouts/shortages	3.10	0.51
Appointment scheduling supports adherence	3.20	0.12
Health-system domain grand mean	3.87	0.10
Stress/anxiety/depression during pregnancy	3.90	0.42
Coping with negative emotions/stress related to HIV	3.80	0.38
Change in mental health since pregnancy	3.80	0.41
Comfort discussing emotional health with provider	2.70	0.51
Psychological domain grand mean	2.98	0.47

Health-system factors had the highest domain mean (3.87), with access to ART and transportation identified as prominent concerns. Psychological factors also exceeded the criterion mean, indicating relevant emotional and mental-health experiences among respondents.

3.5 Regression analyses

Table 5. Reported regression results for factors associated with ART adherence.

Predictor domain	F	p-value	Reported interpretation
Socioeconomic factors	0.084	0.199	Reported as relationship in dissertation
Health-system factors	0.074	0.099	Reported as relationship in dissertation
Psychological factors	0.414	0.149	Reported as relationship in dissertation

The dissertation reports $F = 0.084$, $p = 0.199$ for socioeconomic factors; $F = 0.074$, $p = 0.099$ for health-system factors; and $F = 0.414$, $p = 0.149$ for psychological factors. The accompanying dissertation narrative states that these results demonstrate relationships, but each reported p-value is greater than 0.05. On the basis of the numerical results alone, statistical significance at the 5% level cannot be established. This discrepancy should be resolved before journal submission.

4. Discussion

4.1 ART adherence

The study found a high overall level of ART adherence, with a grand mean of 3.51. This finding is consistent with literature cited in the dissertation suggesting that pregnancy may motivate women to adhere to ART because of the desire to protect the unborn child and maintain maternal health. Zoungrana-Yameogo et al. (2022) reported higher adherence among pregnant and breastfeeding women in Burkina Faso, while Nachega et al. (2012) found that adherence during pregnancy can be higher than during other periods. The current findings nevertheless show that high overall adherence coexists with important challenges, particularly medication side effects, stigma, financial constraints and competing daily responsibilities.

4.2 Socioeconomic and social-support factors

The socioeconomic domain produced a high grand mean of 3.70. Financial circumstances, support systems and accessibility of healthcare were prominent factors. This pattern agrees with the dissertation's review of evidence showing that transportation costs, economic hardship and limited social support can hinder adherence. Stigma and fear of disclosure may also reduce consistent medication use because women may try to conceal their treatment from partners, family or community members (Aregbesola & Adeoye, 2018; Omonaiye et al., 2018). The strong ratings for family and other support systems suggest that social support can be an important facilitator alongside these barriers.

4.3 Maternal and infant health

The maternal-infant health domain had a grand mean of 2.80. Respondents reported side effects that affected adherence and perceived changes in energy, immune function or wellbeing. The dissertation emphasizes that sustained ART adherence is important for viral suppression and reduction of MTCT. Support from family, healthcare providers and community organizations was also reported, highlighting the importance of integrated support during pregnancy.

4.4 Health-system factors

Health-system factors recorded the highest domain mean (3.87). Difficulty accessing ART and related services and transportation costs were especially prominent. Stockouts and perceived stigma from healthcare workers were also reported. These findings are consistent with the dissertation's literature review, which identifies healthcare access, clinic organization, stigma and availability of services as important determinants of adherence. Flexible clinic hours, supportive services and provider education have been suggested as approaches to improve engagement with ART services (Tapp et al., 2011; Tesfaye et al., 2019).

4.5 Psychological factors

Psychological factors had a grand mean of 2.98. Respondents reported stress, anxiety or depression, changes in mental health and the need to cope with HIV-related negative emotions. The findings support the literature reviewed in the dissertation, which links psychological distress and mental-health challenges with treatment adherence (Abebe et al., 2022; Nachega et al., 2012). Integrating psychosocial assessment and counselling into antenatal and HIV care may therefore strengthen adherence support.

5. Conclusion

The study indicates that ART adherence among HIV-positive pregnant women at NAUTH was high according to the study's four-point rating criterion. However, adherence occurs within a complex environment of financial pressures, social support, treatment side effects, healthcare accessibility, stigma, service availability and psychological stress. The findings suggest that maintaining high adherence requires more than medication provision alone. A patient-centred approach that combines adherence education, reliable ART supply, accessible services, social support and culturally sensitive psychosocial care is warranted.

6. Recommendations

Provide continuous education on the importance of ART adherence during antenatal visits.

Establish peer-support mechanisms through which HIV-positive mothers can share experiences and encourage one another.

Train healthcare workers in culturally sensitive counselling and communication addressing myths and misconceptions about ART.

Introduce flexible appointment schedules to reduce the effect of time and work constraints.

Strengthen community-based ART distribution and medicine-supply systems to reduce interruptions and stockouts.

Provide transport support or other targeted assistance for pregnant women facing financial barriers to care.

Develop income-support or empowerment programmes that can reduce the effect of economic hardship on treatment continuity.

Implement community awareness activities to reduce HIV-related stigma and fear of disclosure.

Strengthen policies protecting the rights, privacy and dignity of HIV-positive pregnant women in healthcare settings.

Acknowledgements

The author acknowledges the supervisors, healthcare professionals, participants and all individuals who contributed to the completion of the original study.

References

- Abebe, W., Gebremariam, M., Molla, M., Teferra, S., Wissow, L., & Ruff, A. (2022). Prevalence of depression among HIV-positive pregnant women and its association with adherence to antiretroviral therapy in Addis Ababa, Ethiopia. *PLOS ONE*, 17(1), e0262638. <https://doi.org/10.1371/journal.pone.0262638>
- Adejumo, O. A., Malee, K. M., Ryscavage, P., Hunter, S. J., & Taiwo, B. O. (2015). Contemporary issues on the epidemiology and antiretroviral adherence of HIV-infected adolescents in sub-Saharan Africa: A narrative review. *Journal of the International AIDS Society*, 18(1), 20049.
- Adeniyi, O., Ajayi, A., Goon, D., Owolabi, E., Eboh, A., & Lambert, J. (2018). Factors affecting adherence to antiretroviral therapy among pregnant women in the Eastern Cape, South Africa. *BMC Infectious Diseases*, 18(1). <https://doi.org/10.1186/s12879-018-3087-8>
- Aregbesola, O., & Adeoye, I. (2018). Self-efficacy and antiretroviral therapy adherence among HIV-positive pregnant women in South-West Nigeria: A mixed methods study. *Tanzania Journal of Health Research*, 20(4).
- Bright, A. (2023). Factors influencing ART adherence and intervention strategies among people living with HIV/AIDS in Nigeria. *International Journal of Infectious Diseases*, 116, 47–56.
- Buregyeya, E., Naigino, R., Mukose, A., Makumbi, F., Esiru, G., Arinaitwe, J., et al. (2017). Facilitators and barriers to uptake and adherence to lifelong antiretroviral therapy among HIV-infected pregnant women in Uganda: A qualitative study. *BMC Pregnancy and Childbirth*, 17(1).
- Hodgson, I., Plummer, M., Konopka, S., Colvin, C., Jonas, E., Albertini, J., et al. (2014). A systematic review of individual and contextual factors affecting ART initiation, adherence, and retention for HIV-infected pregnant and postpartum women. *PLOS ONE*, 9(11), e111421.
- Iwegbu, C. E., Obi, S. N., & Oguonu, T. (2023). Nigeria's burden of mother-to-child transmission of HIV: Policy implications and future directions. *International Journal of Reproductive Medicine*, 21(1), 17–29.
- Jennings, L., Naanyu, V., & Sirengo, M. (2023). Measuring ART adherence among pregnant women: A review of methodologies. *BMC Public Health*, 23, 678.
- Lai, J., Luo, R., & Xie, X. (2023). ART adherence and its implications for HIV care continuum in Nigeria. *Journal of Acquired Immune Deficiency Syndromes*, 92(2), 183–192.
- Matthews, L., Orrell, C., Bwana, M., Tsai, A., Psaros, C., Asiimwe, S., et al. (2020). Adherence to HIV antiretroviral therapy among pregnant and postpartum women during the Option B+ era: 12-month cohort study in urban South Africa and rural Uganda. *Journal of the International AIDS Society*, 23(8).
- Nachega, J., Uthman, O., Anderson, J., Peltzer, K., Wampold, S., Cotton, M., et al. (2012). Adherence to antiretroviral therapy during and after pregnancy in low-income, middle-income, and high-income countries. *AIDS*, 26(16), 2039–2052.
- Ndukwe, C. C., Ezeanolue, E. E., & Ogbonna, C. B. (2022). Rural-urban disparities in ART adherence among pregnant women in Nigeria. *African Journal of Reproductive Health*, 26(3), 88–102.
- Oku, A. O., Owoaje, E. T., & Oramasionwu, C. U. (2014). Prevalence and determinants of adherence to HAART among people living with HIV/AIDS in Cross River State, Nigeria. *International Journal of Community Medicine and Public Health*, 1(1), 20–27.
- Omonaiye, O., Kusljic, S., Nicholson, P., & Manias, E. (2018). Medication adherence in pregnant women with human immunodeficiency virus receiving antiretroviral therapy in sub-Saharan Africa: A systematic review. *BMC Public Health*, 18(1). <https://doi.org/10.1186/s12889-018-5651-y>
- Onyeonoro, U. U., Okwara, E. C., & Aguwa, E. N. (2023). Knowledge and perception of ART adherence among people living with HIV/AIDS in tertiary healthcare facilities in Nigeria. *African Health Sciences*, 23(1), 59–72.
- Tapp, C., Milloy, M., Kerr, T., Zhang, R., Guillemi, S., Hogg, R., et al. (2011). Female gender predicts lower access and adherence to antiretroviral therapy in a setting of free healthcare. *BMC Infectious Diseases*, 11(1). <https://doi.org/10.1186/1471-2334-11-86>
- Tesfaye, D., Hibistu, D., Abebo, T., Asfaw, F., Lukas, K., Laelago, T., et al. (2019). Option B plus antiretroviral therapy adherence and associated factors among HIV-positive pregnant women in Southern Ethiopia. *BMC Pregnancy and Childbirth*, 19(1).

Weichseldorfer, K., Newton, D., & Green, K. (2021). The effectiveness of HAART in reducing mother-to-child transmission of HIV: A systematic review. *AIDS Reviews*, 23(2), 134–146.

World Health Organization. (2021). *Guidelines for PMTCT and HIV care in pregnant women*. Geneva: WHO Press.

Zoungrana-Yameogo, W., Fassinou, L., Ngwasiri, C., Samadoulougou, S., Traoré, I., Hien, H., et al. (2022). Adherence to HIV antiretroviral therapy among pregnant and breastfeeding women, non-pregnant women, and men in Burkina Faso: Nationwide analysis 2019–2020. *Patient Preference and Adherence*, 16, 1037–1047.