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STATUS DENIAL AND STIGMATIZATION ON ADHERENCE TO ANTI-RETROVIRAL THERAPY AMONG HIV POSITIVE ADOLESCENTS IN BENUE STATE

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Abstract: *This study investigated the influence of status denial and stigmatization on adherence to ART among HIV positive adolescents in Benue State. This study adopted cross-sectional survey design where 338 HIV positive adolescents in Benue State were used. They comprised of 146 (43.2%) males and 192 (56.8%) females. Their ages ranged from 10-18years with a mean age of 14.438 (SD=2.663). This study employed the use of proportionate sampling to draw the sample for the study. This study used the HIV Status Denial Scale, AIDS Related Stigma Scale and the Self-reported Adherence to ART Questionnaire. The hypotheses raised in this study were tested using simple linear regression, and standard multiple regression analyses. The results showed that there was a significant influence of status denial on adherence to ART among HIV positive adolescents in Benue State. The results also showed that there was a significant influence of stigmatization on adherence to ART among HIV positive adolescents in Benue State. The results showed that there was a significant joint influence of status denial and stigmatization on adherence to ART among HIV positive adolescents in Benue State. It was recommended that adherence counselors in HIV clinics should expand their service to re-emphasize helping HIV positive adolescents to accept their positive status as part of their lives. Secondly, to tackle stigmatization which has been identified as a barrier in adherence to ART in Nigeria, there is need to promote the adoption of human rights approach and strengthening the Anti-Discrimination Law.*

Introduction

The best strategy in the management of Human Immunodeficiency Virus (HIV) is ensuring patients' adherence to antiretroviral therapy (ART). The ART works better when there is adherence to the treatment, which goes beyond

the act of taking the antiretroviral medicine to include the individual's attitude towards treatment (Viswanathan et al., 2015). HIV remains a pandemic that has claimed many lives and has impacted the healthcare systems of many countries, especially those in developing nations. The advent of effective antiretroviral medicines has changed the landscape of medical intervention in HIV, which is now considered a chronic illness (Meloni et al., 2020; Tougas et al., 2015).

Globally, HIV is the second leading cause of death among adolescents (Mabunda et al., 2019). World Health Organization (WHO, 2012) report shows that worldwide 410,000 young people aged 10 to 24 years old referred to as adolescents and young adults (AYAs) were newly infected with HIV in 2020 (World Health Organization, 2015; Meloni et al., 2020). It is also estimated that over 80% of adolescents living with HIV in the world reside in sub–Saharan Africa (Ahonsi et al., 2014). In Africa, this group constitutes a third of the population with Zimbabwe, Nigeria, and South Africa bearing the burden (National Population Commission/Nigeria and ICF International, 2014).

Adolescents (10-19 years) make up 8% of people living with HIV (PLWH) in Nigeria with an HIV prevalence rate of 1.4% (Kim et al., 2014). HIV infections among adolescents in Nigeria are attributed mostly to failure in the prevention of mother-to-child transmission. Kim and colleagues in their review described features from works of literature that illustrated the vulnerability of adolescents who were not perinatally infected with HIV. The vulnerability is that, it is a period when a lot of changes in physical, mental, and emotional development take place. As a result, some engaged in alcohol consumption, risky sexual experimentation, and the use of hard drug. The high-risk sexual behavior of adolescents involves their engagement in unprotected sex with multiple partners, transactional sex, being easily coerced into sex, and peer pressure. Though analysis shows that the male adolescents engage in risky behavior than females; early sexual debut, marriage, and childbirth also make the African female youths vulnerable to HIV infection (UNAIDS, 2017; National Population Commission /Nigeria and ICF International 2014).

High levels of stigma, gender inequality, punitive laws against repressed vulnerable groups, and poverty are identified structural factors that contribute and increase these vulnerabilities (National Population Commission/Nigeria and ICF International, 2014). In addition to these, adolescents are reported to exhibit weak and limited engagement as well as marginalization from mainstream healthcare services; which has the possibility of affecting their adherence to antiretroviral therapy on detection (UNAIDS, 2017; Xu et al., 2017). For the perinatally infected adolescents, their vulnerability lies in their experience of complicated clinical courses, loss of one or both parents with attendant family instability, discrimination, challenges from disclosure, and transition from caregiver to self-care (National Agency for Control of

AIDS, 2016). Available data show a lack of comprehensive knowledge of HIV, AIDS, STIs and reproductive health among adolescents which may negatively affect their adherence to ART. Ahonsi and colleagues (2014) reported less than 60% comprehensive knowledge of HIV and AIDS among African youths. In Nigeria, data from the National Agency for Control of AIDS (NACA, 2016) also show that only 22% of adolescents and 27% of young adults have comprehensive knowledge of HIV further adding to their vulnerability.

Antiretroviral therapy is a combination of three or more antiretroviral drugs to prevent and manage HIV infection by preventing or suppressing viral replication. Due to the effectiveness of ART, more children are surviving to adolescence and adulthood (National Agency for Control of AIDS, 2016). The use of ARTs has led to decreased mortality and morbidity with an increased quality of life as a result of HIV viral suppression and the attendant improvement in the immunological and clinical status of PLWH, including adolescents (Adejumo et al., 2015; Hornschuh et al., 2017). However, attaining and sustaining the HIV treatment endpoints, requires not less than 95% continuous adherence to ART (Ridgeway et al., 2018; Arnold et al., 2019). Failure of which results in the selection of resistant strains of the virus, which leads to disease progression, reduction of future therapeutic options, and increased risk of HIV transmission due to high viral load.

Various adherence levels have been recorded in low and medium-income countries. Adolescents have been generally identified as having poor adherence to ART and hence poorer outcomes compared to their adult counterparts (Arnold et al., 2019; Bakanda et al., 2011). In a meta-analysis in which adherence level cut-offs of >85%, 90%, 95% and 100% was used, 62% of adolescents were found to be adherent to ART. A review of adolescents' adherence levels to ART in the United States of America (USA) showed adherence between 28.3% to 69.8%. A 2014 systematic review identified adherence levels of between 16% to 99% in adolescents (Meloni et al., 2020). In Thailand, suboptimal adherence was recorded in 48.4% of the perinatally infected adolescents (Xu et al., 2017). Optimal level of adherence was obtained in 84% adolescents (12-24 years) in Africa and Asia from the systematic review and meta-analysis done by Kim and colleagues while South America (63%), Europe (62%), and North America (53%) had the poorest rates of adherence (Kim et al., 2014).

Adherence has virologic, immunological, and clinical implications for HIV management outcomes. Studies among geriatric patients also have shown that adherence is a challenge that cut across all ages (Jin et al., 2016). In a comprehensive systematic review and meta-analysis study of adherence in adolescents and young adult aged 15–24 years from 53 countries, 62.3% was found to be adherent. Few published studies in Nigeria assessed ART adherence among adolescents and reported varying percentages of the adolescents with optimal adherence. In two different treatment facilities in Lagos state, optimal adherence level

were self-reported by 84% (Aderemi-Williams & Ogunsowo, 2015) and 26% (David et al., 2016) of the adolescents.

A meta-analysis of adherence in sub-Saharan Africa indicated adherence rates of less than 80% among 23% of Africans (Croome et al., 2017). While there is no particular cut-off mark for adherence to be described as good adherence, most studies framed an adherence rate of 85% and above as good adherence (Falang et al., 2012; Suleiman & Momo, 2016). A related study in a rural setting in the same sub-region in Nigeria showed a 50.4% adherence rate (Oku et al., 2014). Onyeonoro et al. (2013) found a good adherence rate in the southern sub-region of Nigeria in the study of adherence among 282 children ages 4 months to 15 years in Nnamdi Azikiwe University Teaching Hospital, Nigeria. In the study, adherence rates were 92% for females, and 90% for males. In a study in Ilorin, South-West Nigeria sub-region, Bello (2011) found that adherence rates measured through pill count and self-report for a 20-month period in May 2009–December 2010 was 73.3%. A study in the Middle-Belt region of Nigeria reported a better adherence. In a cross-sectional study of 250 participants who had been enrolled in care at the Federal Medical Center Keffi for more than 6 months, researchers found that 62.8% had more than 95% adherence rate, while 31.2% reported 100% adherence rate (Pennap et al., 2013). In a retrospective study (Tor-Anyiin, 2018) in Benue state, 89% and 94% AYAs recorded optimal adherence in urban and rural areas respectively. Benue state currently is one of the states in Nigeria with the highest prevalence (4.9%) of HIV infection (Kim et al., 2014).

Adherence inhibitors have been found to include stigma associated with taking ARVs, side effects associated with ARVs, and education level (Ankrah et al., 2016; Gare et al., 2015). According to Ankrah et al. (2016), other factors include distance from the clinic as reported by patients, transportation costs, and forgetfulness. The experiences of adolescents and how they cope with various challenges associated with ART and the possible effect on their adherence in Africa and resource-limited settings are under-reported and need to be examined (National Population Commission/Nigeria and ICF International, 2014). Therefore, this study will assess the role of psychological factors such as status denial and stigmatization which are implicated in predicting adherence to ART among adolescents.

One of the variables implicated in predicting adherence to ART among adolescents is status denial. Status denial connotes the complete refusal of a diagnosed person to accept their sero-status as positive. People living with HIV/AIDS who accept their status as part of their lives are expected to engage in health seeking behaviours such as drug intake while those who denial their positive status may refuse to initiate or maintain treatment protocols. The factors that influence adherence manifest as either promoters or inhibitors of the adherence behaviour. Previous studies have suggested that people living with HIV are motivated to take treatment depending on the

premium they place on the treatment, the benefits, self-efficacy, acceptance of diagnosis, and disclosure of status (Mannheimer & Hirsch-Moverman, 2015; Langebeek et al., 2014). The non-denial and disclosure of one's HIV status to relatives, friends, and partners has significant health implications. Studies have found that patients who accept their sero-status had better social support; stronger family and relationship cohesion; reductions in anxiety and depression; improvements in physical health, emotional support, and financial support; and were better able to take ART freely and to improve their ART adherence than those who denied their positive status (Yonah et al., 2014; Tshweneagae et al., 2015).

Prevalence rates of HIV status acceptance as opposed to status denial, and serostatus disclosure to any person ranged from 5% to 96.7% (Tam et al., 2015; Kiula et al., 2013). Patients' acceptance of diagnosis and willingness to disclose status enhances social support, thereby facilitating adherence. Accepting one's diagnosis ensures prompt initiation of treatment, while denial leads to delay and poor health outcomes (Portelli et al., 2015). Some qualitative studies have reported barriers that include stigma and discrimination (Wasti et al., 2012), status denial and HIV non-disclosure (Arnold et al., 2014), and religious beliefs (Holtzman et al., 2015; Medved-Kendrick, 2017). Status denial is an indication of lack of insight and the unwillingness to follow stipulated treatment regimen. Thus, status denial may be one of the prime predictors of adherence behaviour especially among adolescents. However, there may be other predictors of adherence to ART as well.

Another variable implicated in predicting adherence to ART among adolescents is stigmatization. Stigma is a chief reason the AIDS epidemic continues to devastate societies around the world (Marta, 2011). It is often associated with discrimination and is expressed in many different ways that affect the targeted victims. Stigma is an undesirable or discrediting attribute that an individual possesses, thus reducing that individual's status in the eyes of the society (Sellier et al., 2011). Thus, stigmatization as a process can lead to prejudicial thoughts and actions on the parts of governments, communities, health care providers, friends, and families towards HIV positive adolescents. Stigma and discrimination are associated with many chronic health conditions, including leprosy, mental health, tuberculosis, and HIV/AIDS. Adolescents living with HIV confront numerous psychosocial stressors in addition to having to cope with developmental challenges of normal adolescent children.

HIV-related challenges may start with the emotional trauma from disclosure of their HIV status, the fear of uncertainties from disease progression, deterioration of quality of life, and death or bereavement related to the death of loved ones on one hand; on the other hand, the stress of long-term treatment and coping with stigma and discrimination at the different levels of the society are also faced by them. HIV-related stigma which is most times spiked by misinformation and myths is the negative

attitude, prejudice, abuse or discrimination directed at people living with HIV/AIDS. This includes being barred from accessing health care services, shunned by friends, community, family and being treated poorly in educational settings (Dahlui et al., 2015).

In Nigeria, there are misconceptions that HIV/AIDS is a death sentence and is commonly associated with infidelity, and is perceived to be transmitted via sexual intercourse only. In November 2014, HIV and AIDS Anti-Discrimination Act 2014 was passed into law by the Nigerian government. This HIV/AIDS Anti-Discrimination Act 2014 was enacted to protect the dignity and fundamental human rights of people living with HIV/AIDS, through the elimination of all manner of discrimination due to their HIV status. Violation of this Act also attracts a 1year imprisonment or more if the offenders are unable to pay the stipulated fine (HIV/AIDS Anti-Discrimination Act 2014).

The stigma of HIV and AIDS is one social process that has been broadly assumed to adversely affect multiple facets of engagement in HIV-related care as well as other factors that may undermine ART adherence, including HIV sero-status disclosure (Tsai et al., 2013), social support (Siedner et al., 2013) and mental well-being (Tsai et al., 2013). Stigma is an "attribute that is deeply discrediting" imposed by the society that reduces someone "from a whole and usual person to a tainted, discounted one" (Ruanjahn et al., 2010, p. 3). When the attribute becomes linked to "discrediting dispositions" (e.g., negative evaluations or stereotypes), these may come to be widely believed in the community (Martin et al., 2012). During the labeling process, persons with and without the stigmatized attribute are separated into "them" and "us" (Wasti et al., 2012) and may be subjected to overt acts of hostility and discrimination (enacted stigma) (Izugbara & Wekesa, 2011). To avoid the potentially unpleasant consequences of revealing their discredited status, stigmatized persons may elect to conceal their seropositivity from others (Okoror et al., 2013).

Stigmatized persons may also internalize the beliefs held in the community and develop self-defacing internal representations of themselves (internalized stigma) possibly leading to demoralization, diminished self-efficacy and emotional distress (Mohammadpour et al., 2010). Similar to adults, if seropositive adolescents attain undetectable viral load, there is a 94% likelihood of not transmitting HIV, living a longer and better quality of life (Arnold et al., 2019). Due to the paucity of data for this subset in Nigeria, it justifies the need to assess this much-needed baseline information. This will provide a better understanding of how to encourage long-term adherence to ART among adolescents. It will also generate indicators for developing target interventions programs that promotes durable adherence to ART among adolescents.

Status Denial and Adherence to ART

Ahmed et al. (2022) explored barriers and facilitators of adherence to ART among PLWH in Pakistan in general and COVID-19 pandemic related in particular. Semi-structured interviews were conducted among 25 PLWH from

December 2020 to April 2021 in the local language (Urdu) at the ART centre of Pakistan Institute of Medical Sciences, Islamabad, Pakistan. Interviews were audio-recorded in the local Urdu language, and bilingual expert (English, Urdu) transcribed verbatim, coded for themes and sub-themes, and analyzed using a phenomenological approach for thematic content analysis. Results indicated that stigma and discrimination, fear of HIV disclosure, economic constraints, forgetfulness, religion (Ramadan, spiritual healing), adverse drug reactions, lack of social support, alternative therapies, and COVID-19 related lock-down and fear of lesser COVID-19 care due to HIV associated stigma were identified as barriers affecting the retention in HIV care. At the same time, positive social support, family responsibilities, use of reminders, the beneficial impact of ART, and initiation of telephone consultations, courier delivery, and long-term delivery of antiretrovirals during COVID-19 were identified as facilitators of HIV retention. They concluded that improving adherence and retention is even more challenging due to COVID-19; therefore, it requires the integration of enhanced access to treatment with improved employment and social support. HIV care providers must understand these reported factors comprehensively and treat patients accordingly to ensure the continuum of HIV care. They recommended that a coordinated approach including different stakeholders is required to facilitate patient retention in HIV care and consequently improve the clinical outcomes of PLWH.

Izudi et al. (2021) evaluated the effects of disclosure of HIV status on adherence to clinic visits and patient representation among people living with HIV in eastern Uganda. In this quasi-randomized study, they performed a propensity-score-matched analysis on observational data collected between October 2018 and September 2019 from a large ART clinic in eastern Uganda. They matched participants with disclosed HIV status to those with undisclosed HIV status based on similar propensity scores in a 1:1 ratio using the nearest neighbor caliper matching technique. The primary outcomes were patient representation (the tendency for patients to have other people pick-up their medications) and adherence to clinic visits. They fitted a logistic regression to estimate the effects of disclosure of HIV status, reported using the odds ratio (OR) and 95% confidence interval (CI). Of 957 participants, 500 were matched. In propensity-score matched analysis, disclosure of HIV status significantly impacts adherence to clinic visits and reduced patient representation. Sensitivity analysis showed robustness to unmeasured confounders. Conclusions were that disclosure of HIV status is associated with increased adherence to clinic visits and lower representation to collect medicines at the clinic. They recommended that disclosure of HIV status should be encouraged to enhance continuity of care among people living with HIV.

Dzansi et al. (2020) conducted six (6) individual in-depth interviews and three (3) focus group discussions to explore adherence behaviour

among patients diagnosed with HIV in a teaching hospital in Accra, Ghana. Participants were drawn from the intervention arm of a mobile phone adherence intervention program. They had been enrolled in the study for at least six (6) months before the interviews were conducted. Results revealed that participants adhered to treatment irrespective of prompts from significant others. Adherence promoters included perception of ART as part of daily routines, benefits of the ART, awareness of regimen, access to food, and transparency. Adherence inhibitors were forgetfulness, secrecy, waiting time, religious beliefs, and sleep. They concluded that people living with HIV (PLWHIV) have the personal motivation to take medication; however, negative perceptions about HIV must be addressed to ensure optimum adherence behaviour.

Dessie et al. (2019) estimated the pooled effect of disclosure on adherence to ART among adults living with HIV in Ethiopia. They performed a systematic search for articles reporting on peer-reviewed, quantitative, English-language observational studies of reporting the association between self sero-status disclosure and good ART adherence in adults living with HIV/AIDS in Ethiopia during from 2010 to 2015. They conducted a meta-analysis for the pooled effect of adherence using a random effects model in Stata version 14 and assessed publication bias using the Egger's test for funnel plot asymmetry. Their search returned in 179 studies, of which seven (3.9%), were eligible and included in the final meta-analysis. The seven included studies were conducted from 2010 to 2015. Their analysis found that disclosure had a significant effect on adherence to ART in adult patients living with HIV. Patients who disclosed were 1.64 times more likely to have good adherence to ART compared with those who did not. The small number of studies eligible for review and differences in study definitions of adherence and disclosure were the main limitations of this study. The review found a statistically significant positive effect of disclosure status on adherence to ART in adult patients living with HIV in Ethiopia. This suggests that Ethiopia's national treatment and prevention programs should redouble efforts to encourage self-disclosure among people living with HIV/AIDS.

Stigmatization and Adherence to ART

Rajmohan et al. (2020) examined prevalence of HIV related stigma among PLHA and to find the association between stigma and adherence to Anti-Retroviral Therapy (ART) among HIV patients in central Kerala. A cross-sectional study was done from July to December 2018 among 105 adult HIV positive patients who have enrolled in Thrissur Network of People living with HIV/AIDS (TNP PLUS). After obtaining informed consent, the participants were interviewed using a structured interview schedule consisting of questions on socio-demographic details, stigma and ART adherence. The prevalence of high stigma was found to be 21% and moderate stigma 61%. Out of 105 study subjects, 68 (64.8%) were found to have a high adherence to ART (≥95%) and 37 (35.2%) were found to have a low adherence (<95%). Patients who had a moderate/high

internalized stigma tend to have a low adherence to ART as compared to patients who had low stigma. On analyzing the association between the different forms of stigma and adherence to ART, isolation by family members, abandoned by friends and verbal stigma were significantly associated with low ART adherence. They concluded that HIV related internalized stigma was pervasive among the study subjects. These patients also experience other forms of enacted stigma. The presence of internalized stigma was found to be significantly associated with low adherence to ART.

Obidiya and Alali (2020) examined if stigmatization affects adherence to ART. Eleven (11) primary articles – descriptive cross-sectional surveys (from 2008 to 2020 - adults 19 years and above) of studies conducted in Nigeria which met the inclusion criteria was selected and reviewed. The result showed that low self-esteem (internalized stigma), facility based (status disclosure), community based (hostility & restriction in family events), family based (not sharing cutleries / toilet facilities) and workplace-based stigma (isolation by co-workers & threats of employment termination) contributed to non-adherence to ART. Sex workers do not feel free accessing HIV services due to fear of possible shaming and blaming by the service providers. The introduction of HIV and AIDS Anti-Discrimination Act 2014 enhanced the protection of the fundamental rights of these PLWHA. The review concluded that stigma is a key factor to non-adherence to ART in Nigeria. The study recommended adoption of human rights approach, strengthening of Anti-Discrimination Laws and future research on inclusion of family members in the treatment of PLWHA in Nigeria to promote their adherence to ART.

Mitzel et al. (2019) examined four alternative models of relationships among HIV-related stigma, medication beliefs, and adherence. Cross-sectional analyses were used to test the four alternative models to best depict associations among HIV-related stigma, medication beliefs, and medication adherence. Models tested included two indirect effects models, an interaction model, and a simple predictor model with no interaction or indirect effects. The outcome variable was HIV medication adherence, and model fit was determined by variance accounted for, Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) values. An interaction model between internalized stigma and medication concerns accounted for the most variance in adherence. There was also a significant indirect effect of internalized stigma on adherence via medication concerns. They recommended that medication concerns are a promising target for interventions focusing on increasing adherence among people with HIV.

Sianturi et al. (2019) investigated the association between stigma, beliefs about medicines, sociodemographic characteristics including ethnicity and adherence in People living with HIV (PLHIV) in Papua, Indonesia. They conducted a cross-sectional study using questionnaires. They included participants from two hospital-outpatient clinics who were on antiretroviral treatment (ART) for more than 6

months, were at least 18 years old, and signed informed consent. Participants completed the Medication Adherence Rating Scale (MARS), Beliefs about Medicines Questionnaire (BMQ), an HIV stigma scale and questions on demographic information. Data on antiretroviral medications were collected from medical records. The outcome was self-reported adherence as measured by the MARS using an 80% cut-off score. Multivariate logistic regression was used to analyze the data. Overall, 331 out of 363 eligible participants were included with a mean age of 33.3 (± 9.4) years, 61.6% were female, 67.1% were Papuan. A total of 65.9% of participants were adherent. Being Papuan decreased the likelihood of adherence. Feeling more distant, a stigma type, also decreased the likelihood of adherence. They concluded that the ethnicity of being Papuan and taking a distance to others were associated with non–adherence. They recommended that targeted interventions should be developed to improve adherence in this group.

Nurfalah et al. (2019) examined the relationship between HIV stigma and adherence to antiretroviral (ARV) therapy among women with HIV. 120 women with HIV involved in this cross-sectional study. The participants were out-patients at the Voluntary Counseling and Testing (VCT) Abdul Moeloek Hospital in Lampung, Indonesia. They examined data from 120 patients. Through chi-squared tests, a statistically significant correlation between HIV stigma and adherence to ARV therapy was revealed. Women with low levels of stigma toward HIV demonstrated adherence to ARV treatment that was 2.27 times greater than that of women with high levels of stigma toward HIV. They recommended that one way to increase adherence to ARV therapy in women with HIV is by minimizing its stigma. This can be done by increasing their self-confidence and not differentiating between people living with HIV and others in the provision of health services.

i. There will be a significant influence of status denial on adherence to ART among HIV positive adolescents in Benue State.
ii. There will be a significant influence of discrimination on adherence to ART among HIV positive adolescents in Benue State.
iii. There will be a significant joint influence of status denial and stigmatization on adherence to ART among HIV positive adolescents in Benue State.

Design

This study adopted cross-sectional survey design to investigate the influence of status denial and stigmatization on adherence to ART among HIV positive adolescents in Benue State. This design is used because it gives the researcher the room to collect data across the different parameters of the studied population and make predictive inferences. In the study the independent variables were status denial and stigmatization while the dependent variable was adherence to ART.

Participants

The participants for this study were 338 HIV positive adolescents in Benue State. They comprised of 146 (43.2%) males and 192 (56.8%) females. Their ages ranged from 10-

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18years with a mean age of 14.438 (SD=2.663). In terms of their ethnic groups, 105 (31.1%) were Tiv, 89 (26.3%) were Idoma and 144 (42.6%) were from other ethnic groups. Considering their religions, 194 (57.4%) were Christians while 144 (42.6%) were Muslims. Lastly, as for their duration with HIV/AIDS, 154 (45.6%) had it for 1-5years, 136 (40.2%) had it for 6-10years while 48 (14.2%) had it for over 10years.

Sampling

This section covered the sample size estimation method and the technique used to draw the samples for the study.

Sample Size Determination

The sample size for this study was determined using the Krejcie and Morgan Table (Krejcie & Morgan, 1970) as seen in the appendix. Based on this table, a sample of 338 HIV positive adolescents represents a population of 2,741 patients in the selected Hospitals in Benue State.

Sampling Technique

This study employed the use of proportionate sampling to draw the sample for the study. This technique was used because the respondents were sampled based on their proportions in the three selected hospitals from; General Hospital Makurdi (1,321 patients, Medical Records, 2022), General Hospital Gboko (667 patients, Medical Records, 2022) and General Hospital Otukpo (753 patients, Medical Records, 2022). The proportions drawn are as seen below:

General Hospital Makurdi $\frac{1321}{2741} \times \frac{338}{1} = 162.9 \approx 163$

General Hospital Gboko $\frac{667}{2741} \times \frac{338}{1} = 82.2 \approx 82$

General Hospital Otukpo $\frac{753}{2741} \times \frac{338}{1} = 92.9 \approx 93$

Therefore, a sample of 338 adolescents was drawn from the three selected hospitals.

Instruments

This study measured the respondents' demographic attributes, status denial, perceived stigmatization and adherence to ART using the following scales:

Demographic Variables: The researcher measured the respondents' sex, age, ethnic group, religion and duration with HIV.

HIV Status Denial Scale: Status denial was measured using the HIV Status Denial Scale developed by Olley and Olaseni (2016). The scale was designed to measure HIV status denial among children. The 7-item scale is rated on a 3-point format of 1 (entirely disagree) to 3 (entirely agree). The unidimensional scale has no reverse items. The author reported a Cronbach's alpha of .92 while the present study reported an alpha coefficient of .86. Sample of items include; "I don't think my HIV status is actually positive", "My HIV symptoms does not mean am HIV positive".

AIDS-Related Stigma Scale: Stigmatization was measured using the AIDS Related Stigma Scale developed by Kalichman et al. (2005). The scale measures perceived stigmatization among children who are HIV positive. The 9-item scale is measured using a format of 1 (I disagree) and

2 (I agree). The unidimensional scale has no reverse items and the score range is between 9 and 18. The author reported an alpha coefficient of .75 while the present study reported .80. Sample of items include; "people believe that those with AIDS must expect some restrictions on their freedom", "people believe that those who have HIV should be isolated".

Self-Reported Adherence to ART Questionnaire: Adherence to ART was measured using the Self-reported Adherence to ART Questionnaire developed by Fonsah et al. (2017). The questionnaire assesses adolescents' level of adherence to drugs. The 6-item scale is rated on a 3-point format of 1(rarely) to 3 (Often). The unidimensional scale has no reversed items and the least score is 6 while the highest score is 18. The author reported an alpha coefficient of .77 while the present study obtained .71. Sample of items include; "Have you ever missed ART because of side effects?", "Have you ever felt taking drugs is useless?"

Procedure

This study was conducted in three hospitals in Benue state. The researchers obtained ethical approval from the Benue State Hospital Management Board. Upon obtaining the approval, the researchers proceeded to the three general hospitals in Makurdi, Gboko and Otukpo to meet the respondents for data collection. The researchers sought the aid of research assistants (Nurses) who aided in the questionnaire administration process. Ethical guidelines were followed where the consent of the respondents was sought, they were assured of data confidentiality and their rights to withdraw at any point during the process. Those who finally consented were randomly sampled, given basic instructions and a copy of the scale to respond to. After the administration process, 338 copies of the questionnaire representing 100% return rate were submitted and found useful for data analysis.

Data Analysis

The data collected for the study were analyzed using both descriptive and inferential statistics. The researcher used mean, standard deviation, frequencies and simple percentages to describe the participants while simple linear regression was used to test hypotheses one and two, and standard multiple regression for hypothesis three.

Results

The three hypotheses raised in this study were tested using regression analysis, the results are presented in the following tables.

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Table 1: Simple linear regression showing the influence of status denial on adherence to ART among HIV positive adolescents in Benue State.

Variable	R	R^2	F	df	ß	t	sig
Constant	.516	.266	121.760	1,336		-3.543	.000
Status Denial					-.516	11.034	.000

The results presented in table 1 shows that there was a significant influence of status denial on adherence to ART among HIV positive adolescents in Benue State; R^2=.266, F(1,336)=121.760, p<.001. This means that status denial explained 26.6% of the variance in adherence to ART. In terms of the direction of the influence, the beta value (ß=-.516, t=11.034, p<.001) indicates a negative relationship between status denial and adherence, this means that the more adolescents deny their HIV status, the lesser their tendency to adhere to their ART. Thus, hypothesis one was supported.

Table 2: Simple linear regression showing the influence of stigmatization on adherence to ART among HIV positive adolescents in Benue State.

Variable	R	R^2	F	df	ß	t	sig
Constant	.175	.030	10.564	1,336		6.392	.000
Stigmatization					-.175	-3.250	.001

The results presented in table 2 shows that there was a significant influence of stigmatization on adherence to ART among HIV positive adolescents in Benue State; R^2=.030, F(1,336)=10.564, p<.001. This means that stigmatization explained 3% of the variance in adherence to ART. In terms of the direction of the influence, the beta value (ß=-.175, t=-3.250, p<.001) indicates a negative relationship between stigmatization and adherence, this means that the more the perceived HIV stigma, the lesser the tendency to adhere to ART among adolescents. Thus, hypothesis two was supported.

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Table 3: Standard Multiple regression showing the joint influence of status denial and stigmatization on adherence to ART among HIV positive adolescents in Benue State.

Variable	R	R^2	F	df	ß	t	sig
Constant	.544	.296	70.586	2,335		1.858	.000
Status Denial					.516	11.254	.000
Stigmatization					-.175	-3.810	.000

The results presented in table 3 shows that there was a significant joint influence of status denial and stigmatization on adherence to ART among HIV positive adolescents in Benue State; R^2=.296, F(2,335)=70.586, p<.001. This means that status denial and stigmatization jointly explained 29.6% of the variance in adherence to ART. Thus, hypothesis three was also supported.

Discussion

Hypothesis one was tested to find out if there will be a significant influence of status denial on adherence to ART among positive adolescents in Benue State. Findings indicated that there was a significant negative influence of status denial on adherence to ART among positive adolescents. Status denial entails the complete refusal of adolescents who are seropositive to accept their diagnosis. This implies that such adolescents may detest adherence to medication since they have failed to accept their status. This finding is related to that of Dessie et al. (2019) who found that HIV disclosure had a significant effect on adherence to ART in adult patients living with HIV. However, their study was on status disclosure among adults. Although, the result implies that since those who disclose their identity are adherent to ART, those who deny their status may resist medication. Similarly, Panmial et al. (2019) found that adherence to ART is significantly associated with disclosure status, although the direction was not indicated. Still in support, other studies (Dzansi et al., 2020) found that the promoters of adherence included counseling, educational interventions, and active disclosure among people living with HIV. In another study, Izudi et al. (2021) revealed that disclosure of HIV status significantly impacts adherence to clinic visits and reduced patient representation. This implies that patients who disclosed their status had low adherence and clinical visits.

Hypothesis two was tested to find out if there will be a significant influence of stigmatization on adherence to ART among positive adolescents in Benue State. Findings indicated that there was a significant negative influence of stigmatization on adherence to ART among positive adolescents. Stigmatization connotes the negative attitudes the society exhibits against people living with HIV/AIDS. This means that people who feel stigmatized will be more likely to avoid taking drugs and making clinical visits. This finding is inconsonance with Rajmohan et al. (2020) found that patients who had a moderate/high internalized stigma tend

to have a low adherence to ART as compared to patients who had low stigma. On analyzing the association between the different forms of stigma and adherence to ART, isolation by family members, being abandoned by friends and verbal stigma were significantly associated with low ART adherence. Still in agreement, Obidiya and Alali (2020) found that internalized stigma, facility based (status disclosure), community based (hostility & restriction in family events), family based (not sharing cutleries/toilet facilities) and school-based stigma contributed to non-adherence to ART. Other studies (Mitzel et al., 2019) have also found that people with low stigmatization and discrimination had good adherence to ART. People with low levels of stigmatization and discrimination were more likely to adhere to ART than those with high levels. Other researchers (Ekstrand et al., 2018; Sianturi et al., 2019; Nurfalah et al., 2019) found that the association between internalized stigma and adherence was mediated by the use of stigma-avoidant coping strategies, suggesting that keeping one's diagnosis a secret may make it more difficult to take one's medications.

Hypothesis three was tested to find out if there will be a significant joint influence of status denial and stigmatization on adherence to ART among positive adolescents in Benue State. Findings indicated that there was a significant joint influence of status denial and stigmatization on adherence to ART among positive adolescents. This finding agrees with Ahmed et al. (2022) who indicated that stigma and fear of HIV disclosure were identified as barriers affecting retention in HIV care.

Conclusion

Based on the finding obtained from the present study, the following conclusions were drawn:

i. Status denial is an antecedent of adherence to ART among HIV positive adolescents in Benue State.
ii. Stigmatization is a predictor of adherence to ART among HIV positive adolescents in Benue State.
iii. Status denial and stigmatization are co-determinants of adherence to ART among HIV positive adolescents in Benue State.

Recommendations

The following recommendations were made based on the findings obtained from the present study:

Adherence counselors in HIV clinics should expand their service to re-emphasize helping HIV positive adolescents to accept their positive status as part of their lives. In this way, they will better adhere to their treatment regimen.

Secondly, to tackle stigmatization which has been identified as a barrier in adherence to ART in Nigeria, there is need to promote the adoption of human rights approach and strengthening the Anti-Discrimination Law. The national health strategies should include health service designs targeted at stigma and discrimination reduction through education and empowerment of adolescent living with HIV to understand the need to change their attitudes and address their fears.

Also, families and communities should be educated on the nature of HIV/AIDS and should be involved in the care and treatment of HIV positive adolescents as this will help reduce stigma and discrimination. There is need for such adolescents to understand their rights and act when they are violated. If all these recommendations are enhanced and strengthened, HIV positive adolescents will be free to access HIV clinics without fear and will likely maintain optimum adherence to their ART.

Limitations of the Study

The researchers inadvertently met some challenges in the course of the study. These challenges are highlighted below:

i. The study employed a cross-sectional survey design which only explains the extent to which the independent variables predicted the dependent variable. Therefore, no causal inferences can be drawn from the findings of this study; that is, one cannot categorically state based on this finding that status denial and stigmatization causes adherence to ART. It can only be said of how they predict adherence.

ii. Secondly, the researchers used self-reported measures of data collection which suffer the major critique of giving the respondents the chance to fake their responses in order to look good before the society. This may have also affected the actual result of the study.

iii. Lastly, the researcher was financially constrained in carrying out the study. This explained why the study was limited to cover only three (3) hospitals in the most populated areas in Benue State.

Contributions to Knowledge

This study has contributed tremendously to knowledge by elucidating the impact of status denial and stigmatization on the adherence to ART among positive adolescents in Benue State. By this, the study has provided additional reference material and data for public health managers to make policies and decisions on improving adherence to ART among adolescents.

In addition, this indigenous study has availed finding that will be useful for the formulation of theories and models that explain adherence behavior and also for health interventions that will benefit the management of HIV in Nigeria.

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