



NIGERIAN INSTITUTE OF MEDICAL RESEARCH

A BIBLIOGRAPHY ON HIV/AIDS IN NIGERIA

2017-2022

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Abdullahi, A., Mustapha, M. I., David, D. A., & Ayodeji, O. T. (2018). Human immunodeficiency virus seroprevalence in patients with invasive cervical cancer in Zaria, North-Western Nigeria. *Annals of African medicine*, 17(1), 17–21. https://doi.org/10.4103/aam.aam_37_17

Abstract

Background: Cervical cancer is the commonest gynecological malignancy in our environment and is an Acquired Immuno-Deficiency Syndrome (AIDS)-associated malignancy. Documented data on the Human Immune-deficiency Virus (HIV) seroprevalence among patients with cervical cancer in our environment are scarce. **Objective:** The aim of this study is to determine the prevalence of HIV infection in women with cancer of the cervix. **Study design:** The work is a descriptive survey by design, concentrating in frequency of occurrences of prevalence of the disease in either cases for a number of years retrospectively carried out at the Radiotherapy and Oncology Centre of Ahmadu Bello University Teaching Hospital (ABUTH) Zaria. **Setting:** The study was carried out at the Radiotherapy and Oncology Centre of ABUTH, Zaria. **Materials and methods:** A 5 years retrospective review of patients with histologically-proven cancer of the cervix seen in the Radiotherapy and Oncology Centre, ABUTH, Zaria, North-Western Nigeria was undertaken. Data such as age, clinical stage of disease and HIV seropositivity at presentation were retrieved from the case files. Data analysis was done using the SPSS statistical package version IBM 23 and results presented in frequencies and percentages and charts for graphical presentation. **Results:** A total of 1,639 patients seen over a period of 5 years were reviewed. The age range of both groups of patients was from 28 years to 92 years with a mean age of 50.5 years. One thousand five hundred and seventy-three of the patients (96%) were seronegative to the HIV tests while 66 (4%) were seropositive. The age range of the seropositive patients was 28 - 49 years with a mean age of 38.1 years. Their peak age at presentation was 30 - 39 years. Similarly, the age range of the seronegative patients was 30 - 92 years with a peak at 40-49 years. 51 (89.5%) of the HIV seropositive patients presented with advanced clinical stage disease, i.e, International Federation of Obstetrics and Gynecology (FIGO) stage 2B and above. 1,363 (93%) of the HIV seronegative patients presented with FIGO 2B disease and above, both scenario illustrating the general trend of late presentation of cancer patients to hospital in our environment. **Conclusion:** The study shows that the prevalence of HIV infection among cervical cancer patients is low in Zaria, with earlier age of development of cervical cancer among HIV seropositive patients compared to HIV seronegative counterparts. Both group of patients present with cervical cancer at an advanced stage. More studies therefore needed to be done to identify the predisposing factors to the high incidence of invasive cervical cancer in our environment and introduction of cervical cancer screening at an earlier age among HIV seropositive patients.

Abe, O. E., Fagbule, O. F., Olaniyi, O. O., Adisa, A. O., & Gbolahan, O. O. (2021). Orofacial lesions associated with long-term highly active antiretroviral therapy among HIV-seropositive adults in Ibadan, Nigeria. *The Pan African medical journal*, 38, 370. <https://doi.org/10.11604>

Abstract

Introduction: highly active antiretroviral therapy (HAART) has contributed to a reduction in HIV-related oral lesions and improved quality of life among HIV seropositive patients. However, the therapy is not without its side effects. This study was aimed at assessing the self-reported orofacial manifestations due to long term use of HAART, as well as the pattern of oral lesions on examination. **Methods:** this was a cross-sectional study conducted among HIV seropositive adult patients in Ibadan, who had been on HAART for at least two years. Data were collected using an interviewer-administered questionnaire. Clinical diagnosis of HIV-related oral lesions was made according to the EC-Clearinghouse criteria. Data analysis was done using SPSS version 25. **Results:** the study participants comprised of 227 HIV seropositive patients who were HAART experienced, with 54 (24%) males and 173 (76%) females. Their mean age (\pm SD) was 44.7 (\pm 9.4) years. The participants CD4 count ranged from 13-1338 cells/mm³, with a median count of 341 cells/mm³. About half (45%) of the participants noted one or more orofacial changes since they commenced HAART. These oral changes included dryness of mouth, burning sensation, abnormal taste, melanotic hyperpigmentation, oral thrush, ulcers, and parotid swelling. Most of those who reported oral changes had been on HAART over 10 years ($p=0.03$), and the changes were more reported among those on the first-line regimen. **Conclusion:** melanotic hyperpigmentation was the most common oral lesion found and burning mouth syndrome was the most commonly reported complain among HIV-seropositive adults who are on long-term HAART.

Keywords: CD4 count; HIV-seropositivity; HIV/AIDS; Highly active antiretroviral therapy; Nigeria; oral candidiasis; oral ulcers; orofacial lesions.

Abiodun, O., Jagun, O., Sodeinde, K., Bamidele, F., Adekunle, M., & David, A. (2021). Socioeconomic, clinical, and behavioral characteristics of adolescents living with HIV in Southwest Nigeria: implication for preparedness for transition to adult care. *AIDS care*, 1–9. Advance online publication. <https://doi.org/10.1080/09540121.2021.1906402>

Abstract

There is a need to generate data that demonstrate preparedness (or a lack of it) of adolescents to crossover to adult care to inform policy and create appropriate models in LMICs. This cross-sectional survey of 252 adolescents (15-19 years) receiving HIV-care assessed sociodemographic characteristics, clinical and ART status, and HIV-related behaviors. Also, the study appraised HIV status awareness, and disclosure, and access to healthcare. The mean age of the participants was 16.41 (SD = 1.41) years, and 128 (50.8%) of them were female. The mean adherence level (by VAS) reported was 73.05 \pm 16.75. The most frequently reported reasons for missing medications were forgetting (39.6%), falling asleep (37.7%), being away from home (33.8%), and being too busy with other endeavors (32.6%). Most (93.7%) of the participants paid for health care services out-of-pocket. Many (38.1%) of them did not know how they acquired HIV infection. About half (44.8%) of them had boy/girlfriends, but only 25 (9.9%) reported ever having sex. Only 4% disclosed their HIV status to their boy/girlfriends. Critical gaps exist in adolescents' preparedness for transition

to adult HIV-care, necessitating the need for specific transition preparedness programs within the HIV-care cascade to address the peculiar needs of adolescents at this stage. **Trial registration:** ClinicalTrials.gov identifier: [NCT03394391](https://clinicaltrials.gov/ct2/show/study/NCT03394391).

Keywords: Adult care; Nigeria; adolescents living with HIV; transition preparedness.

Abiodun, O., Sodeinde, K., Imhonopi, G., Omotosho, A., & Amaike, C. (2021). Social isolation is associated with major depressive disorders among women accessing HIV/AIDS care in Nigeria. *AIDS care*, 1–5. Advance online publication. <https://doi.org/10.1080/09540121.2021.1944595>

Abstract

HIV infection is associated with a four-fold increase in the occurrence of major depressive disorders. The prevalent lack of a partner and communal support further aggravates the burden of depression among HIV-positive women. The current study aimed to assess the relationship between social support and major depressive disorder (MDD). We conducted a cross-sectional study of 458 adult women accessing HIV care in Nigeria. Data was collected through structured interviews using validated scales for measuring social support and depression. Bivariate and multiple regression analyses were used to evaluate the relationship between social support and MDD. The prevalence of MDD requiring intervention was 5.9%. More than half (52.6%) of the participants were socially isolated. The likelihood of MDD increased by 5% for every point reduction in social support scores (adjusted Odds ratio = 0.950, 95% Confidence interval = 0.918-0.983). Also, time since HIV diagnosis had an inverse relationship with major depressive disorders (adjusted Odds ratio = 0.984, 95% Confidence interval = 0.971-0.998). Social isolation is common among women living with HIV. Social support might protect against major depressive disorders requiring treatment. Social support may, therefore, be a critical success factor for interventions, whether support-focused or broader intervention for major depressive disorders among women living with HIV.

Keywords: HIV; Nigeria; major depressive disorder; social support; women.

Adamu, A., Mchunu, G., & Naidoo, J. R. (2021). Women living with HIV in Nigeria: Predictive influence of hardiness on perceived stress. *African journal of AIDS research : AJAR*, 20(1), 100–106. <https://doi.org/10.2989/16085906.2021.1879884>

Abstract

Background: Women living with HIV experience severe HIV-related stress in sub-Saharan Africa. But evidence shows that individuals with high levels of the psychological hardiness characteristic who accept stressful situations as meaningful experience may withstand psychological stress. However, the literature on associations between hardiness and HIV-related stress among women living with HIV is scarce. The objective of this study was to investigate the relationship between hardiness and HIV-related stress among women living

with HIV in Niger State, Nigeria. **Methods:** This study used a cross-sectional design. A systematic sampling technique was used to recruit 748 participants from three selected hospitals in Niger State. The perceived stress scale and the health-related hardiness scale were used for data collection. A total of 676 questionnaires were returned in usable form and were analysed using hierarchical regression analysis. **Results:** Pearson's correlation analysis showed that there is a statistically significant association between perceived stress and subscales of hardiness ($p < 0.001$). Hierarchical regression analysis results showed that hardiness significantly predicted perceived stress among the study sample with $R^2 = 0.286$, $F(3, 669) = 90$, $p < 0.001$. **Conclusion:** The finding of this study that higher hardiness is associated with lower perceived stress suggests the potential helpfulness to women living with HIV of this personality for coping. The finding also suggests that nurses and other health care workers may facilitate the development and/or improvement of hardiness characteristics through cognitive behavioural interventions among women living with HIV to ameliorate HIV-related stress.

Keywords: adversity; coping; resilience; sub-Saharan Africa; traits.

Adamu, P. I., Oguntunde, P. E., Okagbue, H. I., & Agboola, O. O. (2018). On the Epidemiology and Statistical Analysis of HIV/AIDS Patients in the Insurgency Affected States of Nigeria. *Open access Macedonian journal of medical sciences*, 6(7), 1315–1321. <https://doi.org/10.3889/oamjms.2018.229>

Abstract

Background: The effect of insurgencies on a nation regarding the economy, education, health and infrastructure cannot be overemphasised. **Aim:** This research is therefore focused on analysing the incidence of HIV/AIDS disease in states affected by the activities of the Boko Haram insurgency in Nigeria. **Material and methods:** The data collected refer to the period from 2004 to 2017, reporting information on 16,102 patients and including the age, gender, year of diagnosing and status of the patients. Descriptive, Chi-square test of independence and Correlation analyses were performed using Statistical Package for Social Sciences (SPSS) version 20. **Results:** It was discovered that the majority of those living with HIV/AIDS in these Boko Haram ravaged areas are females between the age group of 30 years to 39 years. Reported cases of HIV/AIDS started increasing significantly from age 20, and the highest number of reported cases of HIV/AIDS was recorded in the year 2017. **Conclusion:** The status of the patient was found to be dependent on both the gender and age of the patients' treatment, though the strength of the linear relationship between status and age is not significantly different from zero.

Keywords: AIDS; Boko Haram; Epidemiology; HIV; Nigeria.

Adefalu, M. O., Tunde-Ayinmode, M. F., Issa, B. A., Adefalu, A. A., & Adepoju, S. A. (2018). Psychiatric Morbidity in Children with HIV/AIDS at a Tertiary Health Institution in North-

central Nigeria. *Journal of tropical pediatrics*, 64(1), 38–44.
<https://doi.org/10.1093/tropej/fmx025>

Abstract

Introduction: Children with human immunodeficiency virus (HIV) infection are living longer with the infection and are at risk of different complications. We assessed for the prevalence of and associated factors for psychiatric morbidity among HIV-infected children in a tertiary facility in Ilorin, Nigeria. **Methods:** A descriptive cross-sectional, two-staged study involving 196 HIV-positive children (6-17 years). A semi-structured questionnaire and psychological instruments were used for the study. **Results:** Thirty-eight (19.4%) children had psychiatric disorders: attention-deficit hyperactivity disorder and enuresis. Single parenthood, HIV clinical stages and complications were associated with psychiatric morbidity. Linear combination of the risk factors was not related to the psychiatric disorder. Bivariate correlation analysis showed the tendency to develop psychiatric disorder among the children was positively correlated with complications in the child and the person the child resides with. **Conclusions:** Complicated HIV infection and adverse life events result in elevated risk of having psychiatric morbidity.

Keywords: HIV/AIDS; children; psychiatric morbidity.

Adedeji, T. A., Adebisi, S. A., Adedeji, N. O., Jeje, O. A., & Owolabi, R. S. (2021). Renal Phosphate Handling in Antiretroviral-naïve HIV-Infected Patients. *Infectious disorders drug targets*, 21(2), 202–210. <https://doi.org/10.2174/1871526520666200707115259>

Abstract

Background: Human immunodeficiency virus (HIV) infection impairs renal function, thereby affecting renal phosphate metabolism. **Objectives:** We prospectively estimated the prevalence of phosphate abnormalities (mild, moderate to life-threatening hypophosphataemia, and hyperphosphataemia) before initiating antiretroviral therapy (ART). **Methods:** A cross-sectional analysis was performed on 170 consecutive newly diagnosed ART-naïve, HIV-infected patients attending our HIV/AIDS clinics over a period of one year. Fifty (50) screened HIV-negative blood donors were used for comparison (controls). Blood and urine were collected simultaneously for phosphate and creatinine assay to estimate fractional phosphate excretion (FEPi %) and glomerular filtration rate (eGFR). **Results:** eGFR showed significant difference between patients' and controls' medians (47.89ml/ min/1.73m² versus 60ml/min/1.73m², p <0.001); which denotes a moderate chronic kidney disease in the patients. Of the 170 patients, 78 (45.9%) had normal plasma phosphate (0.6-1.4 mmol/L); 85 (50%) had hyperphosphataemia. Grades 1, 2 and 3 hypophosphataemia was observed in 3 (1.8%), 3 (1.8%), and 1(0.5%) patient(s) respectively. None had grade 4 hypophosphataemia. Overall, the patients had significantly higher median of plasma phosphate than the controls, 1.4 mmol/L (IQR: 1.0 - 2.2) versus 1.1 mmol/L (IQR: 0.3 - 1.6), p <0.001, implying hyperphosphataemia in the patients; significantly lower median urine phosphate than the controls, 1.5 mmol/L (IQR: 0.7 -2.1) versus 8.4 mmol/L (IQR: 3.4 - 16), p <0.001, justifying the

hyperphosphataemia is from phosphate retention; but a non-significantly lower median FEPi% than the controls, 0.96% (IQR: 0.3 -2.2) versus 1.4% (IQR: 1.2 -1.6), $p > 0.05$. Predictors of FEPi% were age (Odds ratio, OR 0.9, $p = 0.009$); weight (OR 2.0, $p < 0.001$); CD4+ cells count predicted urine phosphate among males ($p = 0.029$). **Conclusion:** HIV infection likely induces renal insufficiency with reduced renal phosphate clearance. Thus, hyperphosphataemia is highly prevalent, and there is mild to moderate hypophosphataemia but its life-threatening form (grade 4) is rare among ART-naive HIV patients.

Keywords: Antiretroviral; eGFR.; human Immunodeficiency Virus; hyperphosphataemia; hypophosphataemia; renal handling of phosphate.

Adekanmbi, O., Adedokun, B., Lakoh, S., & Olabumuyi, O. (2020). Trends in Mortality and Clinical Characteristics of Hospitalized Hiv/Aids Patients at the University College Hospital, Ibadan 2010 to 2016. *West African journal of medicine*, 37(1), 67–73.

Abstract

Objective: The purpose of this study was to examine trends in clinical characteristics and in-hospital mortality of HIV patients in a low resource setting in the period 2010 to 2016. **Methods:** Data on socio-demographic and clinical characteristics of 313 hospitalized HIV positive patients at the University College Hospital, Ibadan, Nigeria were retrospectively extracted, described and examined for trends. Factors independently associated with mortality were identified using multiple logistic regression. **Results:** The mean age was 39 years (SD = 9.8) and about two thirds were female. The proportion of females decreased significantly from 83.3% in 2010-2011 to 39.8% in 2016. There was a significant reduction in the diagnosis of disseminated tuberculosis and mortality from 19.4% and 42.9% in 2010-2011 to 4.8% and 27.9% in 2016 respectively. On multiple logistic regression, being male, having neurological features, meningitis, and shorter stay in hospital had significantly higher odds of mortality. **Conclusion:** There was a reduction in in-hospital mortality of HIV patients over the period from 2010 to 2016. Being male and presence of neurological features were associated with mortality. Larger prospective studies are needed to further investigate this observed reduction in mortality among hospitalised patients.

Adekunjo, F. O., Rasiyah, R., Dahlui, M., & Ng, C. W. (2020). Assessing the willingness to pay for HIV counselling and testing service: a contingent valuation study in Lagos State, Nigeria. *African journal of AIDS research : AJAR*, 19(4), 287–295. <https://doi.org/10.2989/16085906.2020.1834417>

Abstract

HIV/AIDS is a major health issue faced by the world, generally, but particularly sub-Saharan Africa. Nigeria ranked third in the world by number of people living with HIV/AIDS in 2019. Despite prominent HIV counselling and testing (HCT) intervention programmes, Nigeria faces serious challenges, such as inadequate funding and low utilisation rates. Paucity of research

into such a critical topic has restricted the capacity of policy makers to address the problem adequately. Consequently, a cross-sectional study was carried out using the contingent valuation method to assess the economic quantum of payment and determining factors associated with people's willingness to pay for HCT services. Data were collected from 768 people selected by convenience sampling of three local government areas - Alimosho, Ikorodu and Surulere in Lagos State, Nigeria. Data were analysed using descriptive statistics, chi-square, Mann-Whitney, and general linear regression model analysis. Findings show that 75% of respondents were willing to pay an average fee of N1 291 (\$4.22) for HCT services. Significant determinants of willingness to pay were: income; knowledge of someone living with HIV or died of AIDS; worry about HIV infection; and fear of HIV-related stigma. The findings offer vital information germane to co-payment schemes aimed at financial sustainability of HCT and HIV/AIDS programmes in Nigeria.

Keywords: HCT; HIV/AIDS; Lagos State; Nigeria; contingent valuation; willingness to pay.

Adelekan, B., Andrew, N., Nta, I., Gomwalk, A., Ndembu, N., Mensah, C., Dakum, P., & Aliyu, A. (2019). Social barriers in accessing care by clients who returned to HIV care after transient loss to follow-up. *AIDS research and therapy*, 16(1), 17. <https://doi.org/10.1186/s12981-019-0231-5>

Abstract

Background: People living with HIV (PLHIV) constantly need to address social issues such as the cost of accessing care, stigma, and lack of social support which impacts on their level of adherence to clinic visits or antiretroviral treatment leading to adverse health outcomes. This study examined the social barriers in accessing care by clients who returned to care after transient loss to follow-up. **Methods:** This study was a cross-sectional survey of PLHIV from 99 US CDC PEPFAR-supported HIV clinics located in 10 of Nigeria's 36 states and Federal Capital Territory, who were momentarily lost to follow-up but returned to care after tracking. Demographic and social factors at bivariate and multivariate level were analyzed to determine the predictors of difficulty in accessing HIV clinics. **Results:** Of the 7483 clients tracked, 1386 (18.5%) were confirmed to be in care, 2846 (38.2%) were lost to follow-up (LTFU), 562 (7.5%) returned to care, 843 (11.2%) discontinued care, 827 (11.1%) transferred out to other facilities for care, 514 (6.8%) had died while 505 (6.7%) could not be reached by phone or located at their addresses. 438 out of the 562 (78%) returnee PLHIV gave consent and participated in the study. 216 out of the 438 (50%) clients who returned to care were transiently lost to follow-up because they had difficulty accessing their HIV clinic. Also, 126/438 (29%) of returnee PLHIV were previously lost to follow-up. Difficult access to a HIV clinic was significantly influenced by prior LTFU (OR 2.5 [95% CI 1.3-4.8], $p = 0.008$), history of being stigmatized (OR 2.1 [95% CI 1.1-3.8], $p = 0.02$), lack of social or financial support (OR 2.8 [95% CI 1.3-6.0], $p = 0.01$) and perceived in-adequate healthcare workers support (OR 3.8 [95% CI 1.2-11.2], $p = 0.02$). Age ($p = 0.218$) and gender ($p = 0.771$) were not significant determinants of difficult access to an HIV clinic. **Conclusion:** Stigma, lack of support and prior loss to follow-up event are essential factors affecting retention in care. Social constructs such as home-based visits, community-based care services, transportation subsidies, and robust

strong social systems should be built into HIV service delivery models to improve retention in care of people on HIV treatment. The authors advocate for further studies on how differentiated care models impact on retention of patients in care.

Keywords: Anti-retroviral therapy (ART); HIV; Loss to follow-up (LTFU); Nigeria; PLHIV; Social barriers.

Adeola, J., Badejo, O. A., Ahonkhai, A., Okonkwo, P., Aboh Akande, P., Evans, C. T., McHugh, M., Pierce, L., Ahmed, I., Jolayemi, T., Ladi Akinyemi, B., Onwuatuelo, I., Murphy, R., Kyriacou, D., Musa, J., & Agaba, P. (2020). Effect of Baseline Symptom Manifestations on Retention in Care and Treatment among HIV-Infected Patients in Nigeria. *Journal of the International Association of Providers of AIDS Care*, 19, 2325958220903575. <https://doi.org/10.1177/2325958220903575>

Abstract

Background: Symptom management is an important component of HIV care. But symptom patterns and how they affect engagement with HIV care and treatment services have not been adequately explored in the era of increased HIV treatment scale-up. We investigated the relationship between symptom patterns among people living with HIV (PLHIV) and 12 months retention in care, within the context of other clinical and demographic characteristics. **Methods:** Retrospective cohort analysis of 5114 PLHIV receiving care within a large HIV treatment program in Nigeria. We assessed the prevalence and burden of baseline symptoms reported during routine clinic visits from January 2015 to December 2017. Multivariable regression was used to identify relationships between 12-month retention and symptom dimensions (prevalence and burden) while controlling for demographic and other clinical variables. **Results:** Increasing symptom burden was associated with higher likelihood of retention at 12 months (adjusted odds ratio [aOR] = 1.19 [95% confidence interval, CI: 1.09-1.29]; $P < .001$) as was the reporting of skin rashes/itching symptom (aOR = 2.59 [95% CI: 1.65-4.09]; $P < .001$). Likelihood of retention reduced with increasing World Health Organization (WHO) Clinical staging, with CD4 ≥ 500 cells/mL and self-reported heterosexual mode of HIV transmission. **Conclusions:** Symptom dimensions and standardized clinical/immunological measures both predicted retention in care, but effects differed in magnitude and direction. Standardized clinical/immunological measures in HIV care (eg, WHO clinical staging and CD4 count categories) can mask important differences in how PLHIVs experience symptoms and, therefore, their engagement with HIV care and treatment. Symptom management strategies are required alongside antiretroviral treatment to improve outcomes among PLHIV, including retention in care.

Keywords: antiretroviral therapy; retention; symptoms; treatment outcomes.

Adeoti, A. O., Dada, M., Elebiyo, T., Fadare, J., & Ojo, O. (2019). Survey of antiretroviral therapy adherence and predictors of poor adherence among HIV patients in a tertiary

institution in Nigeria. *The Pan African medical journal*, 33, 277. <https://doi.org/10.11604/pamj.2019.33.277.18711>

Abstract

Introduction: Adherence is vital to effective antiretroviral therapy (ART) for reducing viral load and HIV/AIDS-related morbidity and mortality. This study was aimed at evaluating the adherence of HIV seropositive patients to ART in a tertiary institution in Nigeria. **Methods:** A cross sectional observational study was conducted among 400 HIV seropositive patients. The study was carried out between December 2016 and February 2017 at the HIV clinic of the Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria. **Results:** The mean age of the HIV patients was 42.2 ± 9.5 years with a predominant female gender (Male:Female = 1:2.8). The median CD4 counts increased from 302.1 ± 15.0 cells/mm³ at diagnosis to 430.8 ± 13.3 cells/mm³ at the time of the study. Majority of participants were unaware of their spouses' HIV status (59.3%) while 32.5% of participants had a serodiscordant spouse. Poverty was a major challenge as 73.3% earned less than 140 dollars per month. Depressive symptoms, anxiety disorder and insomnia were also reported in 40.7%, 33.2% and 47.2% respectively. Poor adherence to ART was observed in almost 20% of the patients. Logistic regression indicated that predictors of poor adherence were depression, anxiety and low CD4 counts. **Conclusion:** Adherence to anti-retroviral therapy was good amongst the majority of HIV seropositive patients. Depression, anxiety disorder and low CD4 count were however associated with poor adherence. This emphasizes the role of the psychology units as integral part of the HIV clinic to assist patients' adherence to anti-retroviral regimens.

Keywords: Adherence; CD4 count; HIV/AIDS; mental health; predictors.

Adeoti, A. O., Desalu, O. O., & Oluwadiya, K. S. (2021). Sexual practices, risk perception and HIV self-testing acceptability among long-distance truck drivers in Ekiti State, Nigeria. *The Nigerian postgraduate medical journal*, 28(4), 273–277. <https://doi.org/10.4103/npmj.npmj.61821>

Abstract

Background: HIV/AIDS is a global health challenge with a high burden in sub-Saharan Africa. Long-distance drivers are a high-risk group whose assessment of HIV status, awareness and willingness to undergo HIV self-testing (HIVST) could help prevent the spread of HIV infections. **Objective:** This study examined the sexual practices, risk perception and HIVST acceptability among long-distance truck drivers in Ekiti State, Nigeria. **Methods:** A cross-sectional study was conducted among long-distance truck drivers between September 2019 and December 2019. A semi-structured questionnaire was designed to investigate the perceived sexual risk factors and willingness to undergo HIVST. **Results:** Of the 306 drivers that participated in the study, almost half (49.8%) had their first sexual experience before they turned 18 years. About one-third (38.6%) had multiple sex partners and (34.0%) patronised commercial sex workers in the past 6 months. Consistent use of condoms was reported in a negligible percentage (3.0%), while 7.4% used intravenous drugs. Two-thirds of

the respondents were interested in HIVST, while 32.2% knew their HIV status. Significant factors associated with multiple sex partners were the duration of working as a long-distance truck driver and patronage of sex workers. **Conclusion:** A significant proportion of the long-distance drivers were engaged in unsafe sexual practices and are at risk for HIV transmission. Considering the mobile nature of the long-distance drivers, the risky practices of these workers require intense advocacy, testing and treatment to reduce HIV transmission. Scaling-up testing using HIVST has the potential to bridge the gap in the diagnosis of HIV among long-distance drivers who are willing to be tested.

Keywords: HIV self-testing; HIV/AIDS; Self-reporting; Sexual practices; long-distance truck drivers; risk perception.

Aderemi-Williams, R. I., Razaq, A. R., Abah, I. O., Opanuga, O. O., & Akanmu, A. S. (2021). Adolescents and Young Adults Knowledge, Adherence and Experiences While on Antiretroviral Therapy in a Tertiary Hospital in Lagos, Nigeria: A Mixed-Method Study. *Journal of the International Association of Providers of AIDS Care*, 20, 23259582211062754. <https://doi.org/10.1177/23259582211062754>

Abstract

In Nigeria, there is a paucity of data on knowledge and experiences of adolescents and young adults (AYAs) with HIV and ART, as well as their challenges maintaining optimal adherence. A mixed-method study was carried out between August and September 2018 among AYAs attending Lagos University Teaching Hospital, Nigeria. Data collection was via AYAs' hospital records, standardized questionnaires, and in-depth interviews (IDIs). The 4-day ACTG tool was used to measure adherence. Collected data were analyzed descriptively. Assessment of 34 AYAs comprising 18 (52.9%) males with 28 (82.4%) students revealed an overall knowledge score about ART and its effect of 73.6%. Twenty-five (73.5%) had poor knowledge of the development of resistant strains of HIV due to non-adherence recorded. Optimal adherence ($\geq 95\%$) was recorded in 20 (58.8%) AYAs. IDI produced 4 themes: (i) reasons for non-adherence, (ii) ensuring optimal adherence, (iii) Social support systems and disclosure, and (iv) stigmatization. Our study provided formative data and revealed areas for intervention to improve knowledge and adherence to ART.

Keywords: ART; adherence; adolescents and young adults; experiences; knowledge.

Adesegun, O. A., Olaniran, O. H., Bamidele, E., Inyang, J. N., Adegbe, M., Binuyo, T. O., Ehioghae, O., Adeyemi, O., Oyebisi, O., Idowu, A. O., & Ajose, O. (2020). HIV-hepatitis co-infection in a rural community in Northern Nigeria. *The Pan African medical journal*, 36, 352. <https://doi.org/10.11604>

Abstract

Introduction: HIV, hepatitis B and hepatitis C pose a public health challenge in sub-Saharan Africa and there are only few studies on co-infection of these viruses done in rural areas in Northern Nigeria. This study provides a rural perspective on HIV-hepatitis co-infection in a Northern Nigerian community. **Methods:** this cross-sectional study was carried out amongst people living with HIV/AIDS (PLWHA) in a rural community hospital over a three-month period. Socio-demographic data and other relevant information were obtained from the participants and case notes using an interviewer-administered questionnaire. Hepatitis B surface antigen and antibody to Hepatitis C virus were assayed from serum using enzyme-linked immunosorbent assay (ELISA) kits developed by LabACON®. Chi-square test was used to compare categorical variables and logistic regression modelling was used to determine correlates of co-infection in the population. **Results:** a total of 281 individuals participated in the study. The prevalence of Hepatitis B co-infection, Hepatitis C co-infection and triple infection was 6.0%, 14.6% and 1.1% respectively. Using Chi-square test, none of the socio-demographic characteristics, WHO Clinical Stage, viral suppression had significant association with Hepatitis B co-infection, however marital status was significantly associated with Hepatitis C co-infection and level of education was significantly associated with triple infection ($p < 0.05$). Logistic regression modelling generated no significant results. **Conclusion:** co-infection of viral hepatitis (particularly Hepatitis C) in PLWHA is common in rural Northern Nigeria, and significant correlates include lack of formal education and being married. There is need for provider-initiated routine counselling and screening of PLWHA for viral hepatitis, with adequate follow-up and treatment of co-infected individuals and Hepatitis B vaccination for those without co-infection.

Keywords: Africa; HIV/AIDS; Nigeria; Public health; hepatitis B; hepatitis C; rural medicine.

Adetoro, D., Khamofu, H., Badru, T., Markson, J., Adedokun, O., Sandah-Abubakar, N., Dafa, I., Chen, M., Chiegil, R., & Torpey, K. (2021). Correlates of uptake of HIV testing among children and young adolescents in Akwa-Ibom state, Nigeria: a secondary data analysis of the Akwa-Ibom aids indicator survey, 2017. *BMC pediatrics*, 21(1), 33. <https://doi.org/10.1186/s12887-021-02495-5>

Abstract

Background: In order to end the AIDS epidemic by 2030, there is a need to significantly reduce the rate of new infection among children and young adolescents. Identifying the correlates of testing behaviour is necessary to improve HIV testing campaigns by refining messages that target individuals in this age group. The objective of this study was to determine the correlates of HIV testing among children and young adolescents in Akwa-Ibom, Nigeria. **Methods:** The outcome was a secondary data analysis of the 2017 Akwa-Ibom AIDS Indicator Survey. Data of 4037 children and young adolescents aged 0-14 years was assessed in this study. Analysis was done using STATA version 16. Chi-squared test and logistic regression models were used to measure association and its strength between uptake of HIV testing and some independent variables (child/caregiver's age, sex, educational status, child's location, caregiver's knowledge of HIV and caregiver ever tested for HIV) at 5% significance level. **Results:** Result showed that only 14.2% of the children and young adolescents have been tested for HIV.

Previous history of blood transfusion (AOR = 5.33, 95%CI = 2.60-10.92, P = < 0.001), caregiver's level of education (AOR = 2.67, 95%CI = 1.30-5.51, P = 0.008) and caregiver ever tested for HIV (AOR = 8.31, 95%CI = 5.67-12.19, P = < 0.001) were significantly associated with uptake of HIV testing. **Conclusion:** This study concludes that a large proportion of children and young adolescents in Akwa-Ibom state have never been tested for HIV. There is a need for HIV testing interventions to be targeted towards this age groups and their parents/guardian. Addressing the knowledge gap amongst caregivers especially in rural areas is crucial towards improving the effectiveness of HIV testing interventions.

Keywords: AIDS; Caregivers; Children; Early infant diagnosis; HIV; HIV testing; Nigeria; Young adolescents.

Adetunji, A. A., Muyibi, S. A., Imhansoloeva, M., Ibraheem, O. M., Sunmola, A., Kolawole, O. O., Akinrinsola, O. O., Ojo-Osagie, J. O., Mosuro, O. A., Abiolu, J. O., Irabor, A. E., Okonkwo, P., Adewole, I. F., & Taiwo, B. O. (2017). Mobile phone use for a social strategy to improve antiretroviral refill experience at a low-resource HIV clinic: patient responses from Nigeria. *AIDS care*, 29(5), 575–578. <https://doi.org/10.1080/09540121.2016.1226476>

Abstract

In sub-Saharan African areas where antiretroviral (ARV) drugs are not available through community pharmacies, clinic-based pharmacies are often the primary source of ARV drug refills. Social pressure is mounting on treatment providers to adjust ARV refill services towards user-friendly approaches which prioritize patients' convenience and engage their resourcefulness. By this demand, patients may be signalling dissatisfaction with the current provider-led model of monthly visits to facility-based pharmacies for ARV refill. Mobile phones are increasingly popular in sub-Saharan Africa, and have been used to support ARV treatment goals in this setting. A patient-centred response to on-going social pressure requires treatment providers to view ARV refill activities through the eyes of patients who are negotiating the challenges of day-to-day life while contemplating their next refill appointment. Using focus groups of five categories of adult patients receiving combination ARV therapy, we conducted this cross-sectional qualitative study to provide insight into modifiable gaps between patients' expectations and experiences of the use of mobile phones in facility-based ARV refill service at a public HIV clinic in Nigeria. A notable finding was patients' preference for harnessing informal social support (through intermediaries with mobile phones) to maintain adherence to ARV refill appointments when they could not present in person. This evolving social support strategy also has the potential to enhance defaulter tracking. Our study findings may inform the development of ARV refill strategies and the design of future qualitative studies on client-provider communication by mobile phones in under-resourced HIV treatment programmes.

Keywords: ARV refill; Antiretroviral therapy; focus groups; mobile phone; social support; sub-Saharan Africa.

Adeyinka, D. A., Olakunde, B. O., Morka, M., Oladimeji, O., & Agogo, E. A. (2018). HIV treatment scale-up: a critical step to controlling HIV epidemic in a resource-limited country. *Public health*, 164, 68–71. <https://doi.org/10.1016/j.puhe.2018.07.016>

Abstract

Objectives: The study was conducted to determine the trend in HIV treatment coverage among people living with HIV and to evaluate effectiveness of the national antiretroviral treatment (ART) programme in reducing new infections in a mixed HIV epidemic nation, Nigeria. **Study design:** Ecological cross-sectional study. **Methods:** The study utilized national HIV programme service data and National HIV/AIDS and Reproductive Health Survey (NARHS) data for 36 states and Federal Capital Territory from 2012 to 2015 in Nigeria. Chi-squared test for trend was conducted to determine differences in ART coverage across the years. We correlated 2015 ART coverage with HIV prevalence Annual Rate of Reduction (ARR) between 2012 and 2015. A linear regression model was fitted to predict the HIV prevalence ARR in relation to ART coverage and adjusted for the effect of socio-behavioral interventions (coverage of condom-use among male). **Results:** Nigeria has recorded steady progress with HIV treatment coverage with an annual rate of progress of 18.25%, $P < 0.001$; however, huge gaps still exist. Females and adults had higher odds of receiving ART. HIV prevalence annual reduction rate was higher for states that had higher ART coverage ($r = 0.4$; $P = 0.02$). Our analysis indicated that a 10% increase in ART coverage was associated with a 4% increase in the annual rate of reduction for HIV prevalence (adjusted $\beta = 0.4$; 95% confidence interval: 0.1-0.8; $P = 0.01$). **Conclusions:** Regardless of the low ART coverage, our analysis supports the evidence base to inform accelerated access to HIV treatment for population Nigeria and other similar resource-limited settings to make ending HIV by 2030 a reality.

Keywords: Antiretroviral treatment; HIV; HIV elimination; Nigeria.

Adimora, D. E., Aye, E. N., Akaneme, I. N., Nwokenna, E. N., & Akubuilu, F. E. (2019). Stigmatization and discrimination as predictors of self-esteem of people living with HIV and AIDS in Nigeria. *African health sciences*, 19(4), 3160–3171. <https://doi.org/10.4314/ahs.v19i4.39>

Abstract

Background: Self-esteem is a major psychological health issue. People living with HIV and AIDS have been found to be victims of discrimination and stigmatization which affect their self-esteem. **Objectives:** The study investigated the influence of stigma and discrimination on self-esteem of people living with HIV and AIDS (PLHIV). **Methods:** The design was a cross-sectional study carried out in four teaching hospitals in south-eastern Nigeria between 13th July 2016 - 11th May 2017. Four hundred and eighty-four (174 males and 310 females) PLHIV participated in the study. Quantitative study supplemented by qualitative in-depth interviews were used to collect data regarding discrimination, stigma and self-esteem of PLHIV whilst a structured questionnaire was used to elicit information about the socio-demographic variables. **Results:** Stigmatization and discrimination were found to have significant influence

on self-esteem of PLHIV. The results indicate that stigmatization and discrimination, together with income, work status, AIDS diagnosis status, and medication use status significantly influence self-esteem of PLHIV. These results imply that stigmatization and discrimination influences on self-esteem among PLHIV. **Conclusion:** Conclusively, intervention programmes should evolve enlightenment through television, movies, and educational programs that incorporate the ill effects of discrimination and stigma so as to boost self-esteem of PLHIV.

Keywords: Intervention; social isolation; poverty; psychological health.

Afolabi, A. Y., Bakarey, A. S., Kolawole, O. E., & Kola, O. J. (2018). Investigation of mother-to-child transmission of HIV in pregnancy and among HIV-exposed infants accessing care at a PMTCT clinic in southwest Nigeria. *Journal of immunoassay & immunochemistry*, 39(4), 403–415. <https://doi.org/10.1080/15321819.2018.1494607>

Abstract

Background: Over 90% of infant acquired immunodeficiency syndrome (AIDS) cases have been through mother-to-child transmission (MTCT) of human immunodeficiency virus (HIV). Consequent to this, prevention of mother-to-child transmission (PMTCT) programs have instituted as dual purposes for prevention of HIV transmission from mother to child and enrollment of infected pregnant women and their families into antiretroviral treatment (ART) program. However, there are still some breakthrough infections and challenges. Therefore, this study was designed to assess risk of HIV transmission among HIV-exposed infants on follow-up at a PMTCT clinic in an antiretroviral (ARV) referral health facility in southwest Nigeria. **Methods:** A cohort of 60 purposively recruited consenting pregnant women referred to PMTCT HIV clinic in Ibadan, southwest Nigeria were enrolled and followed up for 1 year (2015-2016). A well-structured epidemiological questionnaire was used to capture all relevant information. Data were then analyzed by SPSS version 21 (St. Louis, MO, USA), while bivariate and multivariate analyses were used to identify associations. **Results:** A total of 44 mothers and their infants were available for the analysis with an attrition rate of 26.7%. The mean age of mothers at enrollment to follow-up was 32.9 years (SD = 4.2 years). Two (4.5%, 95% CI: 7.2-12.3%) of the infants were HIV positive by DNA PCR test. There was no linear relationship between age of the mothers with CD4 count or viral load both before and after delivery but there was a significant positive relationship with year on ARV ($r = 0.318$, 95% CI: 0.024-0.562). Infants of rural dwelling mothers were at 3.39 (adjusted odds ratio (AOR) = 3.39, 95% CI: 1.32, 2.29) times higher risk of vertical HIV transmission compared to those of urban dwelling mothers. Infants delivered at home had 2.61(AOR = 2.61, 95% CI: 1.59, 7.91) times higher risk of MTCT compared to those delivered at health institution. Mixed feeding was also another important predictor in which the risk of MTCT was about two (AOR = 2.21, 95% CI: 0.68, 9.97) times higher compared to exclusive breastfeeding. **Conclusions:** There was a high risk of MTCT of HIV among exposed infants on follow-up at the PMTCT clinic of Adeoyo Maternity Teaching referral hospital. Our findings will assist health policy makers in providing important information capable of enhancing assurance HIV control in such population and in raising the standard of PMTCT program in Nigeria.

Keywords: HIV-exposed infants; Ibadan; Nigeria; PMTCT; Pregnant women.

Afolaranmi, T. O., Hassan, Z. I., Misari, Z., Ugwu, O. J., Adeoye, P. A., Fayenuwo, O. J., Eugene, E. C., David Ofakunrin, A. O., Chingle, M. P., & Shugaba, A. I. (2020). Sexual Behaviors of HIV-Infected Men who Have Sex with Men in Jos, Plateau State, North Central Nigeria. *Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine*, 45(4), 550–553. <https://doi.org/10.4103/ijcm.IJCM 448 19>

Abstract

Background: Sub-Saharan Africa region remains heavily plagued by HIV/AIDS with recent information suggesting that sex between men is a significant contributor to the spread of this infection. It was against this backdrop that this study was conducted to examine the sexual behaviors of HIV-infected men who have sex with men (MSM) in Jos, Plateau state, North Central Nigeria. **Materials and methods:** A cross-sectional study was conducted among 114 HIV-infected MSM 18 years and above using a quantitative method of data collection. Respondent-driven sampling technique was employed in sampling the study participants, and EpiInfo statistical software version 7 was used for the data analysis. **Results:** The mean age of the respondents was 26.0 ± 5.4 years with condom use in the last anal sex being 77 (67.5%), while majority (83.3%) of the respondents was adjudged to have been engaged in risky sexual behaviors. **Conclusions:** This study has brought to light a significant level of risky sexual behaviors among HIV-infected MSM with condom use, multiple same sexual engagement, transactional sex, and bisexual concurrency as areas of possible interventions.

Keywords: HIV/AIDS; Nigeria; Plateau state; men who have sex with men; sexual behaviors.

Afolaranmi, T. O., Hassan, Z. I., Ugwu, O. J., Ofakunrin, A., Bello, K. K., Chingle, M. P., & Shugaba, A. I. (2021). Retention in HIV care and its predictors among HIV-infected men who have sex with men in Plateau state, North Central Nigeria. *Journal of family medicine and primary care*, 10(4), 1596–1601. <https://doi.org/10.4103/jfmprc.jfmprc 1748 20>

Abstract

Background: Retention in HIV care is the constancy of engagement in HIV treatment, care and support services which is essential to reducing morbidity and mortality associated with the infection as well as halting the development of resistance to antiretroviral therapy (ART). In most African countries, Nigeria inclusive, men who have sex with men (MSM) are major contributors to HIV/AIDS burden. HIV-positive MSM are generally understudied and mostly underserved due to social, political and legislation factors resulting in limited characterization and documentation of the existing health disparities particularly with regards to retention in HIV care. It was against this backdrop that we conducted this study to assess the level of retention in HIV care and its predictors among MSM linked to HIV care. **Methods:** A cross-sectional study conducted among 114 HIV-positive MSM in 2019 using interviewer-administered questionnaire. Data analysis was carried out using version 7 of Epi Info statistical

software version 7 and a probability value of less than 0.05 used as the cut-off for drawing statistically significant conclusion. **Results:** The average age in years of the respondents was 26.0 ± 5.4 while 43 (37.7%) of the participants were adequately retained in HIV care. Adequate retention in HIV care was found to be predicted by awareness of regular male partner's HIV status (AOR = 11.2; 95% confidence interval [CI] = 1.924-65.167) and financial difficulty (AOR = 0.1; 95% CI = 0.022-0.840). **Conclusions:** A suboptimal level of retention in HIV care was demonstrated in the study with awareness of male partner's HIV status and financial buoyancy as its main predictors.

Keywords: Continuum of care; HIV infection; MSM; Nigeria; predictors; retention in care.

Agaba, P. A., Meloni, S. T., Sule, H. M., Ocheke, A. N., Agaba, E. I., Idoko, J. A., & Kanki, P. J. (2017). Prevalence and predictors of severe menopause symptoms among HIV-positive and -negative Nigerian women. *International journal of STD & AIDS*, 28(13), 1325–1334. <https://doi.org/10.1177/0956462417704778>

Abstract

We compared the prevalence of menopause symptoms between women living with HIV to their HIV-negative peers and determined predictors of severe menopause symptoms in Jos, Nigeria. This descriptive cross-sectional study included 714 women aged 40-80 years. We compared prevalence and severity of menopause symptoms using the menopause rating scale (MRS). Logistic regression analysis was used to determine the predictors of severe symptoms. Six-hundred and seven (85.0%) were HIV-positive, with a mean duration of infection of 5.6 ± 2.7 years. The mean age of the cohort was 46 ± 5 years. The most prevalent menopause symptoms were hot flushes (67.2%), joint and muscle discomfort (66.2%), physical/mental exhaustion (65.3%), heart discomfort (60.4%), and anxiety (56.4%). The median MRS score was higher for HIV-positive compared to HIV-negative women ($p = 0.01$). Factors associated with severe menopause symptoms included HIV-positive status (aOR: 3.01, 95% CI: 1.20-7.54) and history of cigarette smoking (aOR: 4.18, 95% CI: 1.31-13.26). Being married (aOR: 0.49, 95% CI: 0.32-0.77), premenopausal (aOR: 0.60, 95% CI: 0.39-0.94), and self-reporting good quality of life (aOR: 0.62, 95% CI: 0.39-0.98) were protective against severe menopause symptoms. We found HIV infection, cigarette smoking, quality of life, and stage of the menopause transition to be associated with severe menopause symptoms. As HIV-positive populations are aging, additional attention should be given to the reproductive health of these women.

Keywords: AIDS; Africa; HIV; menopause; women.

Agu, I. C., Mbachu, C. O., Okeke, C., Eze, I., Agu, C., Ezenwaka, U., Ezumah, N., & Onwujekwe, O. (2020). Misconceptions about transmission, symptoms and prevention of HIV/AIDS among adolescents in Ebonyi state, South-east Nigeria. *BMC research notes*, 13(1), 244. <https://doi.org/10.1186>

Abstract

Objectives: Nigeria has the second largest number of adolescents and young people living with HIV/AIDS in the world. Misconceptions about HIV/AIDS contribute to spread of HIV, and constrain uptake of preventive services. This paper explored misconceptions about HIV/AIDS among adolescents in south-east Nigeria. A qualitative study was conducted in six urban and rural local government areas of Ebonyi state. Data were collected through twelve focus group discussions (FGD) with unmarried adolescents aged 13-18 who were either attending school or out-of-school. The FGDs were conducted using a pre-tested topic guide. Data were coded manually and analyzed using a thematic framework approach. **Results:** There are persistent misconceptions about transmission of HIV/AIDS through mosquito bites and sharing of personal belongings. Some adolescents had inaccurate notions that a HIV infected person could be identified through changes in physical features such as abdominal swelling and longer fingernails. A few of them also reported that HIV could be treated with antibiotics. These misconceptions were expressed by both male and female adolescents. Adolescents have some mistaken beliefs about HIV/AIDS which constrain them from taking necessary preventive measures. Hence, the need to target adolescents with health education interventions on HIV/AIDS.

Keywords: Adolescents; HIV/AIDS; Misconceptions; Prevention; Transmission.

Ahmed, A., Osinubi, M. O., Fasiku, M. M., Uthman, M. M., Soyannwo, T., & Jimoh, O. S. (2021). Coping strategies among patients attending HIV clinics in a North-central State of Nigeria. *Nigerian journal of clinical practice*, 24(1), 104–109. <https://doi.org/10.4103/njcp.njcp.380.20>

Abstract

Background: Nigeria ranks third among the countries with the highest HIV/AIDS burden in the world, next only to India and South Africa. The North-Central zone which Kwara State belongs to has the highest concentration of HIV prevalence rate of 7.5%, while the North-Western zone recorded the lowest prevalence of 2.1%; Kwara state has a prevalence rate of 2.2%. **Aims:** The study assessed the coping strategies adopted by patients attending HIV clinics in a North-central city of Nigeria. **Methods:** The study design was descriptive cross-sectional involving 384 HIV-positive patients who were systematically recruited at 5 public service delivery sites in Ilorin- a North-central city, Nigeria was used for the study. Coping strategies were measured using the Brief COPE scale. Data were analyzed using SPSS software version 20.0. Level of significance was pre-determined at P value <0.05 at a confidence level of 95%. **Results:** Female respondents constituted 222 (58.0%) while males were 162 (42.0%). Respondents experienced varying proportion of coping strategies of which Self-distraction 288 (75.0%), active coping 249 (64.8%), emotional support 228 (59.4%), among others were the major strategies adopted by respondents. **Conclusion:** HIV is a chronic disease with heavy burden on both patients and health facility rendering services for the care of these patients. A good proportion of respondents interviewed adopted varying coping strategies. Sustained social and psychological support will improve further the coping strategies of living with HIV.

Keywords: Clinics; Patients; coping HIV; strategy.

Ahonkhai, A. A., Onwuatuelo, I., Regan, S., Adegoke, A., Losina, E., Banigbe, B., Adeola, J., Ferris, T. G., Okonkwo, P., & Freedberg, K. A. (2017). The patient-centered medical home: a reality for HIV care in Nigeria. *International journal for quality in health care : journal of the International Society for Quality in Health Care*, 29(5), 654–661. <https://doi.org/10.1093/intqhc/mzx083>

Abstract

Objective: HIV care delivery in resource-limited settings (RLS) may serve as a paradigm for chronic disease care, but comprehensive measurement frameworks are lacking. Our objective was to adapt the patient-centered medical home (PCMH) framework for use in RLS, and evaluate the performance of HIV treatment programs within this framework. **Design and setting:** Cross-sectional survey administered within the AIDS Prevention Initiative in Nigeria (APIN) network. **Participants:** Medical directors at APIN clinics. **Main outcome measures:** We adapted the 2011 US National Committee on Quality Assurance's PCMH standard to develop a survey measuring five domains of HIV care: (i) enhancing access and continuity, (ii) identifying and managing patient populations, (iii) planning and managing care, (iv) promoting self-care and support and (v) measuring and improving performance. **Results:** Thirty-three of 36 clinics completed the survey. Most were public (73%) and urban/semi-urban (64%); 52% had >500 patients in care. On a 0-100 scale, clinics scored highest in self-care and support, 91% (63-100%); managing patient populations, 80% (72-81%) and improving performance, 72% (44-78%). Clinics scored lowest with the most variability in planning/managing care, 65% (22-89%), and access and continuity, 61% (33-80%). Average score across all domains was 72% (58-81%). **Conclusions:** Our findings suggest that the modified PCMH tool is feasible, and likely has sufficient performance variation to discriminate among clinics. Consistent with extant literature, clinics showed greatest room for improvement on access and continuity, supporting the tool's face validity. The modified PCMH tool may provide a powerful framework for evaluating chronic HIV care in RLS.

Keywords: HIV; patient-centered medical home; resource-limited settings.

Ahonkhai, A. A., Regan, S., Idigbe, I., Adeniyi, O., Aliyu, M. H., Okonkwo, P., Adeola, J., Losina, E., Musa, Z., Ezechi, O., & Freedberg, K. A. (2020). The impact of user fees on uptake of HIV services and adherence to HIV treatment: Findings from a large HIV program in Nigeria. *PLoS one*, 15(10), e0238720. <https://doi.org/10.1371/journal.pone.0238720>

Abstract

Background: Global HIV funding cutbacks have been accompanied by the adoption of user fees to address funding gaps in treatment programs. Our objective was to assess the impact of user fees on HIV care utilization and medication adherence in Nigeria. **Methods:** We conducted a retrospective analysis of patients enrolled in care before (October 2012-

September 2013) and after (October 2014-September 2015) the introduction of user fees in a Nigerian clinic. We assessed pre- vs. post-user fee patient characteristics and enrollment trends, and determined risk of care interruption, loss to follow-up, and optimal medication adherence. **Results:** After fees were instituted, there was a 66% decline in patient enrollment and 75% decline in number of ART doses dispensed. There was no difference in the proportion of female clients (64% vs 63%, $p = 0.46$), average age (36 vs. 37 years, $p = 0.15$), or median baseline CD4 (220/ul vs. 222/uL, $p = 0.24$) in pre- and post-fee cohorts. There was an increase in clients employed and/or had tertiary education (24% vs. 32%, $p < 0.001$). Compared to pre-fee patients, the post-fee period had a 48% decreased risk of care interruption (aRR = 0.52, 95%CI:0.39-0.69), 22% decreased LTFU risk (aRR = 0.64, 95%CI:0.96), and 27% decreased odds of optimal medication adherence (aOR = 0.7, 3 95%CI 0.59-0.89). **Conclusions:** Patients enrolled in care after introduction of user fees in Nigeria were more likely to be educated or employed, and effectively retained in care after starting ART. However, fees were accompanied by a drastic reduction in new patient enrollment, suggesting that many patients may have been marginalized from HIV care.

Ajagu, N., Anetoh, M. U., & Nduka, S. O. (2017). Expanding HIV/AIDS care service sites: a cross sectional survey of community pharmacists' views in South-East, Nigeria. *Journal of pharmaceutical policy and practice*, 10, 34. <https://doi.org/10.1186/s40545-017-0122-x>

Abstract

Background: Community pharmacists are very accessible to most patients yet; they have been underutilized in the aspect of providing HIV care and services. The World Health Organisation recently recommended expanding community pharmacists' roles to address the increasing complexity of antiretroviral agents and co-infection drug regimen. This study therefore was designed to assess the readiness and willingness of community pharmacists in Nigeria to participate in the care of people living with HIV/AIDS and the possible inclusion of their pharmacy premises as sites for HIV care services. **Methods:** A descriptive cross sectional survey was carried out among 205 community pharmacists in south east, Nigeria between October, 2016 and February, 2017. Two hundred and five self-administered questionnaires were distributed to conveniently selected community pharmacists in the region. Data collected were analysed using SPSS version 23. Descriptive statistics was conducted for the demographics and percentage mean scores for each domain were computed. The variables in each domain were categorised into groups and simple percentages were used to show the percentage distribution of the variables. Cross tabulation was also carried out to show the relationship between the variables and groups' differences were explored using analysis of variance and P -values < 0.05 were considered significant. **Results:** All distributed questionnaires were filled and retrieved. The overall knowledge of HIV among the surveyed pharmacists was seen to be high (70.41%). Although the percentage attitude score of the respondents towards HIV care services was on the average (57%), they were highly willing and ready to use their premise to offer HIV services with a percentage mean readiness score of 87.32%. However, their perceived skills in carrying out these services were observed to be low. **Conclusion:** Community pharmacists in the south eastern part of Nigeria have high knowledge of HIV and a somewhat attitude towards HIV care services with high willingness

and readiness to be involved in HIV care and services. Despite efforts to engage community pharmacists in HIV services more is needed in the aspect of making adequate policies to further empower more community pharmacists in this aspect of care.

Keywords: Attitude; Community pharmacists; HIV services sites; Willingness and readiness.

Ajayi, A. I., Awopegba, O. E., Adeagbo, O. A., & Ushie, B. A. (2020). Low coverage of HIV testing among adolescents and young adults in Nigeria: Implication for achieving the UNAIDS first 95. *PloS one*, 15(5), e0233368. <https://doi.org/10.1371/journal.pone.0233368>

Abstract

Background: Most studies on HIV testing among young people in Nigeria are not nationally representative. As such, recent nationally representative data, such as the Multiple Indicator Cluster Survey (MICS), could help assess the current level of HIV testing among young people, a key target population for HIV prevention in the country. In this study, we examined the coverage and factors associated with HIV testing among adolescents and young adults (AYA). **Methods:** We used the data for 14,312 AYA that examined recent and lifetime HIV testing from the 2017 MCIS. Our outcomes of interest were ever tested for HIV and recently tested for HIV. We examined the association between socio-demographic factors (e.g., age, marital status, education attainment, wealth status), stigma belief, exposure to media and HIV knowledge, and uptake of HIV testing using adjusted and unadjusted logistic regression models. **Results:** Less than a quarter of the AYA (23.7%) had ever tested for HIV, and an even lower proportion (12.4%) tested in the year preceding the survey. More females (25.4%) compared to males (20.8%) had ever tested for HIV. Young people who were aged 20-24 years (AOR 1.52, 95% CI 1.34-1.72), married (AOR 2.42, 95% CI 1.98-2.97), had higher educational attainment (AOR 5.85, 95% CI 4.39-7.81), and belonged to the wealthiest quintile (AOR 1.99, 95% CI 1.53-2.60), had higher odds of having ever tested for HIV compared to those aged 15-19 years, never married, had no formal education and belonged to the poorest wealth quintile. Also, those who had positive stigma belief towards people living with HIV (AOR 2.93, 95% CI 2.47-3.49), had higher HIV knowledge (AOR 1.62, 95% CI 1.24-2.11), and higher media exposure (AOR 1.64, 95% CI 1.36-1.97), had higher odds of having ever tested compared to those who had more negative stigma belief, had low knowledge of HIV and low media exposure. **Conclusion:** The HIV testing coverage among AYA in Nigeria is well below the national target of 95% indicated in the national HIV/AIDS strategic framework (2017-2021). Also, the low rate of HIV testing found in this study means realising the UNAIDS first 95 will require interventions targeting AYA. These interventions should focus on improving young people's knowledge of HIV, reducing negative stigma belief through media campaigns and increasing access to HIV testing through home-based testing and "opt-out" strategy at the point of care.

Ajayi, O. T., Makanjuola, O. B., Olayinka, A. T., Olorukooba, A., Olofu, J. E., Nguku, P., & Fawole, O. I. (2021). Predictors of intestinal parasite infection among HIV patients on antiretroviral

therapy in Jos, Plateau State, Nigeria, 2016: a cross-sectional survey. *The Pan African medical journal*, 38, 306. <https://doi.org/10.11604/pamj.2021.38.306.25751>

Abstract

Introduction: intestinal parasitic infection has been reported as a cause of morbidity and mortality among HIV patients on antiretroviral therapy (ART) due to interruption in treatment of the defaulting HIV patients. This study aimed to determine the prevalence and possible causes of intestinal parasites among HIV patients on ART. **Methods:** a survey involving 375 adult HIV/AIDS patients selected using a systematic random sampling technique was conducted in a Jos University Teaching hospital, Plateau State, Nigeria. Socio-demographic and clinical data was collected using semi-structured interviewer administered questionnaire and electronic dataset review. Fresh stool samples were collected from all participants for laboratory identification of intestinal parasites using formol-ether sedimentation and modified Ziehl-Neelsen techniques. Descriptive statistics, odds ratio and logistic regression model were computed at $P \leq 0.05$. **Results:** the mean age of the study participants was 41.6 ± 9.3 years. Majority 294 (78.4%) were females, 141 (37.6%) lived in the rural area, 50 (13.3%) respondents did not have toilets in their homes. Most 275 (73.3%) had ART adherence level of 95% and above. Prevalence of intestinal parasites was 28.5%. Females (aOR = 2.14, 95% CI=1.12 - 3.89) and participants with no toilet facilities (aOR = 2.0, 95% CI=1.03 - 3.94) were significantly more likely to have intestinal parasites. **Conclusion:** the prevalence of intestinal parasites was high among HIV patients. Gender and unavailability of toilet in homes were found to be predictors of having parasites. We recommend that HIV patients should be periodically screened for IPs during the follow-up clinic visits.

Keywords: Antiretroviral therapy; HIV/AIDS; factors; intestinal parasites; prevalence; protozoa; toilets.

Ajisehiri, W. S., Abubakar, A. A., Egwuenu, A., Balogun, M. S., Adedire, E., & Sabitu, K. (2021). Beyond drug treatment: a cross-sectional assessment of palliative care services for people living with HIV/AIDS at public health facilities, Abuja, Nigeria. *The Pan African medical journal*, 39, 24. <https://doi.org/10.11604/pamj.2021.39.24.23180>

Abstract

Introduction: palliative care offers a care and support system to people living with Human Immunodeficiency Virus (HIV) infection/Acquired Immunodeficiency Syndrome (AIDS). In Nigeria, the palliative care (PC) practice generally is new and still developing. While most studies on HIV/AIDS assess drug treatment and adherence for people living with HIV/AIDS (PLWHA), there is paucity of data on PC services available for them. We therefore assessed the PC services offered and referral services available to PLWHA in health facilities. **Methods:** we conducted a cross-sectional study across all public secondary and tertiary health facilities offering HIV care services in Abuja, Nigeria between February and May 2017. We used an interviewer-administered semi-structure questionnaire to collect information from the heads of health facilities. The questionnaire assessed palliative care and referral services for PLWHA.

Frequencies and proportions were calculated using Microsoft-Excel. **Results:** of the 17 health facilities assessed, only 6 (35.3%) have constituted a palliative care team but only 3 (17.6%) had some sources of fund for PC. Twelve (70.6%) provided nutritional support for PLWHA, 6 (35.3%) provided spiritual and 8 (47.1%) offered bereavement support for families of PLWHA. Sixteen (94.1%) had well-established referral services for PLWHA. **Conclusion:** palliative care services for PLWHA were generally poor in all the health facilities. There exists a well-established referral services for PLWHA in most of the health facilities. We recommend that the PC structure for PLWHA should be improved by increasing and ensuring compliance to guidelines and the established referral network should continue to be strengthened.

Keywords: Palliative care; health facility; human immunodeficiency virus; people living with HIV/AIDS; referral service.

Ajisehiri, W. S., Abubakar, A. A., Gobir, A. A., Balogun, M. S., & Sabitu, K. (2019). Palliative care for people living with HIV/AIDS: Factors influencing healthcare workers' knowledge, attitude and practice in public health facilities, Abuja, Nigeria. *PLoS one*, *14*(12), e0207499. <https://doi.org/10.1371/journal.pone.0207499>

Abstract

Background: Physicians and nurses play vital roles in addressing palliative care (PC) needs of people living with HIV/AIDS (PLWHA). The healthcare workers' (HCWs) experiences determine the success of palliative care delivery. There is paucity of data on PC for PLWHA. For this reason, we assessed the knowledge, attitude and practice of PC for PLWHA and associated factors among health care professionals. **Methods:** We conducted a cross-sectional descriptive study among HCWs in public health facilities in the Federal Capital Territory, Nigeria between February and May, 2017. Multistage sampling technique with proportionate-to-size allocation was used to determine facility sample size and HCWs per professional discipline. Data were collected with questionnaires adapted from Palliative Care Quiz for Nursing, Frommelt Attitude toward Care of the Dying and practical questions adapted from PC standard guidelines. Participants' knowledge, attitude and practice were assessed by awarding one (1) point for each correct answer; incorrect or "not sure" answers took a zero (0) score. Correct responses were summed up to get a total score for each participant. Descriptive statistics was done to describe frequencies and proportions displayed on tables. Linear regression was done to determine factors associated with HCW's knowledge, attitude and practice of PC for PLWHA. **Result:** With a 100% response rate, the mean age of the 348 participants was 37.5 years (SD: ± 8.9), 201 (57.8%) were female, 222 (63.8) were nurses and 230 (66.0%) had a work experience of 10 years or less. Majority of the participants, 310 (89.1%) agreed that palliative care focuses on the relief and prevention of suffering and 319 (91.7%) believe that PLWHA required palliative care. Misconceptions about palliative care include "palliative care is disease-oriented and not person oriented", 252 (72.6%) believed; "palliative care is concerned with prolongation of life", 279 (80.6%); and "use of placebos is appropriate in the treatment of some types of pain", 252 (72.6%). Among the participants, 52% disagreed that "palliative care should be given only for dying PLWHA" while only 18 (5.2%) were right on "family should be involved in the physical care of the dying PLWHA".

Majority of the participants, 292 (84.1%) initiated palliative care discussion during patients' diagnosis while 290 (83.6%) informed terminally ill patients about their diagnosis. Regarding psychological issues, 22 (6.3%) participants hid the truth from the patients while 196 (56.3%) provided emotional support to the patients. Morphine 240 (69.0%) and Pentazocine 194 (55.7%) were the most commonly used drugs for treatment of severe pain by participants across all centres. **Conclusion:** In-service training and undergraduate training on palliative care were associated with knowledge and practice of palliative care for people living with HIV/AIDS. We recommended continuous quality in-service training and education on palliative care for HCWs. While we ensure voluntariness of participation and other ethical principles, the high response rate could be as a result of more motivated health worker than the norm. The results are unlikely to be representative of doctors and nurses in primary health care centres.

Akanbi, M. O., Achenbach, C., Taiwo, B., Idoko, J., Ani, A., Isa, Y., Agbaji, O., Ukoli, C., Akande, P., Maiga, M., & Murphy, R. L. (2017). Evaluation of gene xpert for routine diagnosis of HIV-associated tuberculosis in Nigeria: A prospective cohort study. *BMC pulmonary medicine*, 17(1), 87. <https://doi.org/10.1186/s12890-017-0430-6>

Abstract

Background: Xpert MTB/Rif (Xpert) is described as a game changer in tuberculosis (TB) control. We evaluated the impact of Xpert on diagnosis, time to treatment, and treatment outcome among patients with HIV associated TB in Nigeria. **Methods:** Adults with HIV being evaluated for pulmonary TB (PTB) were consecutively enrolled into the study cohort. At baseline, expectorated sputa were examined using Xpert and smear microscopy for *Mycobacterium tuberculosis* (MTB) and acid fast bacilli, respectively. Patients diagnosed with TB were followed-up until 6 months post TB diagnosis. TB was defined as sputum positive by smear microscopy, Xpert detection of MTB (bacteriologically confirmed case), or clinician diagnosed TB with initiation of full TB treatment (clinical diagnosis). Time to treatment was time from first clinic presentation for TB evaluation to initiation of TB treatment. We examined the proportion PTB patients with a positive Xpert result and compared time to TB treatment and outcome of TB treatment in patients based on sputum test results. **Results:** A total of 310 adults with HIV were enrolled. The median CD4 cell count was 242 (interquartile range (IQR) 120-425) cells/mm³ and 88.1% were receiving antiretroviral therapy (ART). PTB was diagnosed in 76 (24.5%) patients, with 71 (93.4%) being bacteriologically confirmed. Among patients with PTB, 56 (73.7%) were Xpert positive. Median time to treatment was 5 (IQR 2-8) days and 12 (IQR 5-35) days in patient with and without Xpert positive results, respectively; $p = 0.005$. Overall 73.1% had symptom free survival at 6 months post PTB treatment initiation with no significant differences observed based on TB test method. 10 (14.9%) died within 6 months of TB treatment initiation. In analysis adjusted for age, sex, and mode of diagnosis (Xpert positive or negative), only ART use independently predicted mortality (AOR 0.10; 95% CI 0.01-0.93). **Conclusion:** The use of Xpert for routine care reduced time to PTB treatment, but did not improve survival in patients with HIV treated for susceptible PTB.

Keywords: Africa; HIV; Nigeria; Outcomes research; Tuberculosis; Xpert.

Akeju, D., Nance, N., Salas-Ortiz, A., Fakunmoju, A., Ezirim, I., Oluwayinka, A. G., Godpower, O., & Bautista-Arredondo, S. (2021). Management practices in community-based HIV prevention organizations in Nigeria. *BMC health services research*, 21(1), 489. <https://doi.org/10.1186/s12913-021-06494-1>

Abstract

Background: Nigeria has one of the largest Human Immunodeficiency Virus (HIV) epidemics in the world. Addressing the epidemic of HIV in such a high-burden country has necessitated responses of a multidimensional nature. Historically, community-based organizations (CBOs) have played an essential role in targeting key populations (eg. men who have sex with men, sex workers) that are particularly burdened by HIV. CBOs are an essential part of the provision of health services in sub-Saharan Africa, but very little is known about the management practices of CBOs that provide HIV prevention interventions. **Methods:** We interviewed 31 CBO staff members and other key stakeholders in January 2017 about management practices in CBOs. Management was conceptualized under the classical management process perspective; these four management phases-planning, organizing, leading, and evaluating-guided the interview process and code development. Data analysis was conducted thematically using Atlas.ti software. The protocol was approved by the ethics committees of the National Institute of Public Health of Mexico (INSP), the National Agency for the Control of AIDS in Nigeria (NACA), and the Nigerian Institute for Medical Research (NIMR). **Results:** We found that CBOs implement variable management practices that can either hinder or facilitate the efficient provision of HIV prevention services. Long-standing CBOs had relatively strong organizational infrastructure and capacity that positively influenced service planning. In contrast, fledgling CBOs were deficient of organizational infrastructure and lacked program planning capacity. The delivery of HIV services can become more efficient if management practices are taken into account. **Conclusions:** The delivery of HIV services by CBOs in Nigeria was largely influenced by inherent issues related to skills, organizational structure, talent retention, and sanction application. These, in turn, affected management practices such as planning, organizing, leading, and evaluating. This study shows that KP-led CBOs are evolving and have strong potentials and capacity for growth, and can become more efficient and effective if attention is paid to issues such as hierarchy, staff recruitment, and talent retention.

Keywords: Female sex workers; community-based organizations; HIV prevention interventions; Management practices; Nigeria.

Akinsete, A. M., & Ezeaka, C. (2018). Prevalence and risk factors of asymptomatic bacteriuria among children living with HIV in Lagos, Nigeria. *The Pan African medical journal*, 31, 181. <https://doi.org/10.11604/pamj.2018.31.181.16028>

Abstract

Introduction: HIV/AIDS has gradually become a chronic disorder following the success of combination chemotherapy. As a result of the persisting immune deficiency, certain risk factors predispose affected individuals to infections. The aim of the study was to determine the prevalence and identify risk factors of asymptomatic bacteriuria among HIV infected children. **Methods:** this was a case control study conducted at the Lagos University Teaching Hospital from July 2010 to June 2011. Eighty-five children living with HIV were consecutively selected from the HIV clinic of the Lagos University Teaching Hospital and compared with 85 age and sex matched HIV negative controls for the occurrence of asymptomatic bacteriuria. Mid-stream urine samples were obtained from the participants and the samples were analyzed for microscopy, culture and sensitivity. Demographic and clinical data was obtained from the caregivers and clinical notes respectively. Data were analyzed utilizing SPSS version 17. **Results:** the prevalence of asymptomatic bacteriuria was 24.7% among children living with HIV and 8.2% among un-infected children (p value 0.004). The stage of the disease, CD4 count, sex as well as age were risk factors for asymptomatic bacteriuria among children living with HIV. **Conclusion:** asymptomatic bacteriuria is a prevalent problem among children living with HIV infection and urinary screening should be routine in the work up of febrile children living with HIV.

Keywords: Asymptomatic bacteriuria; HIV/AIDS; risk factors.

Akinwande, O., Bashorun, A., Azeez, A., Agbo, F., Dakum, P., Abimiku, A., Bilali, C., Idoko, J., & Ogungbemi, K. (2017). A Decade of Monitoring HIV Epidemics in Nigeria: Positioning for Post-2015 Agenda. *AIDS and behavior*, 21(Suppl 1), 62–71. <https://doi.org/10.1007/s10461-016-1603-7>

Abstract

Background: Nigeria accounts for 9% of the global HIV burden and is a signatory to Millennium Development Goals as well as the post-2015 Sustainable Development Goals. This paper reviews maturation of her HIV M&E system and preparedness for monitoring of the post-2015 agenda. **Methods:** Using the UNAIDS criteria for assessing a functional M&E system, a mixed-methods approach of desk review and expert consultations, was employed. **Results:** Following adoption of a multi-sectoral M&E system, Nigeria experienced improved HIV coordination at the National and State levels, capacity building for epidemic appraisals, spectrum estimation and routine data quality assessments. National data and systems audit processes were instituted which informed harmonization of tools and indicators. The M&E achievements of the HIV response enhanced performance of the National Health Management Information System (NHMIS) using DHIS2 platform following its re-introduction by the Federal Ministry of Health, and also enabled decentralization of data management to the periphery. **Conclusion:** A decade of implementing National HIV M&E framework in Nigeria and the recent adoption of the DHIS2 provides a strong base for monitoring the Post 2015 agenda. There is however a need to strengthen inter-sectoral data linkages and reduce the rising burden of data collection at the global level.

Keywords: HIV; M&E; Monitoring and evaluation; Nigeria; Post-2015; SDGs.

Akinyemi, J. O., Ogunbosi, B. O., Fayemiwo, A. S., Adesina, O. A., Obaro, M., Kuti, M. A., Awolude, O. A., Olaleye, D. O., & Adewole, I. F. (2017). Demographic and epidemiological characteristics of HIV opportunistic infections among older adults in Nigeria. *African health sciences*, 17(2), 315–321. <https://doi.org/10.4314/ahs.v17i2.4>

Abstract

Background: In view of the maturing HIV epidemic in sub-Saharan Africa, better understanding of its epidemiology among older adults is necessary in order to design appropriate care and treatment programmes for them. **Objectives:** To describe the demographic and epidemiological characteristics of HIV opportunistic infections among newly enrolled patients aged 50 years and above in Ibadan, South-West Nigeria. **Methods:** Analysis of data extracted from electronic records of 17, 312 subjects enrolled for HIV/AIDS care and treatment between January 2006 and December 2014 at the ART clinic, University College Hospital, Ibadan. **Results:** Age of the patients ranged from 18 to 90 years with a mean of 36.4 years (SD= 10.3) with older adults constituting 12.0% (2075). Among older adults, about half (52.9%) were females. Majority (59.1%) were currently married while 25.9% were widowed. Prevalence of opportunistic infections was 46.6%. The commonest opportunistic infections (OIs) were: oral candidiasis (27.6%), chronic diarrhoea (23.5% and peripheral neuropathy (14.8%). Significant factors associated with opportunistic infections in older adults were: CD4 count less than 350 (OR=3.12, CI: 2.29-4.25) and hepatitis C virus co-infection (OR=2.17, CI: 1.14-4.13). **Conclusion:** There is need for prompt response to the peculiar challenges associated with the emerging shift in the epidemiology of HIV and associated infections in sub-Saharan Africa.

Keywords: HIV/AIDS; Nigeria; epidemiological characteristics; older adults; opportunistic infections.

Akinyotu, O., Bello, F., Abdus-Salam, R., & Arowojolu, A. (2018). Comparative study of mefloquine and sulphadoxine-pyrimethamine for malaria prevention among pregnant women with HIV in southwest Nigeria. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, 142(2), 194–200. <https://doi.org/10.1002/ijgo.12516>

Abstract

Objective: To compare the effectiveness of mefloquine and sulphadoxine-pyrimethamine as intermittent preventive therapy for malaria among pregnant women with HIV. **Methods:** The present randomized, controlled, prospective, open-label study enrolled women with HIV who had reached at least 16 weeks of pregnancy attending prenatal clinics at secondary and tertiary health facilities in South West Nigeria between January 1 and August 31, 2016. Block randomization was used to assign patients to treatment with mefloquine or sulphadoxine-

pyrimethamine for malaria prophylaxis. The primary outcome was malaria parasitemia at delivery. Data were compared with the χ^2 and t tests on a per-protocol basis. **Results:** Of 142 women enrolled and randomized equally to each group, 131 (92.3%) completed the study (64 in the mefloquine group and 67 in the sulphadoxine-pyrimethamine group). Blood-sample malaria parasites were isolated from 6 (9%) and 5 (7%) patients in the mefloquine and sulphadoxine-pyrimethamine groups, respectively, at enrolment, and 6 (9%) and 9 (13%) patients in the mefloquine and sulphadoxine-pyrimethamine groups, respectively, at delivery; the differences between the groups was not significant at enrolment ($P=0.693$) or delivery ($P=0.466$). **Conclusion:** Outcomes following prophylactic use of mefloquine for intermittent preventive therapy for malaria among pregnant women with HIV were comparable to sulphadoxine-pyrimethamine treatment; mefloquine is a feasible alternative therapy. ClinicalTrials.gov: [NCT02524444](https://clinicaltrials.gov/ct2/show/study/NCT02524444).

Keywords: HIV/AIDS-pregnancy; Intermittent preventive treatment; Malaria; Malaria pregnancy; Mefloquine; Sulphadoxine-pyrimethamine.

Akpa O. M. (2018). Multilevel analysis of psychosocial functioning of Adolescents in families affected by HIV/AIDS in Benue state, Nigeria. *African journal of biomedical research : AJBR*, 21(2), 123–131.

Abstract

Psychosocial functioning is increasing a public health priority issue among young people. Previous reports have focused on the effect of personal health conditions on the psychosocial well-being of children but contextual analysis of environmental or social factors could provide relevant information for interventions. In the context of HIV/AIDS, the present study examined the personal- and contextual-level predictors of Psychosocial Functioning Index (PFI) among adolescents in Benue state, Nigeria. Data on 2,276 adolescents was extracted from a cross-sectional study in Benue State for secondary analysis. The PFI was obtained using the final score of an existing scale (Adolescents Psychosocial Functioning Inventory). Participant's characteristics were summarized using descriptive statistics and compared using Chi-square test. Multilevel logit models were used to assess the individual- and contextual-level predictors of the PFI of adolescents. A nominal p-value ≤ 0.05 was considered significant in all analyses. Participants were 14.77 ± 2.04 years old and mostly female (53.9%). About 19% of the participants have single parents while 62.1% have self-employed mothers. Proportion with elevated PFI was significantly higher among adolescents who have self-employed mothers (84.4%) and alcohol/substance users (82.7%). In adjusted analysis, adolescents who reported alcohol/substance use (OR=1.65; 95%CI: 1.14 to 2.38) were twice more likely to have elevated psychosocial functioning index compared to non-users. The psychosocial functioning index is high among study participants and differs contextually. Adolescent's psychosocial functioning depends on their life styles and parents' marital and economic situations. Family empowerments and other family level intervention programmes will benefit adolescents in these categories.

Keywords: Adolescents; Families affected by HIV/AIDS; HV/AIDS; Multilevel analysis; Psychosocial functioning; Psychosocial problems.

Akpuh, N., Ajayi, I., Adebowale, A., Idris Suleiman, H., Nguku, P., Dalhat, M., & Adedire, E. (2020). Occupational exposure to HIV among healthcare workers in PMTCT sites in Port Harcourt, Nigeria. *BMC public health*, 20(1), 451. <https://doi.org/10.1186/s12889-020-08528-5>

Abstract

Background: Rivers State is among the states with high HIV prevalence in Nigeria. Occupational exposure to HIV through blood or body fluids of HIV/AIDS patients is a recognised risk factor of HIV infections among healthcare workers. We identified the determinants of occupational exposures to HIV among healthcare workers in Prevention of Maternal to Child Transmission (PMTCT) sites within Port Harcourt metropolis in Rivers State. **Methods:** A descriptive cross-sectional study was conducted and multi-stage sampling technique was used to select 341 healthcare providers from 22 public and 22 private health facilities in PMTCT sites in Port Harcourt metropolis. The data collected were analysed using descriptive statistics, Chi-square and logistic regression models (p-value = 0.05). **Results:** Respondents' mean age was $35.9 \pm SD8.4$ years, 270 (80.1%) and 171(50.7%) were females, and from public health facilities respectively. Prevalence of occupational exposure of healthcare workers to HIV in the past 12 months was 153 (45.0%), and 96 (63.3%) experienced such exposure more than once. Contacts with potentially infectious body fluid accounted for the largest proportion 51 (33.3%); followed by needle stick prick 49 (32.6%). About 189 (56.1%) had safety information at their disposal and this serves as a reminder on safety precautions. The likelihood of occupational exposure was significantly higher among doctors (AOR = 2.22, 95% C.I = 1.16-4.25,) but lower among environmental health workers (AOR = 0.10, 95% C.I = 0.02-0.46,) than nurses/midwives when other factors were included in the model. **Conclusion:** Occupational exposure to blood and body fluids remains a frequent occurrence among healthcare workers; highest among doctors in PMTCT sites in the study area. Provision of protective safety materials, training and enforcement of adherence to universal precaution strategies are highly recommended.

Keywords: HIV; HealthCare workers; Nigeria; Occupational exposure; PMTCT; Port Harcourt; Private facility; Public facility; Rivers state.

Alabi, A. D., Oke, O. A., Adedokun, B. O., & Runsewe-Abiodun, T. I. (2018). Perception and Practice of HIV/AIDS Counseling and Testing Among Secondary School Adolescents in Ogun Waterside Local Government Area, Ogun State, Southwest Nigeria. *International quarterly of community health education*, 38(3), 175–180. <https://doi.org/10.1177/0272684X17749571>

Abstract

A large proportion of Nigerian adolescents are sexually active and the country has one of the highest HIV prevalence among youths globally. This study was done to assess the perception and practice of HIV/AIDS counseling and testing (HCT) among secondary school adolescents in a rural community in Southwest Nigeria. A cross-sectional descriptive study was carried out using multistage sampling method. The results showed that despite high level of HCT awareness, majority of the adolescents (62.9%) had negative attitude toward it. The practice of HCT was poor among majority of the respondents as less than 15% of the adolescents had ever done HCT. This study recommends that adolescents should be better informed on the locations of the health centers within the community and services rendered by them. Peer education on HCT should also be intensified in schools to promote positive healthy sexual lifestyles among adolescents.

Keywords: HIV; adolescent; counseling; perception.

Alade, O. T., Abegunde, A. A., Adedigba, J. A., Fakande, I., & Adedigba, M. A. (2021). Environmental Characteristics of HIV/AIDS Affected Households in a Nigerian Rural Community. *International quarterly of community health education*, 272684X21991020. Advance online publication. <https://doi.org/10.1177/0272684X21991020>

Abstract

A study of environmental attributes of HIV/AIDS affected households in Ijesa region, Nigeria (N = 297). Data from both primary and secondary sources were used to establish the relationship between socio-economic and environmental characteristics at different rural community zones; namely traditional core, post traditional and contemporary. There were more female HIV/AIDS patients, located in traditional core zones (78.1%) with high house density, living in shared apartments where residents shared sleeping and bath/toilet rooms. Thus, rape was significantly associated with the design and habitation density of households. In addition, widowhood, young age, informal education, menial jobs and unemployment of patients did not correlate with most environmental variables related to HIV/AIDS in contemporary zone compared with traditional zone. However, wealth status and quality education in relation to good housing environment and decent house density were significant in contemporary zone respectively. The study concluded that policies on HIV/AIDS prevalence at rural community level should focus more on high density areas having poor socio-economic and environmental characteristics.

Keywords: HIV/AIDS; Nigeria; environmental determinants.

Aliyu, A., El-Kamary, S., Brown, J., Agins, B., Ndembi, N., Aliyu, G., Jumare, J., Adelekan, B., Dakum, P., Abimiku, A., & Charurat, M. (2019). Performance and trend for quality of service in a large HIV/AIDS treatment program in Nigeria. *AIDS research and therapy*, 16(1), 29. <https://doi.org/10.1186/s12981-019-0242-2>

Abstract

Background: As antiretroviral therapy (ART) programs expand access, there is an increase in burden to a healthcare system. These results are reduced provider-patient contact time and poor programmatic and patient outcomes. Quality management offers providers a standardized approach for addressing the appropriateness of care to be applied in resource-limited settings. This study aimed to determine the trend of performance on HIV/AIDS quality management indicators of health facilities providing ART over a period of 5 years. **Methods:** The annual performance scores of quality of care (QoC) indicators of 31 health facilities providing ART was extracted from a database covering a period of 5 years (from October 2008 to September 2012). The data are percentages that indicate scores of each health facility assessed based on compliance to National ART guidelines categorized into several indicator domains. A Chi square statistic for the trend, as well as test for departure from the trend line was determined. The p value associated with each indicator provides the significant level for testing an alternative hypothesis that the rate of change over the period considered for that indicator does not equal to zero. The slope of the regression line also gives the magnitude of the rate of change for each indicator by healthcare level across the review period. **Results:** Generally, performance trends showed improvement across most indicator domains. The highest improvement occurred for "3-month loss to follow-up" and "1 year no-visit", with scores declining from 37 to 3%, and 42% to 12% respectively. However, there was a sharp decline in performance between 2010 and 2012 in weight monitoring of patients ($p < 0.01$), adherence assessment to ARVs ($p < 0.01$) and hematocrit measurements ($p = 0.01$). The aggregate rate of change β , as obtained from the slope of the trend line is highly significant ($p < 0.01$) for all the quality-of-care indicators considered, whether improving or declining. **Conclusion:** Periodic assessment to determine HIV/AIDS quality of care can guide rapid scale-up of services to achieve universal coverage in resource-limited settings. Determining trends to understand patterns is very useful for improving programmatic and patient outcomes.

Keywords: ART; Indicators; Nigeria; Performance; Quality.

Aliyu, G. G., Aliyu, S. H., Ehoche, A., Dongarwar, D., Yusuf, R. A., Aliyu, M. H., & Salihu, H. M. (2021). The Burden of HIV, Hepatitis B and Hepatitis C by Armed Conflict Setting: The Nigeria AIDS Indicator and Impact Survey, 2018. *Annals of global health*, 87(1), 53. <https://doi.org/10.5334/aogh.3226>

Abstract

Background: Against a background of security challenges, Nigeria conducted recently the largest population-based HIV survey in the world to ascertain the burden of the HIV disease in the country. **Objective:** We evaluated the main outcomes of the survey and the level of success using participation/response indicators. **Methods:** The survey was conducted from July-December 2018 by over 6,000 field staff across Nigeria in six consecutive weeks, using two-stage cluster sampling. We estimated the prevalence of HIV, hepatitis B and hepatitis C in the entire country and by conflict zone status. Adjusted odds ratios (OR) and 95% confidence intervals (CI) from survey logistic regression models were used to compare the

likelihood of test positivity for the three infections between zones. **Findings:** A total of 186,405 adults were interviewed from 97,250 households in 3,848 census enumeration areas. The overall HIV, hepatitis B and hepatitis C positivity rates were 1.55%, 7.63% and 1.73%, respectively. The prevalence of HIV, hepatitis B and C infection was significantly greater in conflict than non-conflict zones (HIV: 1.75% versus 1.0%; hepatitis B: 9.9% versus 7.3%; and hepatitis C: 3.2% versus 0.3%; $p < 0.01$ in all cases). Individuals living in conflict zones were about three times as likely to test positive for HIV (OR = 2.80, 95% CI = 2.08, 3.60) and nearly six times as likely to test positive for hepatitis C (OR = 5.90, 95% CI = 2.17, 16.67). **Conclusion:** Large population-based surveys are feasible, even in armed conflict settings. The burden of HIV, hepatitis B and hepatitis C was significantly higher in areas of conflict in Nigeria, highlighting the need for reinforced public health control measures in these settings in order to attain UNAIDS' 95-95-95 targets of controlling the HIV epidemic in sub-Saharan Africa by 2030.

Anaba, U. C., Sam-Agudu, N. A., Ramadhani, H. O., Torbunde, N., Abimiku, A., Dakum, P., Aliyu, S. H., & Charurat, M. (2019). Missed opportunities for early infant diagnosis of HIV in rural North-Central Nigeria: A cascade analysis from the INSPIRE MoMent study. *PloS one*, 14(7), e0220616. <https://doi.org/10.1371/journal.pone.0220616>

Abstract

Background: Early identification of HIV-infected infants for treatment is critical for survival. Efficient uptake of early infant diagnosis (EID) requires timely presentation of HIV-exposed infants, same-day sample collection, and prompt release of results. The MoMent (Mother Mentor) Nigeria study investigated the impact of structured peer support on EID presentation and maternal retention. This cascade analysis highlights missed opportunities for EID and infant treatment initiation during the study. **Methods:** HIV-infected pregnant women and their infants were recruited at 20 rural Primary Healthcare Centers. Routine infant HIV DNA PCR testing was performed at centralized laboratories using dried blood spot (DBS) samples ideally collected by age two months. EID outcomes data were abstracted from study case report forms and facility registers. Descriptive statistics summarized gaps and missed opportunities in the EID cascade. **Results:** Out of 497 women enrolled, delivery data was available for 445 (90.8%), to whom 415 of 455 (91.2%) infants were live-born. Out of 408 live-born infants with available data, 341 (83.6%) presented for DBS sampling at least once. Only 75.4% (257/341) were sampled, with 81.7% (210/257) sampled at first presentation. Only 199/257 (77.4%) sampled infants had results available up to 28 months post-collection. Two (1.0%) of the 199 infants tested HIV-positive; one infant died before treatment initiation and the other was lost to follow-up. **Conclusions:** While nearly 85% of infants presented for sampling, there were multiple missed opportunities, largely due to health system and not necessarily patient-level failures. These included infants presenting without being sampled, presenting multiple times before samples were collected, and getting sampled but results not forthcoming. Finally, neither of the two HIV-positive infants were linked to treatment within the follow-up period, which may have led to the death of one. To facilitate patient compliance and HIV-free infant survival, quality improvement approaches should be optimized for EID

commodity availability, consistent DBS sample collection, efficient processing/result release, and prompt infant treatment initiation.

Anosike, A., Olakunde, B. O., Adeyinka, D. A., Ezeokafor, C., Amanze, O., Mathews, O., Alau, K., & Ogungbemi, K. (2019). Clients' satisfaction with HIV treatment and care services in Nigeria. *Public health*, 167, 50–54. <https://doi.org/10.1016/j.puhe.2018.11.012>

Abstract

Objective: Many Sub-Saharan Africa countries have witnessed rapid scale-up of HIV treatment and care services in recent years. However, there is increasing evidence suggestive of poor quality of services. In this study, we examined clients' satisfaction with quality of HIV treatment and care services in Nigeria. **Study design:** This was a cross-sectional survey of people living with HIV (PLHIV) receiving HIV treatment and care services. **Methods:** The study included 1212 PLHIV receiving HIV treatment and care in 96 health facilities across 12 states. We collected data on clients' satisfaction with four quality domains (confidentiality, staff attitude, physical structure, and perceived improved health) and the overall quality of care, sociodemographic characteristics, type of facility, distance to facility, and time spent at facility. A logistic regression analysis was conducted with clients' satisfaction with the overall quality of care as the dependent variable. **Results:** About 90% of the respondents were satisfied with the overall quality of care. Women, rural dwellers, and Muslims, public (government-owned) healthcare facility users, those unsatisfied with confidentiality, and those unsatisfied with staff attitude had statistically significant lower odds of being satisfied with the overall quality of care. After adjusting for sociodemographic characteristics and the type of facility, confidentiality (adjusted odds ratio [AOR] = 0.1, 95% confidence interval [CI] = 0.01-0.81, P = 0.031) and staff attitude (AOR = 0.24, 95% CI = 0.09-0.67, P = 0.006) remained statistically significant. **Conclusions:** Clients' satisfaction with the quality of HIV treatment and care services at health facilities in Nigeria appears high. HIV service provision should be in line with standard ethical principles and more patient centered and responsive to sociodemographic characteristics of PLHIV.

Keywords: Clients' satisfaction; HIV; Nigeria; Quality of care.

Anugwom, E. E., & Anugwom, K. (2018). Beyond Morality: Assessment of the Capacity of Faith-based Organizations (FBOs) in Responding to the HIV/AIDS Challenge in Southeastern Nigeria. *Iranian journal of public health*, 47(1), 70–76.

Abstract

Background: For the world can get rid of the HIV/AIDS pandemic by 2030, there is need for more to be done especially in the case of countries in Africa. In Nigeria, such efforts have included Faith-Based Organizations (FBOs) recognized as partners in the National Response Framework. However, the extent to which these FBOs contribute to efforts to control the pandemic will depend on their capacity. Therefore, this study aimed to ascertain the technical

and managerial capacity of these FBOs to respond to the pandemic in Nigeria. **Methods:** We utilized social survey in examining the capacity of three purposively selected FBOs in the Southeast of Nigeria to respond to the pandemic. Thus, the focus group discussion and the key informant interviews were used. The data for the study was collected between Feb and Apr 2014. **Results:** The study discovered a general low capacity but high willingness of the FBOs to get involved. One of the FBOs studied was better placed than others and had even established committee on the pandemic. However, in another FBO, the pandemic was still seen largely with moral lens that blame those infected rather than provide support. All the FBOs were ambivalent on the use of condoms as a prevention method. **Conclusion:** There is need for sustained capacity building for the FBOs in order to provide them with knowledge on the pandemic and help them act out the role envisaged for them in the National Response Framework in Nigeria.

Keywords: Capacity; Faith-based organizations; HIV/AIDS; Nigeria; Response.

Anyabolu E. N. (2017). Dyslipidemia in people living with HIV-AIDS in a tertiary hospital in South-East Nigeria. *The Pan African medical journal*, 28, 204. <https://doi.org/10.11604/pamj.2017.28.204.13505>

Abstract

Introduction: Across the globe, human immunodeficiency virus (HIV) infection is a healthcare problem. Dyslipidemia, a cardiovascular risk factor, is known to occur with the progression of HIV infection. The factors which influence dyslipidemia in HIV subjects have not been completely identified. The aim of this study was to evaluate serum lipids and identify the factors which might influence dyslipidemia in treatment-naïve HIV subjects in Owerri, Nigeria. **Methods:** This was a cross-sectional study of treatment-naïve HIV subjects. Anthropometric and demographic data were collected. Serum LDL serum cholesterol, serum high density lipoprotein cholesterol, serum triglyceride, spot urine creatinine, spot urine osmolality, spot urine protein, serum creatinine, 24-hour urine protein, 24-hour urine osmolality, 24-hour urine creatinine, creatinine clearance and hemoglobin were conducted. The variables were compared between those who have dyslipidemia and those who have no dyslipidemia. **Results:** The mean age of the subjects was 39 ± 11 years. Females constituted 72.0% and males 28.0%. Elevated serum LDL was present in 17.6%, elevated serum total cholesterol in 11.4%, elevated serum triglyceride in 9.9% and low serum HDL in 34.4% of the subjects. There was significant association between dyslipidemia and CD4 cells count, as well as anemia. There was no significant association between dyslipidemia and urine protein, urine creatinine, urine osmolality, creatinine clearance, as well as 24-hour urine volume. **Conclusion:** The prevalence of dyslipidemia was high in the study subjects. Abnormal CD4 cells count and anemia were common in treatment-naïve HIV subjects who have dyslipidemia.

Keywords: Anemia; CD4 cells count; HIV; Nigeria; Owerri; body mass index; dyslipidemia; urine osmolality; urine protein.

Anyaike, C., Atoyebi, O. A., Musa, O. I., Bolarinwa, O. A., Durowade, K. A., Ogundiran, A., & Babatunde, O. A. (2019). Adherence to combined Antiretroviral therapy (cART) among people living with HIV/AIDS in a Tertiary Hospital in Ilorin, Nigeria. *The Pan African medical journal*, 32, 10. <https://doi.org/10.11604/pamj.2019.32.10.7508>

Abstract

Introduction: This study aims to assess the treatment adherence rate among People Living With HIV/AIDS (PLWHA) receiving treatment in a Nigerian tertiary Hospital. **Methods:** This was a cross-sectional study that assessed self-reported treatment adherence among adults aged 18 years and above who were accessing drugs for the treatment of HIV. Systematic random sampling method was used to select 550 participants and data were collected by structured interviewer administered questionnaire. **Results:** The mean age of respondents was 39.9±10 years. Adherence rate for HIV patients was 92.6%. Factors affecting adherence include lack of money for transportation to the hospital (75%), traveling (68.8%), forgetting (66.7%), avoiding side effects (66.7%), and avoiding being seen (63.6%). **Conclusion:** The adherence rate was less than optimal despite advancements in treatment programmes. Adherence monitoring plans such as home visit and care should be sustained.

Keywords: Adherence; Human Immunodeficiency Virus; Nigeria; antiretroviral.

Asieba, I. O., Oqua, D. A., Wutoh, A. A., Agu, K. A., Omeh, O. I., Adeyanju, Z. A., Adesina, A., Agu, F., Agada, P., Achanya, A., Ekechuwu, N., & Tofade, T. (2021). Antiretroviral therapy in community pharmacies - Implementation and outcomes of a differentiated drug delivery model in Nigeria. *Research in social & administrative pharmacy : RSAP*, 17(5), 842–849. <https://doi.org/10.1016/j.sapharm.2020.06.025>

Abstract

Introduction: The World Health Organization recommended differentiated models of care portends opportunities to decongest hospitals providing antiretroviral therapy (ART) and improve retention, especially in developing countries. A community pharmacy-based ART refill model was implemented where stable clients were devolved to community pharmacies for routine refills at a service fee, to promote private sector participation and sustainability of ART services. The aim of this study was to assess the feasibility, acceptability and outcomes of this model in Nigeria. **Methods:** A population-based retrospective analysis of the community pharmacy ART refill program of the United States Agency for International Development-funded 'Strengthening Integrated Delivery of HIV/AIDS Services' project in Lagos, Rivers, Cross River and Akwa Ibom States from October 2016 to February 2018 was conducted. Standard descriptive statistical methods were used for baseline demographic and clinical characteristics of study participants. Outcomes were assessed using the Chi-square test and a multivariate logistic regressions model. Statistical significance was defined at α -level of 0.05. Analyses were performed using SPSS for Windows version 23 (IBM Corp, Armonk, USA). **Results:** A total of 10015 participants representing 14.4% of ART clients in 50 hospitals opted for this model and were devolved to 244 community pharmacies. All clients

consented and paid a service fee of N1000 (about \$3) per refill visit. Median follow-up duration was 6 months. Prescription refill rate was 95% (95% CI 94.2-95.3). Retention rate was 98% while viral suppression was 99.12%. Refill rates were significantly affected by ART duration, regimen, age and location ($P < 0.001$, 0.004, 0.034 and < 0.001 respectively). **Conclusions:** This community pharmacy ART refill model of differentiated care is feasible and acceptable by clients and providers and demonstrated excellent clinical outcomes of retention and viral suppression. The ability and willingness of some clients to contribute financially to their HIV care was also demonstrated.

Keywords: Antiretroviral therapy; Community pharmacy; Differentiated care; Fee for service; Retention; Viral suppression.

Atilola, G., Randle, T., Obadara, T., Komolafe, I. O., Odutolu, G., Olomu, J., & Adenuga, L. (2018). Epidemiology of HIV and Tuberculosis in pregnant women, South West Nigeria. *Journal of infection and public health*, 11(6), 826–833. <https://doi.org/10.1016/j.jiph.2018.06.004>

Abstract

Background: Pregnant women remain the most vulnerable high-risk population to the devastating impact of the on-going human immunodeficiency virus (HIV) generalized epidemic and co-infection with Tuberculosis in Nigeria. By the end of 2017, the country ranked the second highest in adult HIV-infected individuals and the highest population of orphans due to AIDS in sub-Saharan Africa. We assessed the epidemiology of HIV among pregnant women across ten facilities in south-west Nigeria. **Methods:** This is a cross-sectional study design in which 353 pregnant women randomly selected across ten health care facilities in two states in south west Nigeria. This study was conducted between January and May 2015. HIV testing was conducted and active tuberculosis screening was implemented using the fluorescence microscopy. In addition, a structured questionnaire was administered to elicit risk factors of HIV infection and syndromic Tuberculosis in the study population. **Results:** We found a 5.1% (18/353;95% CI:3.0%-8.0%) rate of HIV and 0% active tuberculosis in the study population. HIV positive pregnant women were 6 times more likely to have blood transfusion with greater odds of infection found in pregnant women with history of blood transfusion in the previous three months (OR:3.27, 95% CI:0.44-24.36). Pregnant women who tested HIV negative had 70% reduction in odds of infection (OR:0.21;95% CI:0.06-0.77). **Conclusions:** This study suggests a possible strong epidemiological link between HIV infection and recent blood transfusion among pregnant women attending ante-natal clinics in south west Nigeria. We therefore recommend further study to develop a more robust estimate of blood transfusion and the risk of HIV in pregnant women in Nigeria.

Keywords: Epidemiology; HIV; Nigeria; Pregnant; Women.

Awofala, A. A., & Ogundele, O. E. (2018). HIV epidemiology in Nigeria. *Saudi journal of biological sciences*, 25(4), 697–703. <https://doi.org/10.1016/j.sjbs.2016.03.006>

Abstract

Nigeria realizes the devastating effects of HIV/AIDS on its people, health, economic, and social progress fairly recently. This paper analyses descriptively the HIV epidemiology in Nigeria based on the sentinel surveillance system in place. Recently, it is estimated that about 3, 229, 757 people live with HIV in Nigeria and about 220, 393 new HIV infections occurred in 2013 and 210,031 died from AIDS related cases. People practicing low-risk sex are the driving force of HIV epidemic in Nigeria while the high risk groups involving female sex workers, men who have sex with men and injecting drug users contribute substantially to new infections. In conclusion, HIV prevalence among adults in Nigeria is relatively low (3.2%), yet Nigeria is an enormous country where HIV infection remains an issue that demands a systematic and highly tailored intervention.

Azuogu, B. N., Ogbonnaya, L. U., Umeokonkwo, C. D., Alo, C., Ifebunandu, N. A., Obionu, C. N., Agu, A. P., Azuogu, V. C., Oyari, F. O., Okedo-Alex, I. N., Okafor, I. M., & Madubueze, U. C. (2019). Effect of multiple intervention models on uptake of HIV testing services and sexual behaviour among residents of military cantonments in south-east Nigeria. *African journal of AIDS research : AJAR*, 18(2), 89–94. <https://doi.org/10.2989/16085906.2019.1586738>

Abstract

Background: HIV testing and counselling (HTC) has been a viable tool in controlling the spread of HIV/AIDS, and serves as the entry point in the HIV care and treatment cascade. In Africa, HIV-related morbidity and mortality are high with thousands still unaware of their HIV status. This study assessed the effect of on-site multiple HIV control interventions on the uptake of HTC services, knowledge and sexual behaviour among residents of two military cantonments [barracks] in south-east Nigeria. **Methods:** A quasi-experimental study was conducted among residents of cantonments in two states in Nigeria. A multistage sampling technique was used to select 350 respondents each at intervention and control sites. A pre-tested interviewer-administered questionnaire was used to collect information. On-site HTC services were established, with the training of HTC counsellors and peer educators. HIV awareness carnivals, with information, education and communication activities were conducted. Data were analysed with SPSS software and statistical tests carried out at 5% level of significance. **Results:** There was a statistically significant increase in the uptake of HTC services from 41.1% pre-intervention to 81.1% post-intervention ($\chi^2 = 113.8$, $p < 0.001$). Also, knowledge about HIV improved significantly from 35.4% to 98.8% ($p < 0.001$) in the intervention group, together with avoidance of risky sexual behaviour. **Conclusion:** The study demonstrated the effectiveness of multiple on-site intervention models in improving HIV knowledge, uptake of HTC services, and sexual behaviour among diverse cantonment residents. Establishing on-site HTC services and a constellation of awareness events will contribute significantly towards HIV prevention and control among high-risk populations.

Keywords: HIV knowledge; MARP; army barracks; awareness; multiple HIV intervention models; program evaluation; sexual conduct; uptake of HTC.

Badru, T., Mwaisaka, J., Khamofu, H., Agbakwuru, C., Adedokun, O., Pandey, S. R., Essiet, P., James, E., Chen-Carrington, A., Mastro, T. D., Aliyu, S. H., & Torpey, K. (2020). HIV comprehensive knowledge and prevalence among young adolescents in Nigeria: evidence from Akwa Ibom AIDS indicator survey, 2017. *BMC public health*, 20(1), 45. <https://doi.org/10.1186/s12889-019-7890-y>

Abstract

Background: Despite the recent increase in HIV infections among adolescents, little is known about their HIV knowledge and perceptions. This study, therefore, sought to examine the factors associated with comprehensive HIV knowledge, stigma, and HIV risk perceptions among young adolescents aged 10-14 years in Akwa Ibom State, Nigeria. Additionally, consenting parents and assenting young adolescents were tested for HIV. **Methods:** We used cross-sectional data from the 2017 Akwa Ibom AIDS Indicator Survey to analyze comprehensive HIV knowledge, stigma, and HIV risk perceptions among young adolescents. Demographic characteristics of young adolescents were summarized using descriptive statistics. Chi-square test (or Fisher's exact test in cases of small subgroup sample sizes) was used to elicit associations between demographics and study outcomes. Separate multivariable logistic regression models were then conducted to determine associations with the study outcomes. Sampling weights were calculated in order to adjust for the sample design. P-values less than 0.05 were considered to be significant. **Results:** A total of 1818 young adolescents were interviewed. The survey highlighted significant low levels of comprehensive HIV knowledge (9.4%) among young adolescents. Adolescent-parent discussions [AOR = 2.19, 95% C.I (1.10-4.38), p = 0.03], schools as sources of HIV information [AOR = 8.06, 95% C.I (1.70-38.33), p < 0.001], and sexual activeness [AOR = 2.55, 95% C.I (1.16-5.60), p = 0.02] were associated with comprehensive HIV knowledge. Majority (93%) of young adolescents perceived themselves not to be at risk of HIV. Overall, 81.5% of young adolescents reported stigmatizing tendencies towards people living with HIV. HIV prevalence among young adolescents was 0.6%. **Conclusions:** Results indicate low comprehensive HIV knowledge among young adolescents. Our findings suggest that there is a need for increased attention towards young adolescents particularly in the provision of comprehensive, functional sexuality education, including HIV at the family- and school-levels. Consequently, age appropriate interventions are needed to address the epidemiological risks of young adolescents that are influenced by a myriad of social issues.

Keywords: Comprehensive HIV knowledge; Nigeria; Risk perceptions; Stigma; Young adolescents.

Badru, O., Oduola, T., Abdulrazaq, A., & Peter, C. (2022). Prevalence and Predictive Factors of Hypertension Among People Living With HIV in Kebbi State, Nigeria: A Cross-sectional Study.

The Journal of the Association of Nurses in AIDS Care : JANAC, 33(1), e6–e14.
<https://doi.org/10.1097/JNC.0000000000000309>

Abstract

The estimated number of people living with HIV (PLWH) globally in 2018 was 38 million, with sub-Saharan Africa accounting for 70%. Antiretroviral therapy has reduced morbidity among PLWH and has resulted in HIV now being considered a manageable chronic disease rather than a fatal one. The increase in the survival rate of PLWH has led to the emergence of chronic diseases, especially hypertension. The study aimed to assess the prevalence and predictive factors associated with hypertension among PLWH in Kebbi State, Nigeria. A descriptive cross-sectional study was adopted. The blood pressure of 301 PLWH was measured with an automated sphygmomanometer device. The median age of the respondents was 37 years. Females accounted for 61% of the respondents, and the majority were married (55.1%). The prevalence of hypertension was 17%. Older age, lack of exercise, and increasing weight were identified as the predictive factors of hypertension.

Banigbe, B., Audet, C. M., Okonkwo, P., Arije, O. O., Bassi, E., Clouse, K., Simmons, M., Aliyu, M. H., Freedberg, K. A., & Ahonkhai, A. A. (2019). Effect of PEPFAR funding policy change on HIV service delivery in a large HIV care and treatment network in Nigeria. *PloS one*, 14(9), e0221809. <https://doi.org/10.1371/journal.pone.0221809>

Abstract

The transition to PEPFAR 2.0 with its focus on country ownership was accompanied by substantial funding cuts. We describe the impact of this transition on HIV care in a large network of HIV clinics in Nigeria. We surveyed 30 comprehensive HIV treatment clinics to assess services supported before (October 2013–September 2014) and after (October 2014–September 2015) the PEPFAR funding policy change, the impact of these policy changes on service delivery areas, and response of clinics to the change. We compared differences in support for staffing, laboratory services, and clinical operations pre- and post-policy change using paired t-tests. We used framework analysis to assess answers to open ended questions describing responses to the policy change. Most sites (83%, n = 25) completed the survey. The majority were public (60%, n = 15) and secondary (68%, n = 17) facilities. Clinics had a median of 989 patients in care (IQR: 543–3326). All clinics continued to receive support for first and second line antiretrovirals and CD4 testing after the policy change, while no clinics received support for other routine drug monitoring labs. We found statistically significant reductions in support for viral load testing, staff employment, defaulter tracking, and prevention services (92% vs. 64%, p = 0.02; 80% vs. 20%, 100% vs. 44%, 84% vs. 16%, respectively, p<0.01 for all) after the policy change. Service delivery was hampered by interrupted laboratory services and reduced wages and staff positions leading to reduced provider morale, and compromised quality of care. Almost all sites (96%) introduced user fees to address funding shortages. Clinics in Nigeria are experiencing major challenges in providing routine HIV services as a result of PEPFAR's policy changes. Funding cutbacks have been associated with compromised

quality of care, staff shortages, and reliance on fee-based care for historically free services. Sustainable HIV services funding models are urgently needed.

Bautista-Arredondo, S., Colchero, M. A., Amanze, O. O., La Hera-Fuentes, G., Silverman-Retana, O., Contreras-Loya, D., Ashefor, G. A., & Ogungbemi, K. M. (2018). Explaining the heterogeneity in average costs per HIV/AIDS patient in Nigeria: The role of supply-side and service delivery characteristics. *PloS one*, 13(5), e0194305. <https://doi.org/10.1371/journal.pone.0194305>

Abstract

Objective: We estimated the average annual cost per patient of ART per facility (unit cost) in Nigeria, described the variation in costs across facilities, and identified factors associated with this variation. **Methods:** We used facility-level data of 80 facilities in Nigeria, collected between December 2014 and May 2015. We estimated unit costs at each facility as the ratio of total costs (the sum of costs of staff, recurrent inputs and services, capital, training, laboratory tests, and antiretroviral and TB treatment drugs) divided by the annual number of patients. We applied linear regressions to estimate factors associated with ART cost per patient. **Results:** The unit ART cost in Nigeria was \$157 USD nationally and the facility-level mean was \$231 USD. The study found a wide variability in unit costs across facilities. Variations in costs were explained by number of patients, level of care, task shifting (shifting tasks from doctors to less specialized staff, mainly nurses, to provide ART) and provider's competence. The study illuminated the potentially important role that management practices can play in improving the efficiency of ART services. **Conclusions:** Our study identifies characteristics of services associated with the most efficient implementation of ART services in Nigeria. These results will help design efficient program scale-up to deliver comprehensive HIV services in Nigeria by distinguishing features linked to lower unit costs.

Bautista-Arredondo, S., La Hera-Fuentes, G., Contreras-Loya, D., Kwan, A., Van Buren, S. J., Amanze, O. O., Atobatele, A., Adeyemi, A., Abatta, E., Ogungbemi, K. M., & Sosa-Rubí, S. G. (2018). Efficiency of HIV services in Nigeria: Determinants of unit cost variation of HIV counseling and testing and prevention of mother-to-child transmission interventions. *PloS one*, 13(9), e0201706. <https://doi.org/10.1371/journal.pone.0201706>

Abstract

Background: Like most countries with a substantial HIV burden, Nigeria continues to face challenges in reaching coverage targets of HIV services. A fundamental problem is stagnated funding in recent years. Improving efficiency is therefore paramount to effectively scale-up HIV services. In this study, we estimated the facility-level average costs (or unit costs) of HIV Counseling and Testing (HCT) and Prevention of Mother-to-Child Transmission (PMTCT) services and characterized determinants of unit cost variation. We investigated the role of service delivery modalities and the link between facility-level management practices and unit

cost variability along both services' cascades. **Methods:** We conducted a cross-sectional, observational, micro-costing study in Nigeria between December 2014 and May 2015 in 141 HCT, and 137 PMTCT facilities, respectively. We retrospectively collected relevant input quantities (personnel, supplies, utilities, capital, and training), input prices, and output data for the year 2013. Staff costs were adjusted using time-motion methods. We estimated the facility-level average cost per service along the HCT and PMTCT service cascades and analyzed their composition and variability. Through linear regressions analysis, we identified aspects of service delivery and management practices associated with unit costs variations. **Results:** The weighted average cost per HIV-positive client diagnosed through HCT services was US\$130. The weighted average cost per HIV-positive woman on prophylaxis in PMTCT services was US\$858. These weighted values are estimates of nationally representative unit costs in Nigeria. For HCT, the facility-level unit costs per client tested and per HIV-positive client diagnosed were US\$30 and US\$1,364, respectively; and the median unit costs were US\$17 and US\$245 respectively. For PMTCT, the facility-level unit costs per woman tested, per HIV-positive woman diagnosed, and per HIV-positive woman on prophylaxis were US\$46, US\$2,932, and US\$3,647, respectively, and the median unit costs were US\$24, US\$1,013 and US\$1,448, respectively. Variability in costs across facilities was principally explained by the number of patients, integration of HIV services, task shifting, and the level of care. **Discussion:** Our findings demonstrate variability in unit costs across facilities. We found evidence consistent with economies of scale and scope, and efficiency gains in facilities implementing task-shifting. Our results could inform program design by suggesting ways to improve resource allocation and efficiently scale-up the HIV response in Nigeria. Some of our findings might also be relevant for other settings.

Bello, T. K., Gericke, G. J., & MacIntyre, U. E. (2019). Development, Implementation, and Process Evaluation of a Theory-Based Nutrition Education Programme for Adults Living With HIV in Abeokuta, Nigeria. *Frontiers in public health*, 7, 30. <https://doi.org/10.3389/fpubh.2019.00030>

Abstract

Introduction: Healthy diets play a role in the management and care for adults living with HIV/AIDS (ALH). Appropriate nutrition education (NE) is necessary to equip ALH with relevant knowledge and skills for healthy eating. A needs assessment identified the need for a nutrition education programme (NEP) as part of the nutrition service for ALH in Abeokuta, Nigeria. The aim of this study was to design a theory-based NEP and to evaluate the implementation process among ALH attending selected federal and state hospitals in Abeokuta as out-patients. **Materials and Methods:** An exploratory descriptive needs assessment in the qualitative and quantitative domains was conducted among a convenient sample of ALH ($N = 243$) at the selected hospitals. The quantitative needs assessment identified needs for improvement in the primary outcome [quality of life (QoL)] and the secondary outcomes [quality of dietary intake, nutrition knowledge, attitudes, and practice (KAP), and anthropometric status]. Participants' perceptions of the NEP were obtained using an interviewer administered questionnaire among 70 ALH who attended the implementation of the NEP and process evaluation thereof at the intervention hospital. **Results:** The qualitative

results identified a lack of knowledge on planning varied meals with limited resources. The identified needs, existing guidelines and literature were integrated with appropriate constructs of the Social Cognitive Theory (SCT) and the Health Belief Model (HBM) into the NEP. The NE manual, participant's work book, flipcharts, and the brochure were tailored to address the identified challenges. **Discussion:** The process evaluation showed that the NEP was implemented as planned and that the participants' perceptions were positive. The use of the NE manual, participant's work book, flipcharts, and brochure demonstrated the practicality of incorporating behavioral theories in NE for ALH.

Keywords: HIV; behavioral theories; nutrition; nutrition education; nutrition education resources; program development; quality of life.

Biallah, C. I., Rampal, L., Lye, M. S., Mohd Sidik, S., Ibrahim, N., Iliyasu, Z., & Onyilo, M. O. (2018). Effectiveness of health education intervention in improving knowledge, attitude, and practices regarding Tuberculosis among HIV patients in General Hospital Minna, Nigeria - A randomized control trial. *PloS one*, *13*(2), e0192276. <https://doi.org/10.1371/journal.pone.0192276>

Abstract

Introduction: The risk of development of active TB in HIV-infected individuals is 20-37 times higher than those that are HIV negative. Poor knowledge of TB amongst people living with HIV has been associated with high transmission. **Objectives:** To determine the effectiveness of a new health education intervention module in improving knowledge, attitude, and practice (KAP) regarding tuberculosis among HIV patients in General Hospital Minna, Nigeria. **Methods:** A randomized control trial was carried out from July 2015 to June 2017. A random number generating program was used to allocate 226 respondents into 2 groups. The intervention group received health education regarding tuberculosis using the developed module. The control group received the normal services provided for HIV patients. Data were collected from December 2015 to September 2016 at baseline, immediate post intervention, three, six and nine months. The outcome measures were knowledge, attitude, and practice. **Results:** There was no significant difference with respect to socio-demographic characteristics, KAP of the respondents in the intervention and control group at baseline. However, there was significant improvement in knowledge in the intervention group compared to the control group, group main effect ($F = (1,218) = 665.889$, $p = 0.001$, partial $\eta^2 = 0.753$, $d = 5.4$); time ($F = (3.605, 218) = 52.046$, $p = 0.001$, partial $\eta^2 = 0.193$, $d = 1.52$) and interaction between group with time ($F = (3.605, 218) = 34.028$, $p = 0.001$, partial $\eta^2 = 0.135$, $d = 1.23$). Likewise, there was significant improvement in attitude, group main effect ($p = 0.001$, $d = 1.26$) and time ($p = 0.001$, $p, d = 0.65$). Similarly, there was improvement in practice, group main effect, time, and interaction of group with time ($p < 0.05$). **Conclusion:** The health education intervention program was effective in improving KAP regarding tuberculosis among HIV patients.

Boyd, A. T., Jahun, I., Dirlikov, E., Greby, S., Odafe, S., Abdulkadir, A., Odeyemi, O., Dalhatu, I., Ogbanufe, O., Abutu, A., Asaolu, O., Bamidele, M., Onyenuobi, C., Efuntoye, T., Fagbamigbe, J. O., Ene, U., Fagbemi, A., Tingir, N., Meribe, C., Ayo, A., ... Swaminathan, M. (2021). Expanding access to HIV services during the COVID-19 pandemic-Nigeria, 2020. *AIDS research and therapy*, 18(1), 62. <https://doi.org/10.1186/s12981-021-00385-5>

Abstract

Background: To accelerate progress toward the UNAIDS 90-90-90 targets, US Centers for Disease Control and Prevention Nigeria country office (CDC Nigeria) initiated an Antiretroviral Treatment (ART) Surge in 2019 to identify and link 340,000 people living with HIV/AIDS (PLHIV) to ART. Coronavirus disease 2019 (COVID-19) threatened to interrupt ART Surge progress following the detection of the first case in Nigeria in February 2020. To overcome this disruption, CDC Nigeria designed and implemented adapted ART Surge strategies during February-September 2020. **Methods:** Adapted ART Surge strategies focused on continuing expansion of HIV services while mitigating COVID-19 transmission. Key strategies included an intensified focus on community-based, rather than facility-based, HIV case-finding; immediate initiation of newly-diagnosed PLHIV on 3-month ART starter packs (first ART dispense of 3 months of ART); expansion of ART distribution through community refill sites; and broadened access to multi-month dispensing (MMD) (3-6 months ART) among PLHIV established in care. State-level weekly data reporting through an Excel-based dashboard and individual PLHIV-level data from the Nigeria National Data Repository facilitated program monitoring. **Results:** During February-September 2020, the reported number of PLHIV initiating ART per month increased from 11,407 to 25,560, with the proportion found in the community increasing from 59 to 75%. The percentage of newly-identified PLHIV initiating ART with a 3-month ART starter pack increased from 60 to 98%. The percentage of on-time ART refill pick-ups increased from 89 to 100%. The percentage of PLHIV established in care receiving at least 3-month MMD increased from 77 to 93%. Among PLHIV initiating ART, 6-month retention increased from 74 to 92%. **Conclusions:** A rapid and flexible HIV program response, focused on reducing facility-based interactions while ensuring delivery of lifesaving ART, was critical in overcoming COVID-19-related service disruptions to expand access to HIV services in Nigeria during the first eight months of the pandemic. High retention on ART among PLHIV initiating treatment indicates immediate MMD in this population may be a sustainable practice. HIV program infrastructure can be leveraged and adapted to respond to the COVID-19 pandemic.

Keywords: ART; CDC; COVID-19; HIV; Nigeria; PEPFAR.

Brown, B. J., Oladokun, R. E., Ogunbosi, B. O., & Osinusi, K. (2017). Blood Transfusion-Associated HIV Infection in Children in Ibadan, Nigeria. *Journal of the International Association of Providers of AIDS Care*, 16(3), 303–308. <https://doi.org/10.1177/2325957413500990>

Abstract

Introduction: This study describes the epidemiologic features and clinical course of children with blood transfusion-associated HIV infection (TAHI) in Ibadan, Nigeria. **Methodology:** All children diagnosed to have TAHI at the University College Hospital, Ibadan, were studied and compared with children who acquired HIV vertically using the pediatric HIV database in the hospital. **Results:** Transfusion-associated HIV infection accounted for 14 (2.3%) of the 597 children diagnosed to have HIV infection between January 2004 and December 2011. The mean age at diagnosis of TAHI was 10.2 years and that of vertically acquired HIV infection was 3.9 years ($P < .001$). In 9 cases, blood transfusion took place in private hospitals and in 5 cases in public hospitals. Median interval between infection and diagnosis of AIDS was 84 months in cases with TAHI and 48 months in vertically acquired cases ($P = .542$). **Conclusion:** Optimal blood safety practices are advocated for prevention of TAHI in Nigeria.

Keywords: AIDS; children; transfusion-associated HIV.

Busari, A. A., Oshikoya, K. A., Adejumo, I. A., Olanrewaju, O. A., Usman, S. O., Badru, W. A., Oreagba, I. A., & Olayemi, S. O. (2021). Low prevalence of isoniazid preventive therapy uptake among HIV-infected patients attending tertiary health facility in Lagos, Southwest Nigeria. *The Pan African medical journal*, 39, 123. <https://doi.org/10.11604/pamj.2021.39.123.28095>

Abstract

Introduction: the burden of HIV and tuberculosis co-infection is a global public health challenge. Despite the benefit of isoniazid preventive therapy (IPT) in reducing the rate of co-infection, the uptake is generally limited in developing countries. This study aimed to determine the prevalence of IPT use and the factors affecting the uptake among HIV-infected patients attending our Teaching Hospital. **Methods:** this cross-sectional survey involved 300 HIV-infected individuals attending the AIDS prevention initiatives in Nigeria clinic of the Lagos University Teaching Hospital. A self-designed and well-structured questionnaire was used to document the demographic data, patients' exposure to tuberculosis, and IPT uptake. Clinical data of eligible patients were also extracted from their case notes. The main outcome measure was the prevalence of IPT use and non-use. **Results:** out of the respondents evaluated, (72.7%, $n = 218$) were females. Tuberculosis was the predominant comorbidity (15.7%, $n = 47$) and majority (53.0%, $n = 159$) had a CD4 count of < 500 cells/ml. Overall prevalence of IPT uptake was very low (7.1%, $n = 18$) among HIV-infected patients. Major factors affecting uptake were lack of awareness of benefit (44.4%, $n = 8$) and lack of fear of contracting tuberculosis (22.2%, $n = 4$). However, lack of awareness of IPT benefit was the only independent factor associated with poor IPT uptake (adjusted odds 1168.75, 95% confidence interval: 85.05-16060.33; $p = 0.001$). **Conclusion:** isoniazid preventive therapy uptake was found to be very low in this study. Increased awareness and policy implementation of IPT by the healthcare provider is necessary.

Keywords: Co-infection; Nigeria; healthcare provider; human immunodeficiency virus; isoniazid preventive therapy; policy; tuberculosis.

Chime, O. H., Arinze-Onyia, S. U., & Ossai, E. N. (2019). Examining the effect of peer-support on self-stigma among persons living with HIV/AIDS. *The Pan African medical journal*, 34, 200. <https://doi.org/10.11604/pamj.2019.34.200.17652>

Abstract

Introduction: Contrary to assertions that stigma may no longer be experienced due to substantial advancement in antiretroviral access and treatment, self-stigma still exists among people living with HIV/AIDS (PLWHA) in Nigeria. The use of peer health workers to improve care in underserved settings has been implemented by a number of programs, but its effect has not been extensively assessed. This study compared the level of self-stigma among PLWHA in peer support and non-support groups in Enugu State Nigeria. **Methods:** A cross-sectional study using quantitative and qualitative instruments was conducted among PLWHA attending ARV clinics. Quantitative data was assessed using pre-tested structured interviewer-administered questionnaires. Chi-square test of statistical significance was used in the analysis. Four focus group discussions and eight key informant interviews were conducted among PLWHA and healthcare workers respectively. Manual content analysis was used to analyse the qualitative data. **Results:** Comparable proportions of respondents in peer support (31.4%) and non-peer support groups (30.2%) had self-stigma ($p=0.709$). Disclosure was higher among respondents in non-peer support groups (96%) against 94.5% in peer support groups ($p=0.331$). Health workers interviewed were of the opinion that self-stigma cuts across members of both groups. Participants in the FGD reported that the media and economic empowerment have helped reduce self-stigma among PLWHA. **Conclusion:** Though peer support groups may be a starting place for the development of social support interventions for PLWHA, it might not be sufficient to combat self-stigma. Interventions aimed at economic empowerment of PLWHA and public enlightenment are essential for effective mitigation against self-stigma.

Keywords: Enugu State; Nigeria; PLWHA; Self-stigma; peer support.

Chime, O. H., Ndibuagu, E. O., & Orji, C. J. (2019). Rates and predictors of adherence and retention for antiretroviral therapy among HIV-positive adults in Enugu, Nigeria. *Malawi medical journal : the journal of Medical Association of Malawi*, 31(3), 202–211. <https://doi.org/10.4314>

Abstract

Background: HIV infection and AIDS are major public health challenges in Nigeria, a country with one of the highest rates of new infection in sub-Saharan Africa and the second largest HIV epidemic in the world. Non-adherence to medication and defaulting from treatment are the two major challenges faced by anti-retroviral therapy (ART) programs in resource-constrained settings. This study was undertaken to determine the rate and predictors of adherence to medication and retention among people living with HIV in Enugu State, Nigeria. **Methods:** This was a cross-sectional retrospective study conducted among adults living with HIV (PLHIV) receiving ARTs in eight comprehensive health facilities in Enugu, Nigeria. We used

self-reported adherence and recorded clinic visits to assess adherence and retention, respectively. Descriptive statistics (frequencies, proportions, mean and standard deviation) and regression analysis were then conducted to identify the association between adherence, retention and demographic and health-related factors. **Results:** The mean age of respondents was 38.5±9.8 years. Predictors of good adherence to medication included being male (adjusted odds ratio [AOR]:2.08; 95% confidence interval [CI]:1.12-3.85), having been on anti-retroviral medications for more than 5 years (AOR:1.92; 95% CI: 1.17-3.16), the non-consumption of alcohol (AOR: 3.67; 95% CI: 2.01-6.70), not using traditional medicine (AOR: 2.76; 95% CI:1.33-5.73) and having a baseline CD4 count exceeding 500 cells/ μ l (AOR: 5.67; 95% CI: 1.32-24.32). Adequate retention was predicted by being resident in the urban area (AOR: 1.90; 95% CI: 1.17-3.06). Being away from home (41.8%) and forgetfulness (35.0%) were reported as the major reasons for missing medication. **Conclusion:** The rates of adherence and retention found in this study were similar to those reported for other resource-limited settings. Health education and behavioural modification interventions should be intensified to reduce the consumption of alcohol and the use of traditional medicine by people living with HIV. Identifying other factors may help to design effective strategies to ensure that people living with HIV adhere to their medications and remain in care.

Keywords: Adherence; Enugu State; Nigeria; PLHIV; predictors; retention.

Chizoba, A. F., Pharr, J. R., Oodo, G., Ezeobi, E., Ilozumb, J., Egharevba, J., Ezeanolue, E. E., & Nwandu, A. (2017). Increasing HIV testing among pregnant women in Nigeria: evaluating the traditional birth attendant and primary health center integration (TAP-In) model. *AIDS care*, 29(9), 1094–1098. <https://doi.org/10.1080/09540121.2017.1317325>

Abstract

Engaging Traditional Birth Attendants (TBAs) may be critical to preventing mother-to-child transmission of HIV (PMTCT) in Nigeria. We integrated TBAs into Primary Health Centers (PHCs) and provided the TBAs with HIV counseling and testing (HCT) training for PMTCT (TAP-In). The purpose of this study was to evaluate the impact of TAP-In on HCT uptake among pregnant women. A quasi-experimental design was used for this study. Twenty PHCs were assigned to the intervention group that integrated TAP-In and 20 were assigned to the control group. Data were collected six months prior to the initiation of TAP-In and six months post, using antenatal clinic registries. Intervention PHCs more than doubled the number of pregnant women who received HCT in their catchment area post TAP-In while control PHCs had no significant change. After initiating TAP-In, intervention PHCs provided almost three times more HCT than the control PHCs ($p < 0.01$) with TBA provided over half of the HCT post TAP-In. The TAP-In model was effective for increasing HCT among pregnant women.

Keywords: HIV/AIDS; Nigeria; PMTCT; traditional birth attendants.

Chukwuocha, U. M., Iwuoha, G. N., Nwakwuo, G. C., Egbe, P. K., Ezeihekaibe, C. D., Ekiyor, C. P., Dozie, I., & Burrowes, S. (2019). Malaria care-seeking behaviour among HIV-infected patients receiving antiretroviral treatment in South-Eastern Nigeria: A cross-sectional study. *PLoS one*, *14*(5), e0213742.

Abstract

This study assesses malaria prevention and treatment behaviour among people living with HIV/AIDS (PLWHA) in Owerri, South Eastern Nigeria. Although Nigeria bears one of the world's largest burdens of both malaria and HIV, there is almost no research studying how co-infected patients manage their care. We systematically sampled 398 PLWHA receiving care at Imo State Specialist Hospital and the Federal Medical Centre in Owerri to complete a structured, pre-tested questionnaire on malaria care-seeking behaviour. Descriptive statistics were reported and chi-square tests and multivariate logistic regressions were also used. The majority of HIV-infected patients (78.9%) reported having had an episode of suspected malaria quarterly or more often. There was a large variation in care-seeking patterns: on suspicion of malaria, 29.1% of participants engaged in self-medication; 39.2% went to drug shops, and only 22.6% visited HIV/AIDS care centres. Almost 40% waited more than 24 hours before initiating treatment. Most (60.3%), reported taking recommended artemisinin-based combination treatments (ACT) but a significant minority took only paracetamol (25.6%) or herbal remedies (3.5%). Most (80%) finished their chosen course of treatment; and completion of treatment was significantly associated with the frequency of suspected malaria occurrence ($p = 0.03$). Most (62.8%) did not take anti-malaria medication while taking antiretroviral treatment (ART) and almost all (87.6%) reported taking an ACT regimen that could potentially interact with Nigeria's first-line ART regimen. Our findings suggest the need to pay more attention to malaria prevention and control as a crucial element in HIV/AIDS management in this part of Nigeria and other areas where malaria and HIV/AIDS are co-endemic. Also, more research on ART-ACT interactions, better outreach to community-level drug shops and other private sector stakeholders, and clearer guidelines for clinicians and patients on preventing and managing co-infection may be needed. This will require improved collaboration between programmes for both diseases.

Crowell, T. A., Keshinro, B., Baral, S. D., Schwartz, S. R., Stahlman, S., Nowak, R. G., Adebajo, S., Blattner, W. A., Charurat, M. E., & Ake, J. A. (2017). Stigma, access to healthcare, and HIV risks among men who sell sex to men in Nigeria. *Journal of the International AIDS Society*, *20*(1), 21489. <https://doi.org>

Abstract

Introduction: Among men who have sex with men (MSM), men who sell sex (MSS) may be subject to increased sexual behaviour-related stigma that affects uptake of healthcare and risk of sexually transmitted infections (STIs). The objectives of this study were to characterize stigma, access to care, and prevalence of HIV among MSS in Nigeria. **Methods:** Respondent-driven sampling was used to recruit MSM in Abuja and Lagos into the ongoing TRUST/RV368 study, which provides HIV testing and treatment. Detailed behavioural data were collected

by trained interviewers. MSS were identified by self-report of receiving goods or money in exchange for sex with men. Poisson regression with robust error variance was used to explore the impact of sex-selling on the risk of HIV. **Results:** From 12 initial seed participants, 1552 men were recruited from March 2013-March 2016. Of these, 735 (47.4%) reported sex-selling. Compared to other MSM, MSS were younger (median 22 vs. 24 years, $p < 0.001$) and more likely to identify as gay/homosexual (42.4% vs. 31.5%, $p < 0.001$). MSS were more likely to report perceived and experienced stigmas such as healthcare avoidance (27.6% vs. 21.5%, $p = 0.005$) and verbal harassment (39.2% vs. 26.8%, $p < 0.001$). Total HIV prevalence was 53.4%. After controlling for other factors, HIV prevalence among MSS was similar to that observed among other MSM (relative risk 0.94 [95% confidence interval 0.84-1.05]). **Conclusion:** These data highlight increased sexual behaviour-related stigma affecting MSS, as compared with other MSM, that limits uptake of healthcare services. The distinct characteristics and risks among MSS suggest the need for specific interventions to optimize linkage to HIV prevention and treatment services in Nigeria.

Keywords: HIV; epidemiology; men who have sex with men; sex work; stigma; sub-Saharan Africa.

Dada, D. A., Aku, E., & David, K. B. (2020). COVID-19 pandemic and antiretrovirals (ARV) availability in Nigeria: recommendations to prevent shortages. *The Pan African medical journal*, 35(Suppl 2), 149. <https://doi.org/10.11604/pamj.suppl.2020.35.149.25639>

Abstract

HIV/AIDS is an infectious disease that has claimed the lives of millions of people worldwide. Currently, there is no vaccine that has been developed in a bid to fight this deadly infection, however, antiretrovirals (ARVs), which are drugs used in the treatment of HIV infection are routinely prescribed to infected persons. They act via several mechanisms of action to reduce the severity of infection and rate of infectivity of the virus by decreasing the viral load while increasing CD4 counts. COVID-19 pandemic has resulted in unprecedented events affecting almost all areas of humans' life including availability of medicines and other consumables. This paper analyses the availability of ARVs during COVID-19 era and offered recommendations to be adopted in order to prevent shortages.

Keywords: COVID-19; HIV; antiretroviral; drug shortage.

Dauda R. S. (2019). HIV/AIDS and economic growth: Evidence from West Africa. *The International journal of health planning and management*, 34(1), 324–337. <https://doi.org/10.1002/hpm.2633>

Abstract

Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) is one of the leading causes of morbidity and mortality in West Africa. Prevalence among the most

productive age group in West and Central Africa stood at 1.5%, 3.4.0%, 2.5%, and 2.1% in 1990, 2000, 2010, and 2015 respectively. This study examined the effect of HIV/AIDS on economic growth in West Africa with focus on 11 countries. The augmented Solow model, rooted in the neoclassical growth theory, was used, which was operationalized using dynamic panel data modeling approach. Incidence, prevalence, number of people living with HIV/AIDS (PLWHA), and AIDS-related deaths were used to measure HIV/AIDS. Estimations using system GMM returned statistically significant results while those of first difference and difference GMM were not. From the outcome of system GMM analysis, a percentage increase in incidence, prevalence, PLWHA, and AIDS deaths correspondingly reduced growth significantly through their effects on life expectancy by 0.15%, 0.02%, 0.004%, and 0.03%. Acquired immune deficiency syndrome deaths and PLWHA lowered economic growth through enrolment but not significantly. The import of the findings is that HIV/AIDS threatens growth through life expectancy in West Africa. Therefore, its spread in the subregion should be effectively contained while proper treatment should be provided for all infected persons.

Keywords: HIV/AIDS; West Africa; dynamic panel analysis; economic growth.

Dauda R. S. (2018). Impact of HIV/aids epidemic on human capital development in West Africa. *The International journal of health planning and management*, 33(2), 460–478. <https://doi.org/10.1002/hpm.2486>

Abstract

West Africa occupies the third position with respect to the burden of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) globally, after Southern and East Africa. About 5 million adults and children are infected with the disease in the subregion, while HIV prevalence in the general population hovers around 2% and 5%. This paper attempts to investigate the impact of HIV/AIDS epidemic on human capital development in 11 West African countries over the period 1990 to 2011. The study used a dynamic panel data modeling approach, using first difference, difference generalized methods of moment, and system generalized methods of moment estimating techniques. Four measures of HIV/AIDS and 2 human capital measures were used in the study. The findings revealed that HIV/AIDS pandemic had negative and significant impact on human capital in West Africa. However, the statistical significance was more pronounced on life expectancy (a measure of human capital), while the negative impact on school enrolment (another human capital measure) was not significant. It is therefore recommended that the spread of HIV/AIDS disease in West Africa should be effectively controlled, while the number of infected persons undergoing antiretroviral therapy in the subregion should be increased to a near 100% coverage.

Keywords: HIV/AIDS; West Africa; dynamic panel analysis; human capital development.

Dike, I. C., Ebizie, E. N., Njoku, O. C., Oraelosi, C. A., Egbe, C. I., Nnamani, A. P., Ezeaku, M. N., Ihuoma, E. C., Otu, M. S., Okechukwu, F. O., Anowai, C. C., Nnodim, E. J., Ukwuezeh, C. P., Onuorah, A. R., & Onwuegbuchulam, A. C. (2021). Improving knowledge and perception of HIV/AIDS among English language speaking children in rural areas through educational digital storytelling. *Medicine*, 100(50), e28058. <https://doi.org/10.1097/MD.00000000000028058>

Abstract

Background/objective: Previous research efforts have shown the need for improvement of knowledge and perception of HIV/AIDS among English Language speaking children in rural areas. Hence, the study at hand was designed to investigate the effect of using educational digital storytelling intervention to satisfy this need of English Language children in rural areas in Nigeria. **Method:** The study adopted a randomized control design involving a pretest, post-test, and follow-up measures. Eight-four children (n = 84) took part in the study. The HIV Knowledge Questionnaire (HIV-KQ-18) and the Perceived Risk of HIV Scale (PRHS) were used for data collection. Data were analyzed using t test statistics. **Result:** The educational digital storytelling intervention in appreciably improved knowledge and perception of English language children in rural areas who participated in the intervention concerning HIV/AIDS compared with their peers in the no-intervention control group. The improvement in knowledge and perception gained was also maintained throughout the follow-up evaluation period. **Conclusion:** The present study showed that the use of educational digital storytelling could improve knowledge and perception of HIV/AIDS among English Language speaking children in rural areas. Educational digital storytelling intervention effectively improved knowledge and perception of HIV/AIDS among children in rural areas. In return, we recommend that rural sociologists, counselors, language and communication experts, child educators, and other professionals involved in public health especially, as it concerns children be skilled in the use and application of educational digital storytelling intervention procedures to facilitate the move towards adopting the method in their professional practices.

Dirisu, O., Sekoni, A., Vu, L., Adebajo, S., Njab, J., Shoyemi, E., Ogunsola, S., & Tun, W. (2020). 'I will welcome this one 101%, I will so embrace it!': a qualitative exploration of the feasibility and acceptability of HIV self-testing among men who have sex with men (MSM) in Lagos, Nigeria. *Health education research*, 35(6), 524–537. <https://doi.org/10.1093/her/cvaa028>

Abstract

Men who have sex with men (MSM) are disproportionately affected by HIV in Nigeria. A key strategy in reducing transmission is to increase HIV testing uptake and linkage to treatment for those who test positive. HIV self-testing (HIVST) is an innovative strategy with the potential to increase uptake of HIV testing among key populations at higher risk for HIV. We conducted 23 in-depth-interviews with MSM and two focus group discussions with key opinion leaders to explore perceptions about the feasibility and acceptability of oral HIVST among MSM in Lagos, Nigeria. HIVST was highly acceptable because it was considered convenient to use, painless, private and addressed concerns about stigma. Concerns cited by participants included comprehensibility of instructions to perform and interpret results correctly, as well

as lack of support mechanisms to facilitate post-test follow-up and linkage to care. Provision of adequate pre-test information was considered vital as part of the kit distribution process to ensure seamless use of HIVST kits. One-on-one peer-to-peer distribution strategies and retail outlets that facilitate anonymous pick-up are potential distribution channels identified in this study. Overall, our findings suggest that an HIVST program that incorporates these considerations would improve access to HIV testing among MSM in Nigeria.

Duru, F. I., Yama, O. E., Duro, D., Odetola, A. A., Danboyi, T., Avidime, O. M., & Mohammed, K. A. (2020). Correlates of Socio-Demographic Variables and Attitude to Condom Use in HIV/AIDS Prevention among Students in Some Selected Nigerian Universities. *Nigerian medical journal : journal of the Nigeria Medical Association*, 61(6), 316–322. <https://doi.org/10.4103/nmj.NMJ 124 19>

Abstract

Background: Unprotected heterosexual sexual act has been correlated with unwanted pregnancy and sexually transmitted diseases (STDs) especially HIV/AIDS, which still has a high endemicity in Africa. This study aimed to determine the association between socio-demographic variables (SDVs), sexual experience, and the use of condom. **Setting and design:** This was a cross-sectional study comprising 542 undergraduate students, randomly selected from three Nigerian universities. **Methodology:** Well-structured open-ended questionnaires were administered to respondents. Bivariate analysis was used to determine the association between SDVs and attitude to condom use and between the SDVs, sexual experience and the use of condom. Data were analyzed using Epi6 6.04 and SPSS 10.0 software packages. Pearson's Chi-square (χ^2) and Fisher's exact tests were used as applicable. The level of significance was set at $P < 0.05$. **Results:** Approximately 46% of the respondents were sexually active (consisting of about 71% of those 25-29 years old and 58% of the males [$P < 0.001$]). About 50.4% had a single sexual partner and 86.7% had "ever used" condom. The most common reasons given for use of condom were prevention of pregnancy (91.7%) and STDs (89.1%). All the SDV except religion significantly ($P < 0.05$) accounted for the disparity in sexual attitudes of the students. Those aged 25 years and above, males and Tiv tribe were more likely to indulge in sexual activities ($P < 0.001$). More females (98%) compared to males (83%) had ever used condom in their sexual experience ($P = 0.010$), while there was no significant association between any of the SDVs and use of condom in the last sexual exposure ($P > 0.05$). **Conclusion:** SDVs play a role in determining the attitude of students towards condom use and sexual experiences. Programs regarding sexual and reproductive health including safe sex education especially among young Nigerian students should be developed or strengthened.

Keywords: Condom; HIV/AIDS; pregnancy; socio-demographic; students; unwanted pregnancy.

Ebonyi, A. O., Oguiche, S., Ochoga, M. O., Agbaji, O. O., Anejo-Okopi, J. A., Abah, I. O., Okonkwo, P. I., & Idoko, J. A. (2017). Changes in the haematological parameters of HIV-1

infected children at 6 and 12 months of antiretroviral therapy in a large clinic cohort, North-Central Nigeria. *Journal of virus eradication*, 3(4), 208–211.

Abstract

Background: Prior to commencing antiretroviral therapy (ART), haematological abnormalities are a common occurrence in individuals diagnosed with human immunodeficiency virus (HIV). In the course of receiving ART, these abnormalities usually improve. We determined the prevalence of haematological abnormalities in children diagnosed with HIV-1 and the changes in haematological parameters that occur after 6 and 12 months of being on ART. **Methods:** A cross-sectional study of HIV-1 infected children aged 2 months to 15 years, between July 2005 and March 2013, at the paediatric HIV clinic of the Jos University Teaching Hospital, Jos. Median values of repeated measures were compared using the Wilcoxon signed-rank sum test. **Results:** The prevalence of anaemia, thrombocytopenia and leukopenia among the 941 children studied, prior to ART was 6.4%, 7.0% and 8.6%. Median (IQR) haemoglobin (Hb) levels increased from 10 g/dL (9-11 g/dL) at baseline to 11 g/dL (10-12 g/dL) and 11 g/dL (10-12 g/dL) at 6 and 12 months of ART ($P<0.001$ and $P<0.001$), respectively, a 10% increase in both cases. Also, platelet count increased from a median of $327\times 10^3/\mu\text{L}$ ($243\text{-}426\times 10^3/\mu\text{L}$) at baseline to $333\times 10^3/\mu\text{L}$ ($266\text{-}408\times 10^3/\mu\text{L}$) at 6 months and $339\times 10^3/\mu\text{L}$ ($267\text{-}420\times 10^3/\mu\text{L}$) at 12 months, representing a 1.8% and 3.7% increase, respectively. The median total white blood cell count decreased from $7.4\times 10^3/\mu\text{L}$ ($5.3\text{-}9.9\times 10^3/\mu\text{L}$) at baseline to $5.9\times 10^3/\mu\text{L}$ ($4.6\text{-}8.0\times 10^3/\mu\text{L}$) and $5.8\times 10^3/\mu\text{L}$ ($4.5\text{-}7.5\times 10^3/\mu\text{L}$) at 6 and 12 months of ART ($P<0.001$ and $P<0.001$), a 20.3% and 21.6% decrease, respectively.

Conclusion: During the 12 months of ART, children in our cohort had significant improvements in haematological parameters such as haemoglobin levels and platelet counts, which would suggest an early positive response to ART.

Ebuenyi, I. D., Ogoina, D., & Harry, T. C. (2018). Predictors of unprotected sexual intercourse among HIV-infected patients receiving antiretroviral drugs in the Niger Delta Region of Nigeria. *AIDS care*, 30(3), 296–299. <https://doi.org/10.1080/09540121.2017.1368443>

Abstract

This study aims to evaluate the predictor of unprotected sexual intercourse among HIV-infected adults receiving antiretroviral therapy (ART) in a tertiary facility in the Niger Delta Region of Nigeria. A cross sectional study was undertaken in a 200 bed tertiary hospital in Bayelsa state, south-south Nigeria. A standardized pre-tested interviewer administered questionnaire was used to collect demographic, clinical and sexual history from consecutive HIV-1 infected adults receiving ART for at least 6 months. Independent predictors of unprotected sexual intercourse (defined as irregular condom use or unprotected sex in previous 6months) were determined using an unconditional logistic regression model. Out of 241 patients studied, 71.8% were females, 48.5% were married, and 20.7% had a sexual partner that is HIV-1 infected. Sixty (24.9%) patients engaged in unprotected sex, 86 (35.7%) used condom consistently and 95 (39.4%) abstained. Female sex, being currently married,

age18-35years, partner being HIV-positive and living with sexual partner were significant associated with risky sex. Female sex, age18-35years and being currently married were the only independent predictors of unprotected sex. HIV-infected adults receiving ART in resource limited settings are potential sources of secondary transmission of HIV. Condom use in the prevention of secondary transmission of HIV in study area should target females, young adults and married couples.

Keywords: HIV/AIDS; Predictors; condom; risky sex; unprotected sexual intercourse.

Egbe, C. O., Dakum, P. S., Ekong, E., Kohrt, B. A., Minto, J. G., & Ticao, C. J. (2017). Depression, suicidality, and alcohol use disorder among people living with HIV/AIDS in Nigeria. *BMC public health*, 17(1), 542. <https://doi.org/10.1186/s12889-017-4467-5>

Abstract

Background: People Living with HIV/AIDS (PLHIV) face various day-to-day and long-term personal, interpersonal, social, physical and psychological challenges as a result of, and in addition to the health conditions they are susceptible to due to their HIV status. There is a dearth of large-scale research to provide robust prevalence estimates of mental health problems among PLHIV, especially in Nigeria. This study aimed to ascertain the prevalence and factors associated with major depressive episodes, suicidality, and alcohol use disorder among people living with HIV/AIDS in Nigeria. **Methods:** A survey of 1187 participants aged 18 years and above was conducted within three HIV treatment centres in Abuja, Nigeria. Depression, suicidality, and alcohol use disorder modules of the WHO World Mental Health Composite International Diagnostic Interview questionnaire were used for this study. A socio-demographic questionnaire was also used to collect other health and demographic data. Descriptive statistics (frequency distribution, percentage, mean, median, mode, and standard deviation) and regression analyses were conducted to explore associations between mental health problems and demographic and other health-related factors. **Results:** Twelve-month prevalence rates were 28.2% for major depressive episodes, 2.9% for suicidal ideation, 2.3% for suicide attempts, 7.8% for harmful alcohol use, 7.0% for alcohol abuse, and 2.2% for alcohol dependence. Major depressive episodes were significantly associated with having planned suicide and marital status. Suicidal ideation was significantly associated with major depressive episodes, marital status, and religion. Females were less likely to be diagnosed with alcohol disorders. **Conclusions:** Some people living with HIV/AIDS also tend to suffer from depression, suicidality, and alcohol use disorders. These findings highlight the need for the integration of mental health services into HIV/AIDS care in Nigeria.

Keywords: Alcohol use disorder; Depression; HIV/AIDS; Nigeria; Suicidality.

Ehiri, J. E., Alaofè, H. S., Yesufu, V., Balogun, M., Iwelunmor, J., Kram, N. A., Lott, B. E., & Abosede, O. (2019). AIDS-related stigmatisation in the healthcare setting: a study of primary healthcare centres that provide services for prevention of mother-to-child transmission of

HIV in Lagos, Nigeria. *BMJ open*, 9(5), e026322. <https://doi.org/10.1136/bmjopen-2018-026322>

Abstract

Objective: To assess AIDS stigmatising attitudes and behaviours by prevention of mother-to-child transmission (PMTCT) service providers in primary healthcare centres in Lagos, Nigeria. **Design:** Cross-sectional survey. **Setting:** Thirty-eight primary healthcare centres in Lagos, Nigeria. **Participants:** One hundred and sixty-one PMTCT service providers. **Outcome measures:** PMTCT service providers' discriminatory behaviours, opinions and stigmatising attitudes towards persons living with HIV/AIDS (PLWHAs), and nature of the work environment (HIV/AIDS-related policies and infection-control guidelines/supplies). **Results:** Reported AIDS-related stigmatisation was low: few respondents (4%) reported hearing coworkers talk badly about PLWHAs or observed provision of poor-quality care to PLWHAs (15%). Health workers were not worried about secondary AIDS stigmatisation due to their occupation (86%). Opinions about PLWHAs were generally supportive; providers strongly agreed that women living with HIV should be allowed to have babies if they wished (94%). PMTCT service providers knew that consent was needed prior to HIV testing (86%) and noted that they would get in trouble at work if they discriminated against PLWHAs (83%). A minority reported discriminatory attitudes and behaviours; 39% reported wearing double gloves and 41% used other special infection-control measures when providing services to PLWHAs. Discriminatory behaviours were correlated with negative opinions about PLWHAs ($r=0.21$, $p<0.01$), fear of HIV infection ($r=0.16$, $p<0.05$) and professional resistance ($r=0.32$, $p<0.001$). Those who underwent HIV training had less fear of contagion. **Conclusions:** This study documented generally low levels of reported AIDS-related stigmatisation by PMTCT service providers in primary healthcare centres in Lagos. Policies that reduce stigmatisation against PLWHA in the healthcare setting should be supported by the provision of basic resources for infection control. This may reassure healthcare workers of their safety, thus reducing their fear of contagion and professional resistance to care for individuals who are perceived to be at high risk of HIV.

Keywords: AIDS-related stigmatization; HIV/AIDS; Nigeria; global maternal and child health; prevention of mother-to-child transmission of HIV; sub-Saharan Africa.

Ekeng, B. E., Edem, K., Amamilo, I., Panos, Z., Denning, D., & Oladele, R. O. (2021). Histoplasmosis in Children; HIV/AIDS Not a Major Driver. *Journal of fungi (Basel, Switzerland)*, 7(7), 530. <https://doi.org/10.3390/jof7070530>

Abstract

The classification of histoplasmosis as an AIDS-defining illness has largely attributed its occurrence in people to the presence of HIV/AIDS especially in Africa. Prior to the advent of the HIV/AIDS epidemic, several cases of histoplasmosis were documented both in the pediatric and adult populations. Our review revealed 1461 reported cases of pediatric histoplasmosis globally in the last eight decades (1939-2021). North America ($n = 1231$) had

the highest number of cases, followed by South America ($n = 135$), Africa ($n = 65$), Asia ($n = 26$) and Europe ($n = 4$). Histoplasmosis was much more common in the non-HIV pediatric population ($n = 1418$, 97.1%) compared to the HIV population. The non-HIV factors implicated were, childhood malignancies ($n = 207$), such as leukemias and lymphomas as well as their treatment, lung diseases ($n = 7$), environmental exposures and toxins ($n = 224$), autoimmune diseases ($n = 12$), organ transplants ($n = 12$), long-term steroid therapy ($n = 3$), the use of immunosuppressive drugs such as TNF-alpha inhibitors ($n = 7$) malnutrition ($n = 12$), histiocytosis ($n = 3$), Hyper immunoglobulin M and E syndromes ($n = 15$, 1.2%), pancytopenia ($n = 26$), diabetes mellitus ($n = 1$) and T-cell deficiency ($n = 21$). Paediatricians should always consider or rule out a diagnosis of histoplasmosis in children presenting with symptoms suggestive of the above clinical conditions.

Keywords: HIV; childhood malignancies; children; histoplasmosis; immunosuppressants; low medium countries.

Ekong, E., Ndembi, N., Okonkwo, P., Dakum, P., Idoko, J., Banigbe, B., Okuma, J., Agaba, P., Blattner, W., Adebamowo, C., & Charurat, M. (2020). Epidemiologic and viral predictors of antiretroviral drug resistance among persons living with HIV in a large treatment program in Nigeria. *AIDS research and therapy*, 17(1), 7. <https://doi.org/10.1186/s12981-020-0261-z>

Abstract

Background: Expanded access to combination antiretroviral therapy (cART) throughout sub-Saharan Africa over the last decade has remarkably improved the prognosis of persons living with HIV (PLWH). However, some PLWH experience virologic rebound after a period of viral suppression, usually followed by selection of drug resistant virus. Determining factors associated with drug resistance can inform patient management and healthcare policies, particularly in resource-limited settings where drug resistance testing is not routine. **Methods:** A case-control study was conducted using data captured from an electronic medical record in a large treatment program in Nigeria. Cases PLWH receiving cART who developed acquired drug resistance (ADR) and controls were those without ADR between 2004 and 2011. Each case was matched to up to 2 controls by sex, age, and education. Logistic regression was used estimate odds ratios (ORs) and 95% confidence intervals (CIs) for factors associated with ADR. **Results:** We evaluated 159 cases with ADR and 299 controls without ADR. In a multivariate model, factors associated with ADR included older age (OR = 2.35 [age 30-40 years 95% CI 1.29, 4.27], age 41 + years OR = 2.31 [95% CI 1.11, 4.84], compared to age 17-30), higher education level (secondary OR 2.14 [95% CI 1.11-4.13]), compared to primary and tertiary), non-adherence to care (OR = 2.48 [95% CI 1.50-4.00]), longer treatment duration (OR = 1.80 [95% CI 1.37-2.35]), lower CD4 count (OR = 0.95 [95% CI 0.95-0.97]) and higher viral load (OR = 1.97 [95% CI 1.44-2.54]). **Conclusions:** Understanding these predictors may guide programs in developing interventions to identify patients at risk of developing ADR and implementing prevention strategies.

Keywords: Acquired drug resistance; Antiretroviral therapy; HIV drug resistance testing; Low Middle Income Countries (LMICs); Predictors; Resource-limited settings.

Ekwunife, O. I., Ofomata, C. J., Okafor, C. E., Anetoh, M. U., Kalu, S. O., Ele, P. U., & Eleje, G. U. (2021). Cost-effectiveness and feasibility of conditional economic incentives and motivational interviewing to improve HIV health outcomes of adolescents living with HIV in Anambra State, Nigeria. *BMC health services research*, 21(1), 685. <https://doi.org/10.1186/s12913-021-06718-4>

Abstract

Background: In sub-Saharan Africa, there is increasing mortality and morbidity of adolescents due to poor linkage, retention in HIV care and adherence to antiretroviral therapy (ART). This is a result of limited adolescent-centred service delivery interventions. This cost-effectiveness and feasibility study were piggybacked on a cluster-randomized trial that assessed the impact of an adolescent-centred service delivery intervention. The service delivery intervention examined the impact of an incentive scheme consisting of conditional economic incentives and motivational interviewing on the health outcomes of adolescents living with HIV in Nigeria. **Method:** A cost-effectiveness analysis from the healthcare provider's perspective was performed to assess the cost per additional patient achieving undetected viral load through the proposed intervention. The cost-effectiveness of the incentive scheme over routine care was estimated using the incremental cost-effectiveness ratio (ICER), expressed as cost/patient who achieved an undetectable viral load. We performed a univariate sensitivity analysis to examine the effect of key parameters on the ICER. An in-depth interview was conducted on the healthcare personnel in the intervention arm to explore the feasibility of implementing the service delivery intervention in HIV treatment hospitals in Nigeria. **Result:** The ICER of the Incentive Scheme intervention compared to routine care was US\$1419 per additional patient with undetectable viral load. Going by the cost-effectiveness threshold of US\$1137 per quality-adjusted life-years suggested by Woods et al., 2016, the intervention was not cost-effective. The sensitivity test showed that the intervention will be cost-effective if the frequency of CD4 count and viral load tests are reduced from quarterly to triannually. Healthcare professionals reported that patients' acceptance of the intervention was very high. **Conclusion:** The conditional economic incentives and motivational interviewing was not cost-effective, but can become cost-effective if the frequency of HIV quality of life indicator tests are performed 1-3 times per annum. Patients' acceptance of the intervention was very high. However, healthcare professionals believed that sustaining the intervention may be difficult unless factors such as government commitment and healthcare provider diligence are duly addressed. **Trial registration:** This trial is registered in the WHO International Clinical Trials Registry through the WHO International Registry Network (PACTR201806003040425).

Keywords: Adherence; Adolescents; Cost-effectiveness; Feasibility studies; HIV/AIDS; In-depth interviews; Incremental cost-effectiveness ratio.

Eluwa, G., Adebajo, S. B., Eluwa, T., Ogbanufe, O., Ilesanmi, O., & Nzelu, C. (2019). Rising HIV prevalence among men who have sex with men in Nigeria: a trend analysis. *BMC public health*, 19(1), 1201. <https://doi.org/10.1186/s12889-019-7540-4>

Abstract

Background: Men who have sex with men (MSM) are conservatively estimated to be less than 1% of the Nigerian population yet nationally account for about 20% of new HIV infection. We estimated the trend in HIV prevalence and determined correlates of HIV infection among MSM. **Methods:** This study used data from respondent-driven sampling in three rounds of integrated biological and behavioral surveillance survey (2007, 2010 and 2014) and covered three states in 2007, six states in 2010 and eight states in 2014. Each round used similar methodology and thus allows for comparison. Behavioral data were obtained using a structured pre-coded questionnaire. Differences in categorical variables were assessed with Chi Square. Logistic regression was used to identify factors associated with HIV. **Results:** A total of 879, 1545 and 3611 MSM were recruited in 2007, 2010 and 2014 respectively. Median age was 22 years for 2007 and 2014 while it was 24 years in 2010. About one-third of MSM in 2007 and 2014 and about two-fifths in 2010 had engaged in transactional sex. HIV prevalence increased from 14% in 2007 to 17% in 2010 to 23% in 2014 ($p < 0.0001$). Factors associated with HIV include older age ≥ 25 years (adjusted odds ratio {AOR}:2.41; 95% CI:1.84-3.16); receptive anal sex (AOR:1.92; 95% CI:1.54-2.40) and history of sexually transmitted infections (AOR:1.26; 95% CI:1.02-1.55). **Conclusion:** There's been a consistent and significant increase in HIV prevalence among MSM with about 10-percentage points relative increase per year over 7 years. Older MSM were more likely to be HIV positive and this may reflect their prolonged exposure to high risk sexual activities. Evidence based interventions are urgently needed to mitigate intra-group HIV transmission and propagation of HIV epidemic between MSM and the general population.

Keywords: HIV; MSM; Men who have sex with men; Nigeria; Trend analysis.

Emmanuel, G., Folayan, M. O., Ochonye, B., Umoh, P., Wasiu, B., Nkom, M., Iorwa, A., & Anenih, J. (2019). HIV sexual risk behavior and preferred HIV prevention service outlet by men who have sex with men in Nigeria. *BMC health services research*, 19(1), 261. <https://doi.org/10.1186/s12913-019-4108-z>

Abstract

Background: The study objectives were to identify differences in HIV sexual risk behavior of men who had sex with other men (MSM) resident in urban and rural Nigeria, their perspectives on need for HIV prevention services and perceived barriers and facilitators to access of HIV prevention services in private, public and peer-led health facilities. **Method:** Data were collected from MSM resident in urban and rural parts of River and Kaduna States. Qualitative assessment sought perspectives on barriers and facilitators of MSM uptake of HIV prevention services. In addition, a questionnaire was administered to seek information on HIV sexual risk behaviors (sexual abuse, age of sexual debut, multiple sexual partners and use of condom at last sexual intercourse), willingness to use and perceived barriers to access of HIV prevention services in public, private and peer-led health facilities, and willingness to use and perception about availability of structural intervention services. Differences in HIV sexual risk behaviors by residential location, and associations between sexual risk behavior and

willingness to access HIV prevention services were determined. **Results:** More MSM resident in urban than rural areas engaged in three or more HIV sexual risk behaviors (25.9% vs 8.7%; $p = 0.02$). More respondents were willing to access HIV prevention service provided through peer-led health facilities. Less than 35% of respondents identified non-availability of free services as a barrier to HIV prevention service access in the three types of health facilities. More MSM with multiple sexual risk behaviors were willing to access services promoting mental and psychosocial health ($p < 0.001$), HIV positive peer support programs ($p = 0.002$) and training on human rights and paralegal services ($p < 0.001$). Respondents opined that services that assured confidential HIV testing and mitigated structural drivers of HIV infection for MSM provided through peer-led facilities, will increase MSM's uptake of HIV prevention services. **Conclusion:** HIV risk reduction intervention services differentiated by rural and urban residence, may be needed for MSM. Services provided through peer-led facilities, that include mental and psychosocial health care, peer support, human rights and paralegal services will likely increase its use by MSM with more HIV sexual risk behaviors.

Emmanuel, G., Folayan, M., Undelikwe, G., Ochonye, B., Jayeoba, T., Yusuf, A., Aiwonodagbon, B., Bilali, C., Umoh, P., Ojemeiri, K., & Kalaiwo, A. (2020). Community perspectives on barriers and challenges to HIV pre-exposure prophylaxis access by men who have sex with men and female sex workers access in Nigeria. *BMC public health*, 20(1), 69. <https://doi.org/10.1186/s12889-020-8195-x>

Abstract

Background: Men who have sex with men (MSM), female sex workers (FSW) have critical needs for effective HIV prevention tools. This study identified perspectives of MSM, FSW and policy makers on the needs for, barriers to, and challenges with pre-exposure HIV prophylaxis (PrEP); and the logistics required to support roll-out of PrEP for MSM and FSW in Nigeria. **Methods:** Qualitative and quantitative data were collected through a cross-sectional study. The quantitative data were collected through an online survey administered to 519 MSM, FSW and transgender respondents. The qualitative data were collected through 22 focus group discussions with 140 MSM and 80 FSW, and a two-day consultative workshop with 65 participants. Two open-ended questions in the online survey were also a source of qualitative data. Results of the quantitative data were reported descriptively; the qualitative data were inductively examined with a content analytic approach to construct descriptive categories. The findings from the quantitative and qualitative responses were triangulated. **Results:** Four hundred and ninety-four (95.2%) online respondents had heard about PrEP through community dialogue (71.3%), and 439 (84.6%) supported its use by MSM and FSW. Fewer than half of the respondents were aware of the clinical care required for PrEP, and misconceptions about PrEP were common. Stated barriers to PrEP uptake were stigma, cost, frequency of HIV counseling and treatment services required, and possible drug-drug interactions. Concerns included possible condom migration, increased risk for sexually transmitted infections and pregnancy for FSW, and poor adherence to medication and hospital schedules. Participants felt that trained peer educators and HIV-test counselors could provide information and refer clients to clinics that provide PrEP. PrEP can be provided through peer-led facilities for MSM and FSW, though its access should be expanded to all

persons who are at substantial risk for HIV to prevent negative labeling of PrEP. Public awareness about the use of antiretrovirals for HIV prevention is needed to prevent labeling of PrEP users as being HIV positive. **Conclusion:** Although MSM and FSW are interested in the use of PrEP, numerous individual and structural barriers need to be addressed to facilitate access to it in Nigeria.

Keywords: Antiretrovirals; Female sex workers; Human immunodeficiency virus; Men who have sex with men; Nigeria; Pre-exposure prophylaxis; Sexually transmitted disease.

Enebe, J. T., Ajah, L. O., Enebe, N. O., Onwudiwe, E. N., Chikezie, I. N., Ajah, M. I., & Onwujekwe, O. E. (2021). Analysis of cost burden of obstetric care among human immunodeficiency virus (HIV) positive women in Enugu metropolis, South-East Nigeria. *Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology*, 41(4), 581–587. <https://doi.org/10.1080/01443615.2020.1787963>

Abstract

The cost of obstetric care could hinder the capacity of human immune-deficiency virus (HIV) positive women to receive adequate care during pregnancy and delivery. This study was aimed at determining the relationship between antenatal/delivery care cost and delivery place choice among HIV positive women in Enugu metropolis. This was a cross-sectional study of 232 post-partum HIV-positive women who came for 6-weeks post-natal visit. Data were analysed using SPSS version 20. The ethical clearance number obtained at UNTH on 18/11/2015 was NHREC/05/01/2008BFWA00002458-1RB00002323. The average obstetric care cost among the respondents was N55,405.67 (US\$346.28). The delivery cost (p -value=0.043) had positive relationship with delivery place choice. The women's proportion delivered by skilled birth attendants (SBA) was 93.1%. In conclusion, obstetric care cost among HIV positive women in Enugu was high. The high obstetric care cost influenced the delivery place of one-third of them. The choice of ill-equipped health facilities may result in higher risk of HIV transmission.

IMPACT STATEMENT
What is already known on this subject? The high HIV/AIDS burden in Nigeria could be attributed to poverty, ignorance, corruption and poor implementation of policies targeted at halting the spread of the infection. The cost of obstetric care could hinder the capacity of HIV positive women to receive adequate care during pregnancy and delivery.
What do the results of this study add? The cost of antenatal care (p -value = .02) and delivery (p -value = .001) had a significant positive relationship with the choice of place of delivery by the respondents. The proportion of the women delivered by SBA was 93.1%. Approximately 31.9% of the women delivered at the health facilities different from where they had antenatal care.
What are the implications of these findings for clinical practice and/or further research? This implies that the obstetric care cost among HIV positive women in Enugu metropolis was catastrophic. Though 93.1% of the respondents were delivered by SBA, the high cost of obstetric care influenced the delivery of one-third of them at centres different from where they had antenatal care. This may lead to women delivering in poorly equipped health facilities, which, in turn, may result in a higher risk of mother-to-child HIV transmission.

Keywords: Human immune deficiency virus; South-East Nigeria; cost of obstetric care; skilled birth attendants.

Eneogu, N. D., Ejimonye, J. C., Ogbueghu, S. N., Nnachi, R. A., Eskay, M., & Nwajiuba, C. A. (2021). Cost estimation of a school-based intervention for improving HIV/AIDS risk perception among secondary school adolescents in Enugu State, Nigeria. *JPMA. The Journal of the Pakistan Medical Association*, 71(8), 2052–2057. <https://doi.org/10.47391/JPMA.1339>

Abstract

Early sexual debut is common in Nigeria and increases HIV risk among adolescents. About 152,000 adolescents are living with HIV. Lack of knowledge and appropriate sexual reproductive health services are some factors responsible. This paper estimated the cost of secondary school-based HIV/AIDS intervention for schools in Enugu State, Nigeria. The rationale for estimation is to avoid unaffordable and ineffective interventions. The cost was estimated between March to October 2019 for schools in urban and rural areas with population of 1595 students. The cost estimation was aided through UNAID proposed guideline. The estimation was done by classifying intervention into cost of training, cost of services and cost of commodities. The cost was estimated at \$5954. The estimated cost in urban is lesser than that of rural. This estimated cost of intervention may inform stakeholders with the knowledge of cost implications to avoid unaffordable school-based HIV interventions in Enugu State, Nigeria.

Keywords: AIDS, HIV, school-based intervention, cost estimation.

Ezeanolue, E. E., Iheanacho, T., Adedeji, I. A., Itanyi, I. U., Olakunde, B., Patel, D., Dakum, P., Okonkwo, P., Akinmurele, T., Obiefune, M., Khamofu, H., Oyeledun, B., Aina, M., Eyo, A., Oleribe, O., Oko, J., Olutola, A., Gobir, I., Aliyu, M. H., Aliyu, G., ... Nigeria Implementation Science Alliance (2020). Opportunities and challenges to integrating mental health into HIV programs in a low- and middle-income country: insights from the Nigeria implementation science Alliance. *BMC health services research*, 20(1), 904. <https://doi.org/10.1186/s12913-020-05750-0>

Abstract

Background: In Nigeria, there is an estimated 1.9 million people living with HIV (PLHIV), 53% of whom utilize HIV care and services. With decreasing HIV-related deaths and increasing new infections, HIV with its associated comorbidities continue to be a key public health challenge in Nigeria. Untreated, comorbid mental disorders are a critical but potentially modifiable determinant of optimal HIV treatment outcomes. This study aimed to identify the challenges and opportunities related to integrating mental health care into existing HIV programs in Nigeria. **Method:** Attendees at the Nigeria Implementation Science Alliance (NISA)'s 2019 conference participated in nominal group technique (NGT) exercise informed by the "Exploration, Preparation, Implementation, and Sustainment (EPIS)" framework. The NGT

process was conducted among the nominal groups in two major sessions of 30-min phases followed by a 30-min plenary session. Data analysis proceeded in four steps: transcription, collation, theming and content analysis. **Results:** The two major theoretical themes from the study were - opportunities and challenges of integrating mental health treatment into HIV services. Three sub-themes emerged on opportunities: building on health care facilities for HIV services (screening, counseling, task-sharing monitoring and evaluation frameworks), utilizing existing human resources or workforce in HIV programs (in-service training and including mental health in education curriculum) and the role of social and cultural structures (leveraging existing community, traditional and faith-based infrastructures). Four sub-themes emerged for challenges: double burden of stigma and the problems of early detection (HIV and mental health stigma, lack of awareness), existing policy gaps and structural challenges (fragmented health system), limited human resources for mental health care in Nigeria (knowledge gap and burnout) and dearth of data/evidence for planning and action (research gaps). **Conclusions:** Potential for integrating treatments for mental disorders into HIV programs and services exist in Nigeria. These include opportunities for clinicians' training and capacity building as well as community partnerships. Multiple barriers and challenges such as stigma, policy and research gaps would need to be addressed to leverage these opportunities. Our findings serve as a useful guide for government agencies, policy makers and research organizations to address co-morbid mental disorders among PLHIV in Nigeria.

Keywords: HIV; Health services integration; Low and middle-income countries; Mental health; Mental health policy; Nigeria.

Fagbamigbe, A. F., Adebawale, A. S., & Ajayi, I. (2019). An assessment of the nutritional status of ART receiving HIV-orphaned and vulnerable children in South-West Nigeria. *Heliyon*, 5(12), e02925. <https://doi.org/10.1016/j.heliyon.2019.e02925>

Abstract

Introduction: Good nutritional status is pertinent to the optimal outcome of effective ART among children. Against this backdrop, the objective of the current study is to assess the nutritional indices of children receiving ART in South-West Nigeria. **Methods:** The study was cross-sectional in design. We randomly selected three urban and six rural ART sites from the ones offering ART services in Oyo state. All consented children receiving ART treatments in the aforementioned sites participated in the study. A total of 390 HIV-positive children and adolescents aged 6-18 years were interviewed using a semi-structured interviewer-administered questionnaire. Children were assessed and growth curves were constructed using the 2007 World Health Organisation (WHO) growth reference standard for children as well as adolescents. Data were presented using descriptive statistics. **Results:** About 52% of the children are male, 136 (34.9%) have lost at least one parent, 52 (13.3%) have lost either parent to HIV/AIDS. Among the males, 19%, 27%, and 27% were underweight, stunted and thin, respectively when compared with 17%, 23% and 23%, respectively, among females. The male and female weight-for-age average z-score were (-0.98 vs -1.04), height-for-age (-1.12 vs -1.07), and BMI-for-age (-1.19 vs -1.18). Irrespective of age, sex, parental survival, and residence, weight-for-age and BMI-for-age analysis revealed substantial underweight, with

the worst outcomes being among those orphaned by HIV/AIDS. **Conclusion:** All nutritional indices considered in this study fell short of the WHO standard. HIV positive children in the ART sites included in this study are faced with a high burden of undernourishment despite been placed on daily ART regimens. In addition to efficient ART, interventions to ameliorate poor nutritional status is needed.

Keywords: ART; BMI-for-age; Epidemiology; HIV/AIDS; Height-for-age; Nutrition; Public health; Weight-for-age.

Faust, L., Yaya, S., & Ekholuenetale, M. (2017). Wealth inequality as a predictor of HIV-related knowledge in Nigeria. *BMJ global health*, 2(4), e000461. <https://doi.org/10.1136/bmjgh-2017-000461>

Abstract

Introduction: Considering the high state-level heterogeneity of HIV prevalence and socioeconomic characteristics in Nigeria, it is a relevant setting for studies into the socioeconomic correlates of HIV-related knowledge. Although the relationship between absolute poverty and HIV transmission has been studied, the role of wealth *inequality* in the dynamics of the HIV epidemic has yet to be investigated in Nigeria. The current study, therefore, investigates wealth inequality and other sociodemographic covariates as predictors of HIV-related knowledge, in order to identify subgroups of the Nigerian population that would benefit from HIV preventive interventions. **Methods:** This study used the nationally representative 2013 Nigerian Demographic and Health Survey (NDHS). HIV-related knowledge was computed as a total score based on HIV-related knowledge indicators in the NDHS, dichotomised using the sample median as the cut-off. Wealth inequality and other relevant sociodemographic variables were introduced into a logistic regression model based on their significance in bivariate analyses. ORs derived from the model were interpreted to identify risk groups for low HIV-related knowledge after adjusting for confounding factors. **Results:** The regression model indicated that individuals with lower literacy levels were almost twice as likely as literate respondents to have low HIV-related knowledge (adjusted OR (AOR): 1.95, 95% CI 1.85 to 2.05, $P < 0.001$), and individuals in the upper wealth quintile were less than half as likely than those in the lower wealth quintile to have low HIV-related knowledge (AOR: 0.40, 95% CI 0.35 to 0.46, $P < 0.001$). Women were also more than twice as likely as men to have low HIV-related knowledge at each level of wealth inequality. In addition, women were 80% less likely to have low mother-to-child transmission knowledge than men, but had over 1.5 times higher odds of having poor knowledge of HIV risk reduction measures. Ethnicity, religious affiliation, relationship status and residing in rural areas were additional significant predictors of HIV-related knowledge. **Conclusion:** HIV-related knowledge in this sample is generally low among women, those with low literacy levels, the poor, the unemployed, those residing in rural areas, those with traditional religious beliefs and those living in states with the highest wealth inequality ratios. The identification of these risk groups for low HIV-related knowledge facilitates the implementation of future evidence-based interventions among these groups in order to potentially reduce HIV transmission.

Keywords: AIDS; HIV; public health.

Folayan, M. O., Cáceres, C. F., Sam-Agudu, N. A., Odetoyinbo, M., Stockman, J. K., & Harrison, A. (2017). Psychological Stressors and Coping Strategies Used by Adolescents Living with and Not Living with Hiv Infection in Nigeria. *AIDS and behavior*, 21(9), 2736–2745. <https://doi.org/10.1007/s10461-016-1534-3>

Abstract

Little is known about stressful triggers and coping strategies of Nigerian adolescents and whether or not, and how, HIV infection modulates these sources of stress and coping. This study evaluated differences in stressors and coping strategies among Nigerian adolescents based on HIV status. We analysed the data of six hundred 10-19 year old adolescents recruited through a population-based survey from 12 States of Nigeria who self-reported their HIV status. Data on stressors and coping strategies were retrieved by self-report from participants, using a validated structured questionnaire. We compared results between adolescents with and without HIV with respect to identification of specific life events as stressors, and use of specific coping strategies to manage stress. Logistic regression analysis adjusted for age and sex. Adolescents living with HIV (ALHIV) had significantly increased odds of identifying 'having to visit the hospital regularly' (AOR: 5.85; 95 % CI: 2.11-16.20; P = 0.001), and 'having to take drugs regularly' (AOR: 9.70; 95 % CI: 4.13-22.81; P < 0.001) as stressors; and 'Seeking social support' (AOR: 3.14; 95 % CI: 1.99-4.93; p < 0.001) and 'using mental disengagement' (OR: 1.64; 95 % CI: 0.49-1.84; p = 0.001) as coping strategies. Adolescents not living with HIV had significantly increased odds of identifying 'argument with a friend or family member' as a stressor (AOR: 6.59; 95 % CI: 3.62-11.98; P < 0.001). Life events related to adolescents' HIV positive status were significant stressors for ALHIV. Providing targeted psychosocial support could help reduce the impact of such HIV status-related stressors on ALHIV.

Keywords: Adolescents; Coping strategies; HIV; Nigeria; Stressors.

Folorunso, O. M., Frazzoli, C., Chijioke-Nwauche, I., Bocca, B., & Orisakwe, O. E. (2021). Toxic Metals and Non-Communicable Diseases in HIV Population: A Systematic Review. *Medicina (Kaunas, Lithuania)*, 57(5), 492. <https://doi.org/10.3390/medicina57050492>

Abstract

Background and Objectives: HIV has been a serious global health concern since its discovery, with about 37.9 million people living with HIV worldwide as of 2018. Sub-Saharan Africa (SSA) accounts for 68% of the infection and contributed 74% of the 1.5 million deaths in 2013 despite having only 12% of the total world population residing in the region. This systematic review has attempted to determine the association between heavy metal toxicity and the occurrence of non-communicable diseases in the HIV/AIDS population. **Materials and Methods:** Three databases were systematically searched: PubMed, Scopus, and Google

Scholar for studies written in English and published between 1 April 2000 and 12 April 2020. Studies were excluded if the main outcomes were not measured or did not meet the inclusion criteria. *Results:* All the six included studies are cross-sectional in design, and therefore were evaluated using the STROBE checklist. The data extraction was done using an extraction table; the ratio of female to male participants included in the study was 1.09:1. Qualitative analysis was used due to the heterogeneity in the heavy metal biomarkers and the outcome measured by the included studies. Two studies compared the concentration of heavy metals in HIV-positive and HIV-negative participants while one compared the levels between HAART-naïve and HAART-treated participants, and three determined the association between heavy metal toxicity and non-communicable diseases (liver fibrosis, anaemia, and reproductive parameters, respectively) in HIV-positive patients. *Conclusions:* Blood lead, cadmium, and mercury levels were higher in HIV-seropositive than -seronegative subjects, whereas serum zinc level was lower in HIV-seropositive than -seronegative subjects, but the causal association between heavy metals and non-communicable diseases in HIV subjects is largely unknown. Interdisciplinary research between nutrition, toxicology, and human health is envisaged for primary and secondary prevention and treatment.

Keywords: AIDS; comorbidities; heavy metals; toxicity.

Herbertson, E. C., Lahiri, C. D., Nwogu, J. N., Soremekun, R. O., Olugbake, O. A., Ezechi, O. C., Akanmu, A. S., & Gandhi, M. (2021). High Acceptability of Donating Hair and Other Biological Samples for Research Among People Living with HIV in an Outpatient Clinic in Lagos, Nigeria. *AIDS research and human retroviruses*, 37(9), 676–682. <https://doi.org/10.1089/AID.2020.0214>

Abstract

Willingness to donate hair samples is a rate-limiting step for assaying antiretroviral (ARV) concentrations in hair, an emerging technique for HIV prevention and treatment monitoring. We surveyed ethnically diverse Nigerians to determine their willingness to donate hair for biomedical research. A cross-sectional survey of people living with HIV on ARV therapy (ART) was conducted at the HIV clinic of Nigerian Institute of Medical Research, using systematic sampling. The researcher-administered questionnaire was designed to capture sociodemographic data, length of time on ART, and willingness to donate hair. Univariate analysis was performed on sociodemographic characteristics, and independent-samples *t*-test and chi-square tests were used for bivariate analysis. Multivariable logistic regression analysis was performed to assess factors associated with willingness to donate hair samples, with a significance level of 0.05. Of the 398 participants enrolled in the study, 258 (64.8%) were female, the average age was 40 years (± 9.8), and the average time spent on ART was 7.3 years (± 4.2). More than half (64.8%) of the respondents were willing to donate hair samples for biomedical research and they were 1.5 times more likely to donate hair than blood. For one-third of the participants, the anticipated benefit from the eventual research findings was the primary motivation to donate hair samples. Fear of use of hair for rituals was the most common stated reason for unwillingness to donate hair samples (21.2%). In an ethnically diverse, urban-based Nigerian study population, nearly two-thirds of the

participants were willing to donate hair samples for biomedical research. These findings support the feasibility of hair sampling for future HIV clinical research conducted within Nigeria.

Keywords: ARV concentration; HIV treatment monitoring; acceptability rate; antiretroviral therapy; hair ARV level; hair collection; predominantly female.

Holtzman, C. W., Godfrey, C., Ismail, L., Raizes, E., Ake, J. A., Tefera, F., Okutoyi, S., & Siberry, G. K. (2022). PEPFAR's Role in Protecting and Leveraging HIV Services in the COVID-19 Response in Africa. *Current HIV/AIDS reports*, 1–11. Advance online publication. <https://doi.org/10.1007/s11904-021-00587-6>

Abstract

Purpose of review: We describe the impact of COVID-19 on PEPFAR programs in Africa and how PEPFAR adapted and leveraged its interventions to the changing landscape of the COVID-19 pandemic. **Recent findings:** To mitigate the potential impact of COVID-19 on the HIV response and protect the gains, continuity of treatment was the guiding principle regarding the provision of services in PEPFAR-supported countries. As the COVID-19 pandemic matured, PEPFAR's approach evolved from a strictly "protect and salvage" approach to a "restore and accelerate" approach that embraced innovative adaptations in service and "person-centered" care. The impact of service delivery interruptions caused by COVID-19 on progress towards HIV epidemic control in PEPFAR-supported African countries remains undetermined. With COVID vaccine coverage many months away and more transmissible variants being reported, Africa may experience more pandemic surges. HIV programs will depend on nimble and innovative adaptations in prevention and treatment services in order to advance epidemic control objectives.

Keywords: Africa; COVID-19; Continuity of services; HIV; PEPFAR; Program adaptation.

Ibeneme, S. C., Irem, F. O., Iloanusi, N. I., Ezuma, A. D., Ezenwankwo, F. E., Okere, P. C., Nnamani, A. O., Ezeofor, S. N., Dim, N. R., & Fortwengel, G. (2019). Impact of physical exercises on immune function, bone mineral density, and quality of life in people living with HIV/AIDS: a systematic review with meta-analysis. *BMC infectious diseases*, 19(1), 340. <https://doi.org/10.1186/s12879-019-3916-4>

Abstract

Background: Compromised immune function, associated with human immune deficiency virus(HIV) infection, is improved by antiretroviral therapy(ART) which also decreases bone mineral density(BMD), and possibly the quality of life(QoL). However,physical(aerobic/resistance) exercises, were reported to induce reverse effects in uninfected individuals and were appraised in the literature for evidence of similar benefits in people living with HIV/AIDS(PLWHA). The main study objective was to evaluate the impact of

physical (aerobic and resistance) exercises on CD⁴⁺ count, BMD and QoL in PLWHA. **Methods:** A systematic review was conducted using the Cochrane Collaboration protocol. Searching databases, up to June 2017, only randomized control trials investigating the effects of either aerobic, resistance or a combination of both exercise types with a control/other intervention(s) for a period of at least 4 weeks among adults living with HIV, were included. Two independent reviewers determined the eligibility of the studies. Data were extracted and risk of bias (ROB) was assessed with the Cochrane Collaboration ROB tool. Meta-analyses were conducted using random effect models using the Review Manager (RevMan) computer software. **Results:** Nineteen studies met inclusion criteria (n = 491 participants at study completion) comprising male and female with age range 22-66 years. Two meta-analyses across 13 sub-group comparisons were performed. However, there were no RCTs on the impact of physical exercises on BMD in PLWHA. The result showed no significant change in CD⁴⁺ count unlike a significant effect of 5.04 point (95%CI: -8.49, -3.74, p = 0.00001) for role activity limitation due to physical health (QoL sub-domain). Overall, the GRADE evidence for this review was of moderate quality. **Conclusions:** There was evidence that engaging in moderate intensity aerobic exercises (55-85% Maximum heart rate-MHR), for 30-60 min, two to five times/week for 6-24 weeks significantly improves role activity limitation due to physical health problems, otherwise physical (aerobic or/and resistance) exercises have no significant effects on CD⁴⁺ count and other domains of QoL. Also, there is lack of evidence on the impact of exercises on BMD in PLWHA due to the paucity of RCTs. The moderate grade evidence for this review suggests that further research may likely have an important impact on our confidence in the estimate of effects and may change the estimate.

Keywords: Aerobic exercise; CD4+ cell count; HIV; QoL; Resistance exercise; Systematic review.

Ijeoma, A., Ejikeme, A., Theodora, O., & Chika, O. (2018). Knowledge, attitude, willingness of HIV counseling and testing and factors associated with it, among long distant drivers in Enugu, Nigeria: an opportunity in reduction of HIV prevalence. *African health sciences*, 18(4), 1088–1097. <https://doi.org/10.4314/ahs.v18i4.30>

Abstract

Background: Long distance truck drivers (LDTDs) have been one of the key forces in the spread of HIV/AIDS across the African continent. **Objective:** We set out to assess the knowledge of HIV transmission route, preventive measures, attitude to HIV Counseling and Testing (HCT), willingness and factors associated with willingness to screen for HIV among long distance truck drivers in Enugu, Nigeria. **Method:** This was a cross-sectional study of 500 long distance truck drivers aged 19-65 years. They were interviewed with a semi-structured questionnaire on aspects of HCT. Data was analyzed using cross tabulations to examine associations and chi square test for various variables. **Result:** A good number of the respondents have wrong ideas of transmission route, ranging from 28.4% to 90.4%. Significantly high number of those with tertiary education will engage in incorrect preventive measures like using antibiotics after sex, and seeking protection from a traditional healer compared to those with no formal education ($\chi^2 = 3.2$, p = 0.02; $\chi^2 = 2.3$, p = 0.01

respectively).. Those with tertiary education and those that were divorced showed a generally good attitude towards HCT and mostly agreed that HCT should be made compulsory compared to others ($\chi^2 = 29.8$, $p < 0.001$; $\chi^2 = 10.1$, $p < 0.001$ respectively). There was a significantly high willingness to screen among 302 (60.4%) of the participants. There was also significant association between marital status, educational level and willingness to screen ($\chi^2 = 174.4$, $p < 0.001$; $\chi^2 = 10.6$, $p < 0.001$ respectively). **Conclusion:** A high number of LDTD had wrong knowledge of transmission route, better educational level did not affect incorrect knowledge of preventive measures, educational and marital statuses affected attitude to HCT, willingness to screen was high with marital status and educational level significantly associated with it. We recommend routine HCT at the work places of truck drivers to correct the anomalies discovered above.

Keywords: HIV counselling; Nigeria; screening; sub-Saharan Africa; testing; truck drivers; willingness.

Iliyasu, Z., Galadanci, H. S., Ibrahim, Y. A., Babashani, M., Mijinyawa, M. S., Simmons, M., & Aliyu, M. H. (2017). Should They Also Have Babies? Community Attitudes Toward Sexual and Reproductive Rights of People Living With HIV/AIDS in Nigeria. *Annals of global health*, 83(2), 320–327. <https://doi.org>

Abstract

Background: People living with HIV have the right to healthy, satisfying sex lives and to appropriate services to ensure their sexual and reproductive health, including having healthy children. The reproductive rights of people living with HIV/AIDS are, however, often met with skepticism and discrimination, despite recent advances in HIV treatment. **Objective:** To assess the attitudes of community members in Kano, Nigeria, toward the right of persons living with HIV/AIDS to have healthy sexual relationships and bear children. **Methods:** A cross-section of 399 adults was interviewed using pretested structured questionnaires. Logistic regression analysis was used to obtain adjusted estimates for predictors of agreement with the rights of persons with HIV/AIDS to bear children. **Findings:** A substantial proportion of respondents (28.6%) strongly agreed and agreed (10.5%) that persons with HIV/AIDS should not be allowed to marry. More than a fifth of the respondents disagreed (16.0%) and strongly disagreed (8.0%) with the rights of HIV-infected persons to bear children. Agreement with the statement "HIV-infected persons should have biological children" was independently associated with higher educational status (adjusted odds ratio: 2.26, 95% confidence interval: 1.82-6.73) and awareness of prevention of mother-to-child HIV transmission effectiveness (adjusted odds ratio: 2.53, 95% confidence interval: 1.92-5.37). Of those who agreed that HIV-infected persons should have children ($n = 253$), 17.8% and 26.1% strongly agreed and agreed, respectively, that persons living with HIV/AIDS should be restricted to having fewer children. Further, 11.5% and 4.8% of respondents disagreed and strongly disagreed, respectively, that infertile HIV-infected couples should receive fertility treatment. **Conclusions:** People living with HIV/AIDS face discriminatory attitudes to their reproductive rights in northern Nigeria. There is a need for effective, culturally appropriate information, education, and

communication approaches to improving community perceptions of sexual and reproductive rights of people living with HIV/AIDS.

Keywords: HIV/AIDS; Nigeria; biological children; community attitudes; sexual and reproductive rights.

Iliyasu, Z., Galadanci, H. S., Musa, A. H., Iliyasu, B. Z., Nass, N. S., Garba, R. M., Jibo, A. M., Okekenwa, S. C., Salihu, H. M., & Aliyu, M. H. (2022). HIV self-testing and repeat testing in pregnancy and postpartum in Northern Nigeria. *Tropical medicine & international health : TM & IH*, 27(1), 110–119. <https://doi.org/10.1111/tmi.13705>

Abstract

Objective: Incident HIV infections in pregnant and breastfeeding mothers pose significant challenges to prevention of mother-to-child HIV transmission efforts in sub-Saharan Africa. We identified the predictors of willingness to self-test for HIV when retesting in pregnancy and postpartum among antenatal clients in a tertiary hospital in Northern Nigeria. **Methods:** Structured and validated questionnaires were administered to a cross section of antenatal attendees (n = 370) in March 2021. Willingness to self-test and adjusted odds ratios of potential predictors were generated from logistic regression models. **Results:** Of the 317 respondents who agreed to repeat HIV test during pregnancy, 29.3% (n = 93) were willing to self-test. Similarly, of those (n = 350) willing to retest after delivery, 27.4% (n = 96) were willing to self-test. Willingness to self-test during pregnancy was higher among respondents who were multiparous (2-4 births) (adjusted odds ratio, aOR = 2.40, 95% confidence interval CI, 1.14-6.43), employed (aOR = 1.49, 95% CI, 1.13-4.53) and those with at least secondary education (aOR = 2.96, 95% CI, 1.43-11.47). In contrast, willingness to self-test was lower among those who were unaware of the husband's HIV status (aOR = 0.05, 95% CI, 0.02-0.13). Willingness to self-test after delivery was higher among respondents who were married (aOR = 15.41, 95% CI, 3.04-78.2), multiparous (aOR = 2.01, 95% CI, 1.27-5.63), employed (aOR = 1.59, 95% CI, 1.08-2.35) and had at least to secondary education (aOR = 6.12, 95% CI, 1.36-27.47). In contrast, willingness to self-test postpartum was lower among those who booked late (≥ 29 weeks) (aOR = 0.11, 95% CI, 0.022-0.52), those who were unaware of the risk of HIV transmission during breastfeeding (aOR = 0.29, 95% CI, 0.12-0.68) and participants who were unaware of the husband's HIV status (aOR = 0.076, 95% CI, 0.03-0.19). **Conclusion:** Willingness to self-test for HIV in pregnancy and postpartum was low in this population and was influenced by risk perception, socio-demographic and obstetric attributes. Communication interventions and training of potential mentor mothers among early adopters could improve self-testing in this group and similar settings.

Keywords: HIV self-testing; HIV/AIDS; pregnancy.

Iliyasu, Z., Galadanci, H. S., Oladimeji, A. I., Babashani, M., Gajida, A. U., & Aliyu, M. H. (2019). Predictors of Safer Conception Practices Among HIV-Infected Women in Northern Nigeria.

International journal of health policy and management, 8(8), 480–487.
<https://doi.org/10.15171/ijhpm.2019.27>

Abstract

Background: Persons living with HIV often face discrimination in safe sex and reproductive choices, especially in lowresource settings. This study assessed fertility desires and intentions, risk perception and correlates of ever use of at least one safer conception method among HIV-infected women attending a tertiary health facility in Kano, Nigeria. **Methods:** Structured questionnaires were administered to a cross section of 328 of 427 eligible HIV-infected women. Fertility desires and intentions, risk perception and safer conception practice were analyzed. Logistic regression was employed to assess for predictors. **Results:** Of the 328 respondents, 150 respondents (45.7%) wanted more children. The proportions of respondents aware of their transmission risk during pregnancy, delivery, and breastfeeding were 69.5%, 75.3%, and 78.9%, respectively. Further, 68.9% of respondents were aware of the prospects of bearing HIV-negative children without infecting their partners. About 64.8% of women were aware of at least one safer conception method. Safer conception methods everused by the participants include: antiretroviral therapy (ART) (36.7%), timed unprotected intercourse with (10.9%), and without pre-exposure prophylaxis (PrEP) (17.2%), intravaginal insemination (7.3%) and intrauterine insemination (4.7%). Safer conception practice was predicted by marital status (married versus single, adjusted odds ratio [AOR]=1.50, 95% CI =1.10-3.55), parity (2-4 versus 0, AOR=12.1, 95% CI=3.7-39.8), occupation (civil servants versus traders, AOR=0.37, 95% CI=0.16-0.86), husband's serostatus (seroconcordant versus serodiscordant) (AOR=1.51, 95% CI=1.13-4.64), couple contraceptive use (users versus non-users) (AOR=1.62, 95% CI=1.16-5.83) and transmission risk perception (high risk versus low/no risk) (AOR=2.14, 95% CI=1.18-3.90). **Conclusion:** We found high levels of fertility desires and intentions and moderate risk perception among a cohort of HIV-infected women in urban Kano, Nigeria. The use of safer conception practices was not common. Our findings underscore the need for healthcare provider capacity building to enhance safer conception counseling and service delivery.

Keywords: HIV/AIDS; Northern Nigeria; Safer Conception Practice; Women.

Iliyasu, Z., Hassan-Hanga, F., Ajuji, S. I., Bello, M. M., Abdulkadir, S. S., Nass, N. S., Salihu, H. M., & Aliyu, M. H. (2021). Correlates of Health Care Workers' Knowledge and HIV-Exposed Infant Immunization Counseling Practice in Northern Nigeria. *International journal of MCH and AIDS*, 10(1), 55–65. <https://doi.org/10.21106/ijma.432>

Abstract

Background: Human Immunodeficiency Virus (HIV)-exposed and HIV-infected infants are at increased risk of vaccine-preventable diseases. However, little is known about health care workers' knowledge and immunization counseling practices in this population. We determined the predictors of health care workers' knowledge of vertical transmission risks, HIV exposed/infected infant immunization, and counseling practices in a tertiary center in

Northern Nigeria. **Methods:** A cross-section of 297 health workers were interviewed using a structured, validated questionnaire. Knowledge and HIV-exposed infant immunization counseling practices were analyzed, and adjusted odds ratios for predictors were derived from logistic regression models. **Results:** Of the 297 participating health care workers, (32.3%, $n=96$) had adequate knowledge of HIV-exposed/infected infant immunization. Two-thirds (67%, $n=199$) of the participants appropriately identified the timing of infant diagnosis, while (73%, $n=217$) and (56.2%, $n=167$) correctly categorized infants as HIV-exposed and HIV-infected, respectively. Only (19.5%, $n=58$) participants had ever counselled a HIV-positive mother on infant immunization. Knowledge was predicted by work unit (HIV clinic vs. Obstetrics & Gynecology clinic), (Adjusted Odds Ratio (AOR) =3.78, 95% CI: 1.27-5.54), age (30-39 vs. <30 years), (AOR=2.24, 95% CI:1.19-5.67), years of experience (≥ 10 vs. <5), (AOR=1.76, 95% CI: 1.15-6.04), number of children (1 vs. 0), (AOR=1.73, 95% CI:1.14-4.23), infant immunization training (yes vs. no), (AOR=1.57, 95% CI:1.12-5.43), female sex (AOR = 1.17, 95% CI:1.06-2.21), profession (nurse/midwife vs. physician), (AOR=0.44, 95% CI:0.21-0.94) and previous HIV test (no vs. yes), (AOR=0.67, 95% CI:0.21-0.83). **Conclusion and global health implications:** Knowledge of HIV-exposed infant immunization was low and counseling practices were sub-optimal. Both immunization knowledge and counseling practices were predicted by demographic, professional, and training variables. Our findings indicate the need for educating health care workers on HIV exposed/infected infant immunization policy and improving counseling skills through capacity-building programs.

Keywords: HIV; Health care workers; Immunization; Infant; Knowledge; Nigeria.

Iliyasu, Z., Kassim, R. B., Iliyasu, B. Z., Amole, T. G., Nass, N. S., Marryshow, S. E., & Aliyu, M. H. (2020). Acceptability and correlates of HIV self-testing among university students in northern Nigeria. *International journal of STD & AIDS*, 31(9), 820–831. <https://doi.org/10.1177/0956462420920136>

Abstract

Concerns about stigma and confidentiality limit the uptake of HIV testing and counseling (HTC) among young adults. HIV self-testing has been offered as a youth-friendly alternative to conventional HTC. We conducted a cross-sectional study to assess HTC uptake, willingness to self-test, and their predictors among university students ($n = 399$) in Kano, Nigeria. Anonymous self-administered questionnaires were provided to participants. Adjusted odd ratios were generated for predictors with logistic regression models. The results showed that only 35.8% ($n = 143$) of participants had previous HTC. Most respondents (70.4%, $n = 281$) were willing to self-test. HTC was associated with year of college (500 Level vs. 100 Level), adjusted odds ratio (AOR, [95% Confidence Interval (CI)] = 0.44 (0.19-0.97), campus residence (off- vs. on-campus, AOR = 0.45; 95%CI: 0.28-0.73), sexual activity in the past six months (AOR = 0.39; 95%CI: 0.24-0.64), willingness to self-test (AOR = 0.38; 95%CI: 0.22-0.66), and consistent condom use (AOR = 4.45; 95%CI: 1.41-14.08). Students who were older (≥ 30 vs. <20 years, AOR = 0.20; 95%CI: 0.05-0.90) and female (AOR = 0.56; 95%CI: 0.32-0.98) were less likely to be willing to self-test, whereas students who were more senior (500 Level vs. 100 Level, AOR = 5.24; 95%CI: 1.85-14.84), enrolled in clinical science programs (vs. agriculture,

AOR = 4.92; 95%CI: 1.51-16.05) or belonging to "other" ethnic groups (vs. Hausa-Fulani, AOR = 2.40; 95%CI: 1.11-5.19) were more willing to self-test. Overall HTC uptake was low, but acceptability of self-testing was high. College seniority, age, ethnicity, and program of study were associated with willingness to self-test. Our findings support the feasibility of scaling up HIV self-testing among university students in Nigeria.

Keywords: HIV self-testing; Nigeria; acceptability; students.

Iliyasu, Z., Owen, J., Aliyu, M. H., & Simkhada, P. (2020). "I prefer not to have a child than have a HIV-positive child": a Mixed Methods Study of Fertility Behaviour of Men Living with HIV in Northern Nigeria. *International journal of behavioral medicine*, 27(1), 87–99. <https://doi.org/10.1007/s12529-019-09837-9>

Abstract

Background: In the era of HIV treatment as prevention, little research has focused on the fertility behaviour of men living with HIV. This study examines the predictors and motivators of fertility among men living with HIV and on antiretroviral treatment in Kano, Nigeria. **Method:** Using mixed methods, structured questionnaires were administered to a clinic-based sample of men living with HIV (n = 270) and HIV-negative/untested controls (n = 270), followed by in-depth interviews with a sub-group of 22 HIV-positive participants. Logistic regression and the framework approach were used to analyse the data. **Results:** Compared to HIV-negative/untested controls, lower proportions of men living with HIV desired more children (79.3%, n = 214 vs. 91.1%, n = 246, p < 0.05) and intended to bear children within 3 years (57.0%, n = 154 vs. 67.0%, n = 181) (p < 0.05). Marital status (ever married vs. single) predicted fertility intention among men living with HIV (adjusted odds ratio, AOR = 4.70, 95% confidence interval CI, 1.75-13.64) and HIV-negative/untested controls (AOR = 4.23, 95% CI, 1.37-16.45). Men considered self and partner health status, HIV transmission risks, poverty, the effectiveness of interventions, child survival and religion when making fertility decisions. **Conclusion:** Fertility desires remain high post-HIV diagnosis. HIV services should include integrated reproductive health programs that address the fertility desires of clients and include considerations for fertility services.

Keywords: Fertility desire; Fertility intention; HIV/AIDS; Men; Nigeria; Predictors.

Inzaule, S. C., Bertagnolio, S., Kityo, C. M., Siwale, M., Akanmu, S., Wellington, M., de Jager, M., Ive, P., Mandaliya, K., Stevens, W., Boender, T. S., Ondo, P., Sigaloff, K., Rinke de Wit, T. F., & Hamers, R. L. (2020). The relative contributions of HIV drug resistance, nonadherence and low-level viremia to viremic episodes on antiretroviral therapy in sub-Saharan Africa. *AIDS (London, England)*, 34(10), 1559–1566. <https://doi.org/10.1097/QAD.0000000000002588>

Abstract

Introduction: To achieve viral suppression among more than 90% of people on antiretroviral therapy (ART), improved understanding is warranted of the modifiable causes of HIV viremic episodes. We assessed the relative contributions of drug-resistance, nonadherence and low-level viremia (LLV) (viral load 50-999 cps/ml) on viremic episodes in sub-Saharan Africa. **Methods:** In a multicountry adult cohort initiating nonnucleoside reverse transcriptase inhibitor-based first-line ART, viremic episodes (viral load ≥ 1000 cps/ml) were classified as first, viral nonsuppression at 12 months; second, virological rebound at 24 months (after initial viral suppression at 12 months); third, failure to achieve viral resuppression at 24 months (after viremic episode at 12 months). We used adjusted odds ratios from multivariable logistic regression to estimate attributable fractions for each risk factor. **Results:** Of 2737 cohort participants, 1935 had data on pretreatment drug resistance (PDR) and at least 1 viral load outcome. Viral nonsuppression episodes [173/1935 (8.9%)] were attributable to nonadherence in 30% (35% in men vs. 24% in women) and to PDR to nonnucleoside reverse transcriptase inhibitors in 10% (15% in women vs. 6% in men). Notably, at contemporary PDR prevalences of 10-25%, PDR would explain 13-30% of viral nonsuppression. Virological rebound episodes [96/1515 (6.3%)] were mostly attributable to LLV (29%) and nonadherence (14%), and only rarely to PDR (1.1%). Failures to achieve viral resuppression [66/81 (81.5%)] were mostly attributable to the presence of acquired drug resistance (34%) and only rarely to nonadherence (2.4%). **Conclusion:** Effective adherence interventions could substantially reduce viral nonsuppression (especially in men) and virological rebound (especially during LLV), but would have limited effect on improving viral resuppression. Alternative ART regimens could circumvent PDR and acquired resistance.

Jahun, I., Dirlikov, E., Odafe, S., Yakubu, A., Boyd, A. T., Bachanas, P., Nzelu, C., Aliyu, G., Ellerbrock, T., Swaminathan, M., & CDC Nigeria ART Surge Team (2021). Ensuring Optimal Community HIV Testing Services in Nigeria Using an Enhanced Community Case-Finding Package (ECCP), October 2019-March 2020: Acceleration to HIV Epidemic Control. *HIV/AIDS (Auckland, N.Z.)*, 13, 839–850. <https://doi.org/10.2147/HIV.S316480>

Abstract

Purpose: The 2018 Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) showed Nigeria's progress toward the UNAIDS 90-90-90 targets: 47% of HIV-positive individuals knew their status; of these, 96% were receiving antiretroviral therapy (ART); and of these, 81% were virally suppressed. To improve identification of HIV-positive individuals, Nigeria developed an Enhanced Community Case-Finding Package (ECCP). We describe ECCP implementation in nine states and assess its effect. **Methods:** ECCP included four core strategies (small area estimation [SAE] of people living with HIV [PLHIV], map of HIV-positive patients by residence, HIV risk-screening tool [HRST], and index testing [IT]) and four supportive strategies (alternative healthcare outlets, performance-based incentives for field testers, Project Extension for Community Healthcare Outcomes, and interactive dashboards). ECCP was deployed in nine of 10 states prioritized for ART scale-up. Weekly program data (October 2019-March 2020) were tracked and analyzed. **Results:** Of the total 774 LGAs in Nigeria, using SAE, 103 (13.3%) high-burden LGAs were identified, in which 2605 (28.0%) out of 9,294 hotspots were prioritized by mapping newly identified PLHIV by residential addresses. Over

22 weeks, among 882,449 individuals screened using HRST, 723,993 (82.0%) were eligible and tested for HIV (state range, 43.7-90.4%), out of which 20,616 were positive. Through IT, an additional 3,724 PLHIV were identified. In total, 24,340 PLHIV were identified and 97.4% were linked to life-saving antiretroviral therapy. The number of newly identified PLHIV increased 17-fold over 22 weeks (week 1: 89; week 22: 1,632). Overall mean HIV positivity rate by state was 3.3% (range, 1.8-6.4%). **Conclusion:** Using ECCP in nine states in Nigeria increased the number of PLHIV in the community who knew their status, allowing them to access life-saving care and decreasing the risk of HIV transmission.

Keywords: ART Surge; HIV risk assessment tool; index partner testing; small area estimation.

Jahun, I., Greby, S. M., Adesina, T., Agbakwuru, C., Dalhatu, I., Yakubu, A., Jelve, T., Okoye, M., Ikpe, S., Ehoche, A., Abimiku, A., Aliyu, G., Charurat, M., Greenwell, G., Bronson, M., Patel, H., McCracken, S., Voetsch, A. C., Parekh, B., Swaminathan, M., ... Aliyu, S. (2021). Lessons From Rapid Field Implementation of an HIV Population-Based Survey in Nigeria, 2018. *Journal of acquired immune deficiency syndromes (1999)*, 87(Suppl 1), S36–S42. <https://doi.org/10.1097/QAI.0000000000002709>

Abstract

Background: The need for accurate HIV annual program planning data motivated the compressed timeline for the 2018 Nigerian HIV/AIDS Indicator and Impact Survey (NAIS). The survey team used stakeholder cooperation and responsive design, using survey process and paradata to refine survey implementation, to quickly collect high-quality data. We describe processes that led to generation of data for program and funding decisions, ensuring HIV services were funded in 2019. **Setting:** Nigeria is the most populous country in Africa, with approximately 195 million people in 36 states and the Federal Capital Territory. Challenges include multiple security threats, poor infrastructure, seasonal rains, and varied health system capacity. **Methods:** Stakeholders worked together to plan and implement NAIS. Methods from other population-based HIV impact assessments were modified to meet challenges and the compressed timeline. Data collection was conducted in 6 weeks. Responsive design included reviewing survey monitoring paradata and laboratory performance. Costs required to correct data errors, for example, staff time and transportation, were tracked. **Results:** NAIS data collection was completed in 23 weeks, ahead of the originally scheduled 24 weeks. Responsive design identified and resolved approximately 68,000 interview errors, affecting approximately 62,000 households, saving about US\$4.4 million in costs. Biweekly field laboratory test quality control improved from 50% to 100% throughout NAIS. **Conclusions:** Cooperation across stakeholders and responsive design ensured timely release of NAIS results and informed planning for HIV epidemic control in Nigeria. Based on NAIS results, funds were provided to place an additional 500,000 HIV-positive Nigerians on antiretroviral therapy by the end of 2020, pushing Nigeria toward epidemic control.

Jahun, I., Said, I., El-Imam, I., Ehoche, A., Dalhatu, I., Yakubu, A., Greby, S., Bronson, M., Brown, K., Bamidele, M., Boyd, A. T., Bachanas, P., Dirlikov, E., Agbakwuru, C., Abutu, A., Williams-Sherlock, M., Onotu, D., Odafe, S., Williams, D. B., Bassey, O., ... Swaminathan, M. (2021). Optimizing community linkage to care and antiretroviral therapy Initiation: Lessons from the Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) and their adaptation in Nigeria ART Surge. *PloS one*, 16(9), e0257476. <https://doi.org/10.1371/journal.pone.0257476>

Abstract

Background: Ineffective linkage to care (LTC) is a known challenge for community HIV testing. To overcome this challenge, a robust linkage to care strategy was adopted by the 2018 Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS). The NAIIS linkage to care strategy was further adapted to improve Nigeria's programmatic efforts to achieve the 1st 90 as part of the Nigeria Antiretroviral Therapy (ART) Surge initiative, which also included targeted community testing. In this paper we provide an overview of the NAIIS LTC strategy and describe the impact of this strategy on both the NAIIS and the Surge initiatives. **Methods:** The NAIIS collaborated with community-based organizations (CBOs) and deployed mobile health (mHealth) technology with real-time dashboards to manage and optimize community LTC for people living with HIV (PLHIV) diagnosed during the survey. In NAIIS, CBOs' role was to facilitate linkage of identified PLHIV in community to facility of their choice. For the ART Surge, we modified the NAIIS LTC strategy by empowering both CBOs and mobile community teams as responsible for not only active LTC but also for community testing, ART initiation, and retention in care. **Results:** Of the 2,739 PLHIV 15 years and above identified in NAIIS, 1,975 (72.1%) were either unaware of their HIV-positive status (N = 1890) or were aware of their HIV-positive status but not receiving treatment (N = 85). Of these, 1,342 (67.9%) were linked to care, of which 952 (70.9%) were initiated on ART. Among 1,890 newly diagnosed PLHIV, 1,278 (67.6%) were linked to care, 33.7% self-linked and 66.3% were linked by CBOs. Among 85 known PLHIV not on treatment, 64 (75.3%) were linked; 32.8% self-linked and 67.2% were linked by a CBO. In the ART Surge, LTC and treatment initiation rates were 98% and 100%, respectively. Three-month retention for monthly treatment initiation cohorts improved from 76% to 90% over 6 months. **Conclusions:** Active LTC strategies by local CBOs and mobile community teams improved LTC and ART initiation in the ART Surge initiative. The use of mHealth technology resulted in timely and accurate documentation of results in NAIIS. By deploying mHealth in addition to active LTC, CBOs and mobile community teams could effectively scale up ART with real-time documentation of client-level outcomes.

Kanma-Okafor, O. J., Onwuasoanya, E. E., Sekoni, A. O., Ayankogbe, O. O., Izuka, O. M., & Ejekam, C. (2019). HIV/AIDS-Related Knowledge, Attitudes and Uptake of HIV Testing Services: A Comparative Study of Male and Female Secondary School Students in Lagos, Nigeria. *West African journal of medicine*, 36(3), 222–231.

Abstract

Background: Knowledge of HIV/AIDS and use of HIV Testing Services in Nigeria is still far from optimal. Good HIV/AIDS-related knowledge and attitudes are important in prevention. The

aim of this study was to assess and compare HIV/AIDS knowledge, attitudes and the uptake of HIV Testing Services between male and female senior secondary school students in Lagos, Nigeria. **Methods:** Using multistage sampling, 543 (50.3% male, 49.7 % female) participants were selected in a comparative cross-sectional study carried out in six senior secondary schools in Alimosho LGA, Lagos. Data was collected using a pre-tested, self-administered questionnaire and analyzed using SPSS- 20, $p < 0.05$ was considered significant. **Results:** Participants' level of knowledge of HIV/AIDS was good (86.4% male, 86.3% female), the difference was not statistically significant. The main source of HIV/AIDS information was their teachers (male - 53.6%, female - 49.3%). Attitudes were positive (99.3% males, 98.1% females). However, the uptake of HIV testing was low (27.8% male, 24.1% female). Only 41.8% of males and 34.1% of females knew where HIV Testing Services were offered. The uptake of HIV testing showed a significant association, for the males, with family structure ($p=0.034$), confiding in their fathers ($p=0.039$) and religion ($p=0.044$), and for the females, mothers' level of education ($p=0.036$), number of siblings ($p=0.044$) and alcohol use ($p=0.006$). **Conclusion:** In both groups, knowledge and attitude were optimal, however. the uptake of HIV testing was low due to poor access. Teaching about HIV/AIDS in schools should be sustained, but to improve the use of HIV Testing Services, stronger families are encouraged, though providing more HIV testing centers, especially Youth Friendly Centers should be considered.

Karshima, S. N., & Karshima, M. N. (2021). Epidemiology of Cryptosporidium Infections among People Living with HIV/AIDS in Nigeria: Results of Systematic Review and Meta-analysis. *Acta parasitologica*, 66(1), 60–74. <https://doi.org/10.1007/s11686-020-00253-8>

Abstract

Purpose: Cryptosporidium is implicated in diarrhea epidemics in many parts of the world and is said to be the most common protozoan cause of diarrhea among people living with HIV/AIDS (PLWHA) globally. To provide data on the burden of Cryptosporidium infections among Nigerians living with HIV/AIDS, we reported the prevalence, geographic distribution and Cryptosporidium species diversity among this population in Nigeria. **Methods:** We used the PRISMA guidelines to perform a systematic review and meta-analysis of articles published between January 1, 1995 and April 21, 2020. Pooled estimate (PE), heterogeneity, quality of each study and publication bias were determined using the random-effects model, Cochran's Q test, the 9 point Joanna Briggs Institute Critical Appraisal Instrument and the Egger's regression asymmetry test, respectively. **Results:** Forty-six articles reported 2612 positive cases of Cryptosporidium infections from 12,756 PLWHA examined in 20 Nigerian States and the Federal Capital Territory. Overall pooled estimate was 14.5% (95% CI 10.4-19.9) with a range of 0.3% (95% CI 0.0-1.8) to 43.7% (95% CI 35.6-52.3) across sub-groups, with the PEs in relation to CD4⁺ T cell count, species and age showing significant variations at $p < 0.05$. Cryptosporidium hominis was the most prevalent (3.5%, 95% CI 2.3-5.2) of the six Cryptosporidium species reported in Nigeria. **Conclusion:** Cryptosporidium infections are moderately prevalent among PLWHA in Nigeria with the highest regional prevalence in the north-east. In addition to personal hygienic practices, the inclusion of Cryptosporidium screening as part of HIV/AIDS clinics in Nigeria will reduce the burden of the parasite among PLWHA in Nigeria.

Keywords: Cryptosporidium infections; Epidemiology; Geographic distribution; Nigeria; People living with HIV/AIDS; Species diversity.

Lawal, A. M., & Olley, B. O. (2017). Psychosocial factors predicting risky sexual behaviour among long distance truck drivers in Lagos, Nigeria. *SAHARA J : journal of Social Aspects of HIV/AIDS Research Alliance*, 14(1), 213–221. <https://doi.org/10.1080/17290376.2017.1405838>

Abstract

Long distance truck drivers (LDTDs) have been identified as one of the groups at higher risk for human immunodeficiency virus (HIV) infection. Understanding how certain social and psychological variables that have a strong theoretical basis contribute to sexual risk behaviour will guide in the implementation process of HIV risk-reduction intervention in the trucking population. In line with the conceptualisation of Information, Motivation and Behavioural skills model, we examined the extent that HIV knowledge, attitude towards condom use, peer support to condom use, perceived vulnerability to HIV/AIDS, and condom use self-efficacy will independently and jointly explain sexual risk behaviours of LDTDs in a haulage company in Lagos, Nigeria. A cross-sectional survey design was used and 154 drivers with ages ranging from 27 to 68 years ($M = 44.03$, $SD = 8.82$) completed copies of a questionnaire comprising demographics and measures of psychological variables. Psychological factors that included HIV knowledge, attitude towards condom use, perceived vulnerability to HIV/AIDS, peer support to condom use, and condom use self-efficacy significantly jointly predicted sexual risk behaviours ($R^2 = .59$, $F(5, 148) = 42.63$; $p < .05$), by accounting for about 59% of the explained variance in sexual risk behaviours. Social factors that included age, number of years of education, number of wives, number of intercourses in the last three months, number of partners apart from primary partners, and number of weeks spent outside home significantly jointly predicted sexual risk behaviour ($R^2 = .15$, $F(6, 147) = 4.39$; $p < .05$) by accounting for about 15% of the explained variance in sexual risk behaviour among the drivers. It is concluded that all the psychological and social factors examined as predictor variables could jointly play important roles in prevention intervention programmes for reducing sexual risk behaviours of LDTDs. Stakeholders should sensitise LDTDs on the need to realise that they are a high-risk group and are more vulnerable to HIV infection; thus, behaviour change is indispensable in their sexual relationships.

Keywords: Nigeria; long distance truck drivers; psychological factors; risky sexual behaviour; social factors.

Lo, J., Nwafor, S. U., Schwitters, A. M., Mitchell, A., Sebastian, V., Stafford, K. A., Ezirim, I., Charurat, M., & McIntyre, A. F. (2021). Key Population Hotspots in Nigeria for Targeted HIV Program Planning: Mapping, Validation, and Reconciliation. *JMIR public health and surveillance*, 7(2), e25623. <https://doi.org/10.2196/25623>

Abstract

Background: With the fourth highest HIV burden globally, Nigeria is characterized as having a mixed HIV epidemic with high HIV prevalence among key populations, including female sex workers, men who have sex with men, and people who inject drugs. Reliable and accurate mapping of key population hotspots is necessary for strategic placement of services and allocation of limited resources for targeted interventions. **Objective:** We aimed to map and develop a profile for the hotspots of female sex workers, men who have sex with men, and people who inject drugs in 7 states of Nigeria to inform HIV prevention and service programs and in preparation for a multiple-source capture-recapture population size estimation effort. **Methods:** In August 2018, 261 trained data collectors from 36 key population-led community-based organizations mapped, validated, and profiled hotspots identified during the formative assessment in 7 priority states in Nigeria designated by the United States President's Emergency Plan for AIDS Relief. Hotspots were defined as physical venues wherein key population members frequent to socialize, seek clients, or engage in key population-defining behaviors. Hotspots were visited by data collectors, and each hotspot's name, local government area, address, type, geographic coordinates, peak times of activity, and estimated number of key population members was recorded. The number of key population hotspots per local government area was tabulated from the final list of hotspots. **Results:** A total of 13,899 key population hotspots were identified and mapped in the 7 states, that is, 1297 in Akwa Ibom, 1714 in Benue, 2666 in Cross River, 2974 in Lagos, 1550 in Nasarawa, 2494 in Rivers, and 1204 in Federal Capital Territory. The most common hotspots were those frequented by female sex workers (9593/13,899, 69.0%), followed by people who inject drugs (2729/13,899, 19.6%) and men who have sex with men (1577/13,899, 11.3%). Although hotspots were identified in all local government areas visited, more hotspots were found in metropolitan local government areas and state capitals. **Conclusions:** The number of key population hotspots identified in this study is more than that previously reported in similar studies in Nigeria. Close collaboration with key population-led community-based organizations facilitated identification of many new and previously undocumented key population hotspots in the 7 states. The smaller number of hotspots of men who have sex with men than that of female sex workers and that of people who inject drugs may reflect the social pressure and stigma faced by this population since the enforcement of the 2014 Same Sex Marriage (Prohibition) Act, which prohibits engaging in intimate same-sex relationships, organizing meetings of gays, or patronizing gay businesses.

Keywords: HIV; Nigeria; female sex workers; hotspot mapping; key population; men who have sex with men; people who inject drugs.

Mbachu, C., Okoli, C., Onwujekwe, O., & Enabulele, F. (2018). Willingness to pay for antiretroviral drugs among HIV and AIDS clients in south-east Nigeria. *Health expectations : an international journal of public participation in health care and health policy*, 21(1), 270–278. <https://doi.org/10.1111/hex.12612>

Abstract

Background: The current trend of withdrawal of donor support for HIV/AIDS treatment in Nigeria may require that the cost of antiretroviral drugs be borne in part by infected people and their families. **Objective:** This study was conducted to determine the economic value for free antiretroviral drugs (ARVs) expressed by clients receiving treatment for HIV/AIDS in a tertiary hospital. **Study method:** The contingent valuation method was used to elicit the values attached to free ARVs from people living with HIV/AIDS that were receiving care in a public tertiary hospital in south-east Nigeria. Exit poll using a pre-tested questionnaire was undertaken with adult clients on treatment. The bidding game technique was used to elicit their willingness to pay (WTP) for ARVs for themselves and members of their households. Ordinary least squares (OLS) multiple regression analysis was used to test the construct validity of elicited WTP amounts. **Results:** About a third of the respondents were willing to pay for a monthly supply of ARVs for themselves and household members. The mean WTP for monthly supply of ARVs for self was US\$15.32 and for household member was US\$15.26 (1US\$=N160). OLS regression analysis showed that employment status and higher socio-economic status were positively associated with higher WTP. OLS showed that age and transport cost per clinic visit were negatively related to WTP. Knowing the risks of not adhering to treatment protocol was positively related to WTP.

Conclusion: The respondents positively valued the free ARVs. This calls for greater financial support for the sustainable provision of the treatment service. However, holistic financing mechanisms should be explored to ensure sustained funding in the event of complete withdrawal of donor support.

Keywords: HIV and AIDS; antiretroviral drugs; clients; willingness to pay.

Meloni, S. T., Agaba, P., Chang, C. A., Yiltok, E., Oguche, S., Ejeliogu, E., Agbaji, O., Okonkwo, P., & Kanki, P. J. (2020). Longitudinal evaluation of adherence, retention, and transition patterns of adolescents living with HIV in Nigeria. *PloS one*, *15*(7), e0236801. <https://doi.org/10.1371>

Abstract

Introduction: Adherence to antiretroviral therapy (ART) and retention in treatment programs are required for successful virologic suppression and treatment outcomes. As the number of adolescents living with HIV continues to increase globally, more information about adherence and retention patterns during and through transition from child- to adult-centered care is needed to ensure provision of a high level of care and inform development of targeted interventions to improve patient outcomes in this vulnerable population. In this analysis, we sought to describe long-term trends in adherence, retention, and virologic suppression in adolescents receiving ART at a pediatric HIV clinic in Nigeria through transition to the adult clinic. **Setting:** The Jos University Teaching Hospital, United States President's Emergency Plan for AIDS Relief (PEPFAR)-funded HIV clinic in Jos, Plateau State, Nigeria. **Methods:** We conducted a retrospective observational longitudinal evaluation of data that had been collected during the course of care in a large pediatric ART program in Nigeria. We used descriptive statistics to define our patient population and quantify retention from ART

initiation through adolescence and transition to adult-centered care. Logistic regression was used to evaluate predictors of loss to follow-up. We used medication possession ratio (MPR) to quantify adherence for each year a patient was on ART. To evaluate adherence and virologic suppression, we measured the proportion of patients with $\geq 95\%$ MPR and the proportion with virologic suppression (viral load ≤ 400 copies/mL) within each age cohort, and used bivariate analyses to examine any association between MPR and VL suppression for all person-years observed. **Results:** A total of 476 patients received at least one dose of ART as an adolescent (ages 10-19 years). The proportions of patients lost to follow-up were: 11.9% (71/597) prior to adolescence, 19.1% (31/162) during adolescence, and 13.7% (10/73) during transition to adult-centered care. While over 80% of patients had $\geq 95\%$ medication adherence in all age groups, their viral load suppression rates through adolescence and post-transition were only 55.6%-64.0%. For patients that successfully transitioned to adult-centered care, we observed 87.7% (50/57) retention at month 12 post-transition, but only 34.6% (9/26) viral load suppression. **Conclusions:** Our evaluation found considerable proportions of adolescents lost to follow-up throughout the ART program cascade. We also found discrepancies between the proportions of patients with $\geq 95\%$ MPR and the proportions with VL suppression, suggesting that true medication adherence in this population may be poor. Significant attention and targeted interventions to improve retention and adherence focused on adolescents are needed in order for global programs to achieve 90-90-90 goals.

Meloni, S. T., Onwuamah, C. K., Agbaji, O., Chaplin, B., Olaleye, D. O., Audu, R., Samuels, J., Ezechi, O., Imade, G., Musa, A. Z., Odaibo, G., Okpokwu, J., Rawizza, H., Mu'azu, M. A., Dalhatu, I., Ahmed, M., Okonkwo, P., Raizes, E., Ujah, I., Yang, C., ... Kanki, P. J. (2017). Implication of First-Line Antiretroviral Therapy Choice on Second-Line Options. *Open forum infectious diseases*, 4(4), ofx233. <https://doi.org/10.1093/ofid/ofx233>

Abstract

Background: Although there are a number of studies comparing the currently recommended preferred and alternative first-line (1L) antiretroviral therapy (ART) regimens on clinical outcomes, there are limited data examining the impact of 1L regimen choice and duration of virologic failure (VF) on accumulation of drug resistance mutations (DRM). The patterns of DRM from patients failing zidovudine (AZT)-containing versus tenofovir (TDF)-containing ART were assessed to evaluate the predicted susceptibility to second-line (2L) nucleoside reverse-transcriptase inhibitor (NRTI) backbone options in the context of an ongoing programmatic setting that uses viral load (VL) monitoring. **Methods:** Paired samples from Nigerian ART patients who experienced VF and switched to 2L ART were retrospectively identified. For each sample, the human immunodeficiency virus (HIV)-1 polymerase gene was sequenced at 2 time points, and DRM was analyzed using Stanford University's HIVdb program. **Results:** Sequences were generated for 191 patients. At time of 2L switch, 28.2% of patients on AZT-containing regimens developed resistance to TDF, whereas only 6.8% of patients on TDF-containing 1L had mutations compromising susceptibility to AZT. In a stratified evaluation, patients with 0-6 months between tested VL samples had no difference in proportion

compromised to 2L, whereas those with >6 months between samples had a statistically significant difference in proportion with compromised 2L NRTI. In multivariate analyses, patients on 1L AZT had 9.90 times higher odds of having a compromised 2L NRTI option than patients on 1L TDF. **Conclusions:** In the context of constrained resources, where VL monitoring is limited, we present further evidence to support use of TDF as the preferred 1L NRTI because it allows for preservation of the recommended 2L NRTI option.

Keywords: antiretroviral therapy; drug resistance; tenofovir; viral load monitoring; zidovudine.

Morhason-Bello, I. O., & Fagbamigbe, A. F. (2020). Association between Knowledge of Sexually Transmitted Infections and Sources of the Previous Point of Care among Nigerians: Findings from Three National HIV and AIDS Reproductive Health Surveys. *International journal of reproductive medicine*, 2020, 6481479. <https://doi.org/10.1155/2020/6481479>

Abstract

Background. Adequate knowledge of sexually transmitted infections (STIs) is critical for effective control of disease. Health education/counselling at the point of care provides ample opportunities to improve knowledge of patient seeking treatment. There is no study from Nigeria that investigates association between sources of previous point of care of STI and quality of knowledge of people on STI. We hypothesised that previous treatment of STI will be associated with better knowledge of STI and HIV infection. **Methods.** Three consecutive nationally representative cross-sectional surveys on HIV and AIDS Reproductive Health in Nigeria, conducted in 2005, 2007, and 2012 were analysed. Outcome measures were knowledge of STI only, and a combined knowledge of STI and HIV transmission and prevention. We designed a knowledge scale of 14-item questions for STI and 41-item questions for STI and HIV. Logistic regression was used to identify risk factors at 5% significance level. **Results.** Knowledge of STI increased from 13.4% in 2005 to 15.0% in 2007 to 26.5% in 2012. Respondents that received treatment from pharmacy and patient medicine vendors had higher odds of good knowledge of STI than those who did not receive any treatment (aOR = 2.55) in 2005. In 2012, respondents treated at health facilities were over two times likely to have good knowledge of STI and HIV transmission and prevention (aOR = 2.35). STI positive individuals in the highest economic class were two times likely to have good knowledge of STI and HIV transmission and prevention than those in the lowest class. **Conclusion.** Participants that previously sought care from health facilities, pharmacy, and patient medicine vendors had better knowledge of STIs and HIV infection prevention and transmission than those who sought care from unorthodox sources. We recommend a national awareness creation on STI prevention including provision of information on safe point of care for STIs in Nigeria.

Muhammad Hamid, A., Tamam, E., & Nizam Bin Osman, M. (2020). Relationships between Media Exposure and Knowledge, Attitude, and Practice on HIV/AIDS: A Cross Sectional Survey

of Adolescent *Islamiyya* Girls in Nigeria. *Health communication*, 35(4), 419–429. <https://doi.org/10.1080/10410236.2018.1564960>

Abstract

Exposure to HIV/AIDS media among adolescents in sub-Saharan Africa was reported as low in the early 2000s, but now given developments in technology and program appeal, there emerges a need for reassessment. Given that communication, particularly through the media plays a major role in stemming the spread of the epidemic, this study examines the HIV/AIDS media exposure, knowledge, attitude, and practice (KAP) of adolescent *Islamiyya* girls in northern Nigeria as a predominantly Muslim society. The objectives of the study were to (1) identify the girls' major sources of information on HIV/AIDS; (2) assess their exposure to HIV/AIDS media and their HIV/AIDS knowledge, attitude and practice; and (3) verify relationships between media exposure and HIV/AIDS KAP. Based on the Advertising Research Foundation's Hierarchy of Effects model, hypotheses were posed to test the relationships. A questionnaire survey was administered on a randomly selected sample of 500 *Islamiyya* girls in Bauchi, Nigeria, from an estimated population of 35,000. Results were analyzed using descriptive statistics and partial least squares structural equation modeling. The results showed media exposure is not a significant predictor of HIV/AIDS practice, but it is a significant predictor of HIV/AIDS knowledge. And HIV/AIDS knowledge significantly predicted both HIV/AIDS attitude and practice. HIV/AIDS attitude also significantly predicted HIV/AIDS practice. It is thus concluded that among Nigerian adolescent girls, exposure to HIV/AIDS media is a necessary but not a sufficient predictor of HIV/AIDS KAP.

Mukhtar-Yola, M., Kuczawski, M., & Oniyangi, O. O. (2020). Should children know their HIV status? Prevalence, caregiver's perspectives and barriers to disclosure at the National Hospital Abuja, Nigeria. *Nigerian journal of clinical practice*, 23(10), 1419–1425. <https://doi.org/10.4103/njcp.njcp.187.20>

Abstract

Background: Nigeria ranks second globally with a HIV/AIDS prevalence of 3.2%. HIV infected children are surviving to adolescence because of anti-retroviral therapy, but many do not know why they need to take these medicines. Disclosure is critical to long-term disease management, yet, if, how and when caregivers and or health professionals disclose to children is not well known in resource-limited settings. The barriers to disclosure remain largely undocumented. **Objectives:** To determine the prevalence and age of HIV disclosure to children in Abuja, Nigeria and identify caregivers perspectives as well as barriers to disclosure. **Methods:** A cross-sectional study was done June-July 2016 using a structured questionnaire, convenience sampling and quantitative methods at the infectious disease clinics of National Hospital Abuja. A sample of 164 caregivers of HIV-positive children aged 5-16 years receiving antiretroviral therapy for at least 1 year were enrolled. **Results:** Prevalence of full disclosure was 24.5%, partial disclosure 22.7%, with overall prevalence of 47.2%. Mean age at full disclosure was 11.87 years. Bivariate analysis showed significant difference between disclosure and child's level of education (χ^2 for trend 26.710, $P < 0.001$), support for disclosure

(χ^2 4.399, $P = 0.036$) and if caregiver held the opinion that children should have disclosure done (Pearson's χ^2 30.174, $P < 0.001$). However, on logistic regression, only the age of the child ($P < 0.001$, 95% CI 1.176-1.499) and the caregiver's opinion ($P = < 0.001$, 95% CI 4.914-2.542) remained significant. Various barriers to disclosure were identified. **Conclusion:** The prevalence of full disclosure is low and several barriers prevent early disclosure. Caregiver's and HCWs need empowerment with culturally appropriate skills and platforms to increase disclosure rates, which may help improve adherence.

Keywords: Barriers; HIV; children; disclosure.

Nasir, I. A., Emeribe, A. U., Ojeamiren, I., & Aderinsayo Adekola, H. (2017). Human Immunodeficiency Virus Resistance Testing Technologies and Their Applicability in Resource-Limited Settings of Africa. *Infectious diseases*, 10, 1178633717749597. <https://doi.org/10.1177/1178633717749597>

Abstract

There has been tremendous breakthrough in the development of technologies and protocols for counselling, testing, and surveillance of resistant human immunodeficiency virus strains for efficient prognosis and clinical management aimed at improving the quality of life of infected persons. However, we have not arrived at a point where services rendered using these technologies can be made affordable and accessible to resource-limited settings. There are several technologies for monitoring antiretroviral resistance, each with unique merits and demerits. In this study, we review the strengths and limitations of prospective and affordable technologies with emphasis on those that could be used in resource-limited settings.

Keywords: Antiretroviral resistance; HIV/AIDS; laboratory technology.

Ndembi, N., Murtala-Ibrahim, F., Tola, M., Jumare, J., Aliyu, A., Alabi, P., Mensah, C., Abimiku, A., Quiñones-Mateu, M. E., Crowell, T. A., Rhee, S. Y., Shafer, R. W., Gupta, R., Blattner, W., Charurat, M. E., & Dakum, P. (2020). Predictors of first-line antiretroviral therapy failure among adults and adolescents living with HIV/AIDS in a large prevention and treatment program in Nigeria. *AIDS research and therapy*, 17(1), 64. <https://doi.org/10.1186/s12981-020-00317-9>

Abstract

Background: A substantial number of persons living with HIV (PLWH) in Nigeria do not experience durable viral suppression on first-line antiretroviral therapy (ART). Understanding risk factors for first-line treatment failure informs patient monitoring practices and distribution of limited resources for second-line regimens. We determined predictors of immunologic and virologic failures in a large ART delivery program in Abuja, Nigeria. **Methods:** A retrospective cohort study was conducted at the University of Abuja Teaching Hospital, a tertiary health care facility, using data from February 2005 to December 2014 in Abuja,

Nigeria. All PLWH aged ≥ 15 years who initiated ART with at least 6-month follow-up and one CD4 measurement were included. Immunologic failure was defined as a CD4 decrease to or below pre-ART level or persistent CD4 < 100 cells per mm^3 after 6 months on ART. Virologic failure (VF) was defined as two consecutive HIV-1 RNA levels > 1000 copies/mL after at least 6 months of ART and enhanced adherence counselling. HIV drug resistance (Sanger sequences) was analyzed using the Stanford HIV database algorithm and scored for resistance to common nucleoside reverse transcriptase inhibitors (NRTIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs). Univariate and multivariate log binomial regression models were used to estimate relative risks (RRs) and 95% confidence intervals (CIs). **Results:** Of 12,452 patients followed, a total of 5928 initiated ART with at least 6 months of follow-up and one CD4 measurement. The entry point for 3924 (66.2%) was through the program's own voluntary counseling and testing (VCT) center, while 1310 (22.1%) were referred from an outside clinic/program, 332 (5.6%) in-patients, and 373 (6.3%) through other entry points including prevention of mother to child transmission (PMTCT) and transferred from other programs. The mean CD4 at enrollment in care was 268 ± 23.7 cells per mm^3 , and the mean HIV-1 RNA was $3.3 \pm 1.3 \cdot \log_{10}$ copies/mL. A total of 3468 (80.5%) received nevirapine (NVP) and 2260 (19.5%) received efavirenz (EFV)-based regimens. A total of 2140 (36.1%) received tenofovir (TDF); 2662 (44.9%) zidovudine (AZT); and 1126 (19.0%) stavudine (d4T). Among those receiving TDF, 45.0% also received emtricitabine (FTC). In a multivariate model, immunologic failure was more common among PLWH with female gender as compared to male [RR (95% CI) 1.22 (1.07-1.40)] and less common among those who entered care at the program's VCT center as compared to other entry points [0.79 (0.64-0.91)], WHO stage 3/4 as compared to 1/2 [0.19 (0.16-0.22)], or CD4 200 + cells per mm^3 as compared to lower [0.19 (0.16-0.22)]. Virologic failure was more common among PLWH who entered care at the program's VCT center as compared to other entry points [RR (95% CI) 1.45 (1.11-1.91) and those with CD4 < 200 cells per mm^3 at entry into care as compared to higher [1.71 (1.36-2.16)]. Of 198 patient-derived samples sequenced during virologic failure, 42 (21%) were wild-type; 145 (73%) carried NNRTI drug resistance mutations; 151 (76.3%) M184I/V; 29 (14.6%) had ≥ 3 TAMs, and 37 (18.7%) had K65R, of whom all were on TDF-containing first-line regimens. **Conclusions:** In this cohort of Nigerian PLWH followed for a period of 9 years, immunologic criteria poorly predicted virologic failure. Furthermore, a subset of samples showed that patients failing ART for extended periods of time had HIV-1 strains harboring drug resistance mutations.

Nazziwa, J., Faria, N. R., Chaplin, B., Rawizza, H., Kanki, P., Dakum, P., Abimiku, A., Charurat, M., Ndembu, N., & Esbjörnsson, J. (2020). Characterisation of HIV-1 Molecular Epidemiology in Nigeria: Origin, Diversity, Demography and Geographic Spread. *Scientific reports*, 10(1), 3468. <https://doi.org/10.1038/s41598-020-59944-x>

Abstract

Nigeria has the highest number of AIDS-related deaths in the world. In this study, we characterised the HIV-1 molecular epidemiology by analysing 1442 HIV-1 pol sequences collected 1999-2014 from four geopolitical zones in Nigeria using state-of-the-art maximum-likelihood and Bayesian phylogenetic analyses. The main circulating forms were the

circulating recombinant form (CRF) 02_AG (44% of the analysed sequences), CRF43_02G (16%), and subtype G (8%). Twenty-three percent of the sequences represented unique recombinant forms (URFs), whereof 37 (11%) could be grouped into seven potentially novel CRFs. Bayesian phylodynamic analysis suggested that five major Nigerian HIV-1 sub-epidemics were introduced in the 1960s and 1970s, close to the Nigerian Civil War. The analysis also indicated that the number of effective infections decreased in Nigeria after the introduction of free antiretroviral treatment in 2006. Finally, Bayesian phylogeographic analysis suggested gravity-like dynamics in which virus lineages first emerge and expand within large urban centers such as Abuja and Lagos, before migrating towards smaller rural areas. This study provides novel insight into the Nigerian HIV-1 epidemic and may have implications for future HIV-1 prevention strategies in Nigeria and other severely affected countries.

Negedu-Momoh, O. R., Balogun, O., Dafa, I., Etuk, A., Oladele, E. A., Adedokun, O., James, E., Pandey, S. R., Khamofu, H., Badru, T., Robinson, J., Mastro, T. D., & Torpey, K. (2021). Estimating HIV incidence in the Akwa Ibom AIDS indicator survey (AKAIS), Nigeria using the limiting antigen avidity recency assay. *Journal of the International AIDS Society*, 24(2), e25669. <https://doi.org/10.1002/jia2.25669>

Abstract

Introduction: HIV incidence estimates are important to characterize the status of an epidemic, identify locations and populations at high risk and to guide and evaluate HIV prevention interventions. We used the limiting antigen avidity assay (LAg) as part of a recent infection testing algorithm to estimate HIV incidence in the Akwa Ibom AIDS Indicator Survey (AKAIS), Nigeria. **Methods:** In 2017, AKAIS, a cross-sectional population-based study was conducted at the household (HH) level in 31 local government areas (LGAs) of Akwa Ibom state. Of the 8963 participants aged ≥ 15 years who were administered questionnaires for demographic and behavioural data, 8306 consented to HIV rapid testing. Whole-blood specimens were collected from 394 preliminary HIV-seropositive individuals for CD4+ cell count determination and plasma storage. Samples were shipped to a central quality laboratory for HIV confirmatory testing and viral load determination. A total of 370 HIV-positive specimens were tested for the recent HIV infection using the LAg assay. **Results:** Of the 8306 consenting adults, the HIV prevalence was 4.8%. Of the 370 HIV-positive samples tested for HIV recency, the median age was 35 years, 48.8% had CD4+ cell count $>500/\text{mm}^3$ and 81.3% was not virally suppressed. Viral suppression was greater among females (21%) than for males (13%). A total of 11 specimens were classified as recent based on the LAg assay and HIV viral load ≥ 1000 copies/mL. The weighted, adjusted HIV-1 incidence was 0.41/100 person-years (95% CI 0.16 to 0.66); translating to 13,000 new cases of HIV infections annually in Akwa Ibom, a state with a population of 5.5 million. The HIV incidence rate was similar in females and males (0.41% and 0.42% respectively). The incidence rate was the highest among participants aged 15 to 49 years (0.44%, 95% CI 0.15 to 0.74) translating to 11,000 new infections annually, about 85% of all new infections in the state. **Conclusions:** The finding of the high HIV incidence among the 15 to 49-year age group calls for renewed and innovative efforts to prevent HIV infection among young adults in Akwa Ibom state.

Keywords: HIV-1; Nigeria; incidence; limiting antigen avidity; recent infection; viral load.

Nnakenyi, I. D., Uchechukwu, C., & Nto-Ezimah, U. (2020). Prevalence of hepatitis B and C virus co-infection in HIV positive patients attending a health institution in southeast Nigeria. *African health sciences*, 20(2), 579–586. <https://doi.org/10.4314/ahs.v20i2.5>

Abstract

Background: The health of people living with HIV/AIDS becomes progressively worse when co-infected with hepatitis B virus (HBV) and hepatitis C virus (HCV), resulting in shortened life span. The modes of transmission of HIV, HBV and HCV are similar. **Objective:** To determine the prevalence of HBV and HCV co-infection in HIV patients. **Method:** This was a retrospective study of serology test results for hepatitis B surface antigen (HBsAg) and antibodies to HCV (anti-HCV) of HIV positive patients registered from 2008-2013 (6years) at the University of Nigeria Teaching Hospital. Adult patients with confirmed HIV seropositivity were included. Ethical approval was obtained and confidentiality of the patient information was maintained. Laboratory records were reviewed to obtain HBsAg, anti-HCV, and CD4 T-lymphocyte results. Prevalence was determined by the number of positive results over total number of patients tested. Chi-square test was used to determine relationships and $p < 0.05$ was considered to be statistically significant. **Results:** 4663 HIV patient records were included comprising 3024 (65%) females and 1639 (35%) males. Serology results showed 365/4663 (7.8%) tested HBsAg-positive only; 219/4663 (4.7%) tested anti-HCV-positive only; and 27/4663 (0.58%) tested both HBsAg and anti-HCV-positive. Correlation of age and sex were statistically significant with HBV and HCV ($p < 0.05$) but not CD4 count ($p > 0.05$). **Conclusion:** HBV co-infection was more prevalent than HCV, and triple infection was also observed. Screening for these viral infections in the HIV population is necessary for early identification to enable appropriate, holistic management of these patients.

Keywords: HIV; Hepatitis B virus; Hepatitis C virus; co-infection.

Nowak, R. G., Bentzen, S. M., Ravel, J., Crowell, T. A., Dauda, W., Ma, B., Liu, H., Blattner, W. A., Baral, S. D., Charurat, M. E., & TRUSTRV368 Study Group (2017). Rectal microbiota among HIV-uninfected, untreated HIV, and treated HIV-infected in Nigeria. *AIDS (London, England)*, 31(6), 857–862.

Abstract

Objective: Untreated advanced HIV infection alters the gut microbiota, but it is unclear whether antiretroviral therapy (ART) reverses these changes. We compared the composition of the rectal microbiota among three groups of men who have sex with men (MSM): HIV-uninfected, untreated HIV, and ART-treated HIV-infected. **Design:** A cross-sectional study was conducted among 130 MSM (55 HIV-uninfected, 41 untreated HIV, and 34 ART-treated HIV) in Abuja, Nigeria. **Methods:** Bacterial 16S rRNA genes were amplified from rectal swabs, sequenced and clustered into Genera-level operational taxonomic units. Alpha diversity was

quantified using the Shannon index and compared among groups using the Kruskal-Wallis test; associations with other scale variables were quantified using Spearman's rank correlation (R_s). The relative abundance of the top 15 taxa was compared according to HIV infection/treatment status using the Wilcoxon rank sum test. **Results:** HIV-treated MSM had a decrease in a commensal phylum, Bacteroidetes ($P < 0.01$). Alpha diversity was positively correlated with viral loads ($R_s = 0.32$, $P < 0.01$). Statistically significant shifts in relative abundance of rectal microbiota for the HIV-treated group included a decrease in the most abundant bacteria, *Prevotella* ($P = 0.02$) and an increase in pathogenic bacteria, *Peptoniphilus* ($P = 0.04$), *Fingoldia* ($P = 0.01$), *Anaerococcus* ($P = 0.03$), and *Campylobacter* ($P = 0.03$) compared with the other groups. **Conclusion:** Untreated HIV infection does not significantly alter the rectal microbiota, whereas prior treatment is associated with a shift toward a more pathogenic pattern of microbiota. Treatment with an antibiotic, co-trimoxazole, in conjunction with ART may have contributed to this shift.

Nwimo, I. O., Elom, N. A., Ilo, C. I., Ojide, R. N., Ezugwu, U. A., Eke, V. U., & Ezugwu, L. E. (2020). HIV/AIDS knowledge and attitude towards people living with HIV/AIDS (PLWHA): a cross-sectional study of primary school teachers. *African health sciences*, 20(4), 1591–1600. <https://doi.org/10.4314/ahs.v20i4.11>

Abstract

Background: Teachers are in advantage position to propagate correct information with regard to HIV/AIDS thereby influencing attitude towards PLWHA. With correct information stigmatization leading to spread of the scourge might be prevented. **Aims & objectives:** The study was conducted to determine knowledge and attitude of primary school teachers towards PLWHA. **Methods & materials:** The cross-sectional survey was used to study a sample of 400 primary school teachers in Ebonyi State, Nigeria. The instrument used for data collection was researchers' designed questionnaire. Out of 400 copies of questionnaire administered; 394 representing 98.5% return rate, were used for analysis of data. **Results:** Results showed respondents had moderate (57.4%) knowledge concerning HIV/AIDS and positive attitude (3.09 ± 0.98) to PLWHA. Female teachers' dispositions to PLWHA were better than the males based on their attitude scores and the difference was not significant in general knowledge of HIV/AIDS and attitude to PLWHA. **Conclusion:** Our findings underscore the need for a universal health education programme, focusing on HIV/AIDS education, in education institutions that train teachers in Nigeria so as to possibly mitigate the discrepancy in knowledge regarding curability of AIDS and any undesirable attitude towards PLWHA that may arise among teachers.

Keywords: HIV/AIDS; PLWHA; attitude; knowledge; primary school; teachers.

Nwogu, J. N., Babalola, C. P., Ngene, S. O., Taiwo, B. O., Berzins, B., & Gandhi, M. (2019). Willingness to Donate Hair Samples for Research Among People Living with HIV/AIDS

Attending a Tertiary Health Facility in Ibadan, Nigeria. *AIDS research and human retroviruses*, 35(7), 642–648. <https://doi.org>

Abstract

The use of hair samples in biomedical research is a rapidly growing field. High acceptability rates for hair collection have been demonstrated in multiple settings. Each setting may have unique issues and, to our knowledge, no previous study has assessed the acceptability of hair sampling for HIV-related research in Nigeria. This study aimed to assess the willingness to donate hair for research among people living with HIV (PLWH). A cross-sectional study was conducted among 381 PLWH in a tertiary institution in Southwest Nigeria, using convenience sampling. An interviewer-administered questionnaire was used to collect data from consenting participants, including a question on willingness to donate hair for research. The mean age of respondents was 42.1 ± 10.5 years and more than three-quarters of the respondents were females. Two hundred and eighty-eight (75.8%) respondents had at least a tertiary education. Only 51.4% of the respondents were willing to donate their hair for research. Possible sample diversion for rituals was the major (60.5%) reason cited for unwillingness to donate hair. In multivariate analysis, respondents with primary education or less exhibited a trend toward being more willing to donate hair than those with secondary education or more ($p = .091$). Muslims were 1.7 times more willing to donate hair than Christians even after adjusting for other demographic covariates (95% confidence interval: 1.11-2.72); $p = .016$. There is a moderate willingness to donate hair for research among our population of PLWH in Nigeria. These results underscore the importance of cultural sensitivity and community education when introducing innovative HIV research techniques to new settings.

Keywords: HIV; acceptability rate; adherence monitoring; antiretroviral drugs; beliefs; biomedical research; hair collection.

Obebe, O. O., & Falohun, O. O. (2021). Epidemiology of malaria among HIV/AIDS patients in sub-Saharan Africa: A systematic review and meta-analysis of observational studies. *Acta tropica*, 215, 105798. <https://doi.org/10.1016/j.actatropica.2020.105798>

Abstract

Malaria related HIV morbidity and death is a concern in sub-Saharan Africa. Understanding the epidemiology of malaria among people living with HIV is vital for adequate intervention. We conducted a systematic review and meta-analysis to estimate the prevalence of malaria in HIV patients in sub-Saharan Africa. We searched PubMed, AJOL, Web of Science and Google Scholar databases. The overall pooled prevalence and pooled Odds Ratio (OR) with their 95% Confidence Intervals (CI) were estimated using the random-effects model and potential causes of heterogeneity in prevalence estimates were investigated using subgroup and meta-regression analysis. 58 studies, including 23,911 HIV patients, were identified between January 1990 and October 2020. The overall pooled prevalence of malaria in HIV patients was 22.7% (95% CI 18.0; 28.1). The Prevalence of malaria among HIV/AIDS patients was 33.1%,

30.2%, 15.3%, and 12.6% in Southern, Western, Central, and Eastern regions of SSA respectively. Prevalence of malaria in the central and western was higher [26.7% (95% CI 20.6; 33.9)] than 13.6% reported in the southern and eastern regions (95% CI 8.8; 20.5). There was a significant decrease in malaria prevalence among HIV/AIDS patients in the Eastern and Southern SSA regions from 21.9% (95% CI 15.5; 30.0) in the 2000-2010 period to 9.7% (95% CI 5.5-16.4) in the post-2010 period compared to the central and western regions. HIV infected patients with low CD4 + T cell count ($CD4 < 200$ cells/mm³) were 2.19 times more likely to become infected with malaria than those with high CD4 + T cell count ($CD4 \geq 200$ cells/mm³) (pooled odds ratio (POR): 2.19 (95%CI 1.20;3.98), while patients on antiretroviral therapy (POR): 0.37 (0.23; 0.59), and in WHO clinical stages I and II (POR): 0.64 (0.28; 1.46), had a lower odds of been infected with malaria. Our review suggests that due consideration should be given to malaria among HIV/AIDS patients in SSA. In particular, the assessment and improvement of preventive measures for malaria/HIV co-infection in high-prevalence regions is important. For the treatment of both diseases, prophylaxis with cotrimoxazole and antiretroviral therapy should also be encouraged.

Keywords: HIV/AIDS patients; Malaria; Meta-analysis; Prevalence; sub-Saharan Africa.

Obebe, O. O., & Falohun, O. O. (2021). Epidemiology of malaria among HIV/AIDS patients in sub-Saharan Africa: A systematic review and meta-analysis of observational studies. *Acta tropica*, 215, 105798. <https://doi.org/10.1016/j.actatropica.2020.105798>

Abstract

Malaria related HIV morbidity and death is a concern in sub-Saharan Africa. Understanding the epidemiology of malaria among people living with HIV is vital for adequate intervention. We conducted a systematic review and meta-analysis to estimate the prevalence of malaria in HIV patients in sub-Saharan Africa. We searched PubMed, AJOL, Web of Science and Google Scholar databases. The overall pooled prevalence and pooled Odds Ratio (OR) with their 95% Confidence Intervals (CI) were estimated using the random-effects model and potential causes of heterogeneity in prevalence estimates were investigated using subgroup and meta-regression analysis. 58 studies, including 23,911 HIV patients, were identified between January 1990 and October 2020. The overall pooled prevalence of malaria in HIV patients was 22.7% (95% CI 18.0; 28.1). The Prevalence of malaria among HIV/AIDS patients was 33.1%, 30.2%, 15.3%, and 12.6% in Southern, Western, Central, and Eastern regions of SSA respectively. Prevalence of malaria in the central and western was higher [26.7% (95% CI 20.6; 33.9)] than 13.6% reported in the southern and eastern regions (95% CI 8.8; 20.5). There was a significant decrease in malaria prevalence among HIV/AIDS patients in the Eastern and Southern SSA regions from 21.9% (95% CI 15.5; 30.0) in the 2000-2010 period to 9.7% (95% CI 5.5-16.4) in the post-2010 period compared to the central and western regions. HIV infected patients with low CD4 + T cell count ($CD4 < 200$ cells/mm³) were 2.19 times more likely to become infected with malaria than those with high CD4 + T cell count ($CD4 \geq 200$ cells/mm³) (pooled odds ratio (POR): 2.19 (95%CI 1.20;3.98), while patients on antiretroviral therapy (POR): 0.37 (0.23; 0.59), and in WHO clinical stages I and II (POR): 0.64 (0.28; 1.46), had a lower odds of been infected with malaria. Our review suggests that due consideration

should be given to malaria among HIV/AIDS patients in SSA. In particular, the assessment and improvement of preventive measures for malaria/HIV co-infection in high-prevalence regions is important. For the treatment of both diseases, prophylaxis with cotrimoxazole and antiretroviral therapy should also be encouraged.

Keywords: HIV/AIDS patients; Malaria; Meta-analysis; Prevalence; sub-Saharan Africa.

Obimakinde, A. M., Adebusoye, L., Achenbach, C., Ogunniyi, A., & Olaleye, D. (2020). Going Beyond Giving Antiretroviral Therapy: Multimorbidity in Older People Aging with HIV in Nigeria. *AIDS research and human retroviruses*, 36(3), 180–185. <https://doi.org/10.1089/AID.2019.0131>

Abstract

"Graying of HIV epidemic" is observed globally, as people living with HIV (PLWH) are aging, due to effectiveness of antiretrovirals. The normal aging processes and HIV-induced immune dysfunction, are potential mechanisms, driving multimorbidity (MM) in PLWH. MM is the concurrent presence of two or more diseases in a single individual. Aging PLWH, are at increased risk of acute and chronic morbidities compared with counterpart without HIV. Despite increasing concern in Nigeria, research on correlates of MM in aging PLWH is lagging. This was a comparative study, of ≥ 60 years of age, age-matched (± 5 years) HIV-positive and HIV-negative patients. Patients were recruited, from the Infectious Disease Institute and Geriatric clinics of the University College Hospital, Ibadan, Nigeria, between April and June 2018. MM was defined as the occurrence of more than two morbidities in an individual, and it was considered acute, when within 30 days and chronic, when above 3-months duration. Data analysis was done using SPSS 23. We studied 186 individuals (62 HIV-positive and 124 HIV-negative). The PLWH had lower mean age (63.9 vs. 68.1 years, $p = .00$, $t = 5.68$), more chronic MM (2.0 vs. 1.3, $p = .004$, $t = 2.970$), which occurred earlier (4.7 vs. 9.6 years, $p = .003$, $t = 3.05$), more overall MM (3.6 vs. 2.8, $p = .015$, $t = 2.448$), and lower quality of life (82.7 vs. 86.2, $p = .002$, $t = 3.130$). Risk estimates for "any" MM revealed the odds are in favor of the older PLWH [69.4% vs. 46.8%, $p = .004$, odds ratio = 0.388 (95% confidence interval = 0.204-0.740)]. Logistic regression revealed, age > 64 years, higher total body fat, lower nadir CD4 counts, and longer duration of HIV infection, were significantly associated with MM in aging PLWH ($p = .019$). Older individuals with HIV on antiretrovirals in Ibadan, had a significantly greater burden of MM compared with those without HIV. HIV treatment programs in Nigeria will need to adapt a comprehensive health care plan for aging PLWH.

Keywords: ART; PLWH; aging; multimorbidity; quality of life.

Ochonye, B., Folayan, M. O., Fatusi, A. O., Bello, B. M., Ajidagba, B., Emmanuel, G., Umoh, P., Yusuf, A., & Jaiyebo, T. (2019). Sexual practices, sexual behavior and HIV risk profile of key populations in Nigeria. *BMC public health*, 19(1), 1210. <https://doi.org/10.1186/s12889-019-7553-z>

Abstract

Background: There is little evidence on the need for differentiated HIV prevention services for men who have sex with men (MSM), female sex workers (FSW) and people who inject drugs (PWID) in Nigeria. The aim of the study was to determine and compare the HIV sexual risk profiles of FSW, MSM and PWID resident in Nigeria; and identify factors associated with condom use among the groups. This will help identify if differentiated HIV prevention services are needed for MSM, FSW and PWID in Nigeria. **Methods:** This is a cross-sectional study. Data on sexual practices (anal, vaginal and oral sex), history of alcohol and psychoactive substance use, and high risk sexual behaviors for HIV infection (inconsistent use of condom) was collected from study FSW, MSM and PWID resident in Enugu, Nassarawa, Benue, and Akwa-Ibom States of Nigeria between April and June, 2015. Association between sexual practices, alcohol and psychoactive substance use, and HIV sexual risk behaviors; and differences in sexual risk behaviors of MSM, FSW and PWID were determined using Pearson chi-square for categorical variables, and t-test for continuous variables. Determinants of condom use in the last 30 days were identified using logistic regression analysis. **Results:** The study population consisted of 188 (38.5%) FSW, 145 (29.7%) MSM and 155 (31.8%) PWID. MSM (AOR: 0.17; 95%CI: 0.05-0.67; $p = 0.01$) and PWID (AOR: 0.07; 95%CI: 0.02-0.21; $p < 0.001$) were significantly less likely than FSW to have used condom in the last 30 days. A lower proportion of FSW and PWID used condom during anal sex in the last 12 months when compared with MSM ($p < 0.001$ respectively). The proportion of MSM (23.5%) and FSW (23.4%) who had ever used psychoactive drugs was high. Of those who had ever used psychoactive drugs, 25.0% of FSW and 29.4% of MSM had injected drugs in the last 30 days of the survey. Also, 39.3% of PWID shared needles and syringes. The use of psychoactive substances (AOR: 5.01; 95%CI: 2.59-9.68; $p < 0.001$) and the ability to negotiate condom use (AOR: 2.04; 95%CI: 1.06-3.93; $p = 0.03$) were factors associated with condom use in the last 30 days of the survey. **Conclusion:** HIV prevention programs designed for MSM, FSW and PWID need to address inconsistent condom use during sex by addressing condom negotiation skills. This sexual risk behavior is common to the three groups.

Keywords: Female sex workers; Key populations; Men who have sex with men; Nigeria; People who inject drugs; Sexual behavior; Sexual practices.

Ochonye, B., Folayan, M. O., Fatusi, A. O., Emmanuel, G., Adepoju, O., Ajidagba, B., Jaiyebo, T., Umoh, P., & Yusuf, A. (2019). Satisfaction with use of public health and peer-led facilities for HIV prevention services by key populations in Nigeria. *BMC health services research*, 19(1), 856. <https://doi.org/10.1186/s12913-019-4691-z>

Abstract

Background: The aim of the study was to identify the proportion of female sex workers, men who have sex with men, and people who inject drugs who had accessed HIV prevention services at public health facilities and peer-led facilities, their level of satisfaction with these services, and perceived barriers and challenges to accessing HIV services from public and peer-led HIV prevention service providers. **Methods:** A mixed-method approach was used to

collect data from key populations in the four states in Nigeria. Quantitative data collected included level of satisfaction with and barriers to use of public and peer-led facilities. In-depth interviews and focus-group discussions were conducted to explore reasons for satisfaction with and barriers to use of services. Descriptive and bivariate analyses were conducted for quantitative data. Qualitative data were summarised, emerging themes identified, described and quotes reflecting the themes corresponding to interview questions highlighted. **Results:** Nine hundred sixty-seven persons responded to questions on the use of public health or/and peer-led facilities. Two hundred thirty-eight (49.4%) respondents had received HIV and sexual and reproductive health services through public health facilities, and 236 (48.7%) had received the services through peer-led facilities. Significantly more respondents were satisfied with the quality of services provided by peer-led organisations than with public health facilities with respect to service providers listening to respondent's problems and concerns ($p = 0.007$), privacy and confidentiality ($p = 0.04$) and respect of rights of service recipients ($p = 0.04$). Significantly more respondents using peer-led organisations than those using public health facilities identified no barriers to service access ($p = 0.003$). More respondents using public health facilities than peer-led facilities identified cost of services ($p = 0.01$), confidentiality ($p = 0.002$), waiting time ($p < 0.01$) and staff attitude ($p = 0.001$) as barriers to service access. There was no difference in the proportion of respondents willing to discontinue their use of either facilities ($p = 0.08$). Qualitative data revealed that concerns with access of services at the public health facility were due mainly to stigma and the effects of the same-sex prohibition law. **Conclusion:** Key populations were more satisfied receiving HIV prevention services at peer-led organisations than at public health facilities.

Keywords: HIV prevention services; Health services; Key populations; Nigeria; Peer-led organisations; Public-health facilities; Same-sex prohibition law; Stigma.

Odafe, S., Stafford, K. A., Gambo, A., Onotu, D., Swaminathan, M., Dalhatu, I., Ene, U., Ademola, O., Mukhtar, A., Ramat, I., Akipu, E., Debem, H., Boyd, A. T., Sunday, A., Gobir, B., & Charurat, M. E. (2019). Health Workers' Perspectives on the Outcomes, Enablers, and Barriers to the Implementation of HIV "Test and Treat" Guidelines in Abuja, Nigeria. *Journal of AIDS and HIV treatment*, 1(2), 33–45.

Abstract

We evaluated health workers' perspectives on the implementation of the 2016 HIV "Test and Treat" guidelines in Nigeria. Using semi-structured interviews, qualitative data was collected from twenty health workers meeting inclusion criteria in six study sites. Data exploration was conducted using thematic content analysis. Participants perceived that the "Test and Treat" guidelines improved care for PLHIV, though they also perceived possible congested clinics. Perceived key factors enabling guidelines use were perceived patient benefits, availability of policy document and trainings. Perceived key barriers to guidelines use were poverty among patients, inadequate human resources and stock-outs of HIV testing kits. Further improvements in uptake of guidelines could be achieved by effecting an efficient supply chain system for HIV testing kits, and improved guidelines distribution and capacity building prior to implementation. Additionally, implementing differentiated approaches that decongest

clinics, and programs that economically empower patients, could improve guidelines use, as Nigeria scales "Test and Treat" nationwide.

Keywords: Barriers; Guidelines; HIV/AIDS; Health workers' perceptions; Test and Treat; Treat All; enablers.

Odiachi, A., Al-Mujtaba, M., Torbunde, N., Ereka, S., Afe, A. J., Adejuyigbe, E., Galadanci, H. S., Jasper, T. L., Cornelius, L. J., & Sam-Agudu, N. A. (2021). Acceptability of mentor mother peer support for women living with HIV in North-Central Nigeria: a qualitative study. *BMC pregnancy and childbirth*, 21(1), 545. <https://doi.org/10.1186/s12884-021-04002-1>

Abstract

Background: Mentor mothers provide psychosocial and other support to pregnant and postpartum women living with HIV (WLHIV), which has been shown to enhance maternal-infant outcomes in the prevention of mother-to-child transmission of HIV (PMTCT). Our objective was to assess the acceptability of mentor mothers as a PMTCT intervention, and to explore opinions on mentor mother program composition and delivery among stakeholders in North-Central Nigeria. **Methods:** We conducted nine focus group discussions and 31 in-depth interviews with 118 participants, including WLHIV, pregnant women, male partners, health workers, traditional birth attendants, community leaders, PMTCT program implementers, and policymakers. Participants were purposively recruited from health facilities and surrounding communities in the Federal Capital Territory and Nasarawa State. Transcripts were manually analysed using a Grounded Theory approach, where theory was derived from the data collected. **Results:** Most participants were female (n = 78, 67%), and married (n = 110, 94%). All participant groups found mentor mothers acceptable as women providing care to pregnant and postpartum women, and as WLHIV supporting other WLHIV. Mentor mothers were uniquely relatable as role models for WLHIV because they were women, living with HIV, and had achieved an HIV-negative status for their HIV-exposed infants. Mentor mothers were recognized as playing major roles in maternal health education, HIV treatment initiation, adherence, and retention, HIV prevention for male partners and infants, and couple HIV disclosure. Most WLHIV preferred to receive mentor mothers' services at health facilities rather than at home, due to concerns about HIV-related stigma and discrimination through association with mentor mothers. Key mentor mother needs were identified as training, remuneration, and validation as lay health workers. **Conclusions:** Mentor mothers are an acceptable PMTCT intervention among stakeholders in North-Central Nigeria. However, stigma and discrimination for both mentor mothers and their clients remain a critical challenge, and mentor mother needs such as training, pay, and a sustainably supported niche in health systems require focused attention. **Trial registration:** Clinicaltrials.gov registration number ([NCT01936753](https://clinicaltrials.gov/ct2/show/study/NCT01936753)), registered on September 3, 2013 (retrospectively registered).

Keywords: Counseling; Expert mothers; HIV; Mentor mothers; Nigeria; PMTCT; Peer support.

Odimegwu, C. O., Alabi, O., De Wet, N., & Akinyemi, J. O. (2018). Ethnic heterogeneity in the determinants of HIV/AIDS stigma and discrimination among Nigeria women. *BMC public health*, 18(1), 763. <https://doi.org/10.1186/s12889-018-5668-2>

Abstract

Background: Stigma and discrimination remains a barrier to uptake of HIV/AIDS counselling and treatment as well as effective HIV reduction programmes. Despite ethnic diversity of Nigeria, studies on determinants of HIV stigma incorporating the ethnic dimension are very few. This paper provides empirical explanation of the ethnic dimension of determinant of HIV stigma and discrimination in Nigeria. **Methods:** Nationally representative data from Nigerian Demographic and Health Survey 2013 (Individual recode) was analysed to explore ethnic differentials and homogeneity in the determinants of HIV/AIDS stigma and discrimination among women in multi-ethnic Nigeria. **Results:** Result shows that determinants of HIV stigma and discrimination varies by ethnicity in Nigeria. Significant ethnic differentials in HIV/AIDS stigma and discrimination by Secondary school education exist among Hausa and Igbo respectively (OR = 0.79; CI: 1.49-2.28 and OR=1.62; CI: 1.18-2.23, $p < 0.05$). Wealth status significantly influenced HIV/AIDS stigma and discrimination among Hausa, Igbo and Yoruba ethnic groups ($p < 0.05$). Knowledge of HIV/AIDS was significantly associated with lower odds of discriminating attitudes among the Hausa and Fulani ethnic groups (OR = 0.45; CI: 0.30-0.67 and OR=0.36; CI: 0.16-0.83, $p < 0.05$). **Conclusions:** Identifying ethnic differential and homogeneity in predictors of HIV/AIDS stigma is key to reducing HIV/AIDS prevalence in Nigeria and countries with similar settings.

Keywords: Discrimination; Ethnicity; HIV/AIDS; NDHS; Nigeria; Stigma.

Oduenyi, C., Ugwa, E., Ojukwu, Z., & Ojukwu-Ajasigwe, J. (2019). An Exploratory Study of Stigma and Discrimination among People Living with HIV/ AIDS in Abuja Municipal Area Council, Nigeria. *African journal of reproductive health*, 23(1), 88–99. <https://doi.org/10.29063/ajrh2019/v23i1.9>

Abstract

This study examined the magnitude of HIV/AIDS stigma and discrimination among people living with HIV/AIDS (PLWHA) in Abuja Municipal Area Council (AMAC). A descriptive cross-sectional study was conducted using both qualitative and quantitative methods to survey 100 PLWHA resident in AMAC-FCT. Participants were selected through a combination of two-stage and systematic random sampling technique using a table of random numbers. A 40-item structured questionnaire adapted from the HIV Stigma Scale and a semi-structured focus group discussion (FGD) guide were used to collect data. Quantitative data were coded and entered SPSS statistical software. Frequency tables were generated, and data subjected to descriptive and inferential statistics. Cross tabulations examined pattern of associations between respondent's characteristics while qualitative findings utilized content analysis along five specific themes to demonstrate the way HIV/AIDS stigma manifested among respondents. Participation was 100% and HIV/AIDS stigma prevalence was high at 67%, with

mean age 33.01years (SD±5.94years) for respondents. Findings confirmed rejection of PLWHA by sexual partners, family members and friends, dismissal from work, decrease in the quality of health care services and sometimes outright denial of services. A high correlation was found between the scales and subscales of the HIV Stigma Scale with all correlation values reaching statistical significance ($p = 0.01$). Regret for disclosure of status and ending social interaction by PLWHA was reported as consequences of disclosure and potential hindrance for disclosure which will encourage ongoing transmission of the virus. Our study provides evidence on stigma and discrimination of PLWHA in AMAC, FCT-Abuja in the face of limited evidence to drive HIV prevention interventions. Further studies should investigate other predictors and reasons for stigma and discrimination among this population.

Keywords: AMAC; Abuja-FCT; Discrimination; HIV/AIDS; PLWHA; Stigma.

Odukoya, O., Badejo, O., Sodeinde, K., & Olubodun, T. (2020). Behavioral risk factors for hypertension among adults living with HIV accessing care in secondary health facilities in Lagos State, Nigeria. *Journal of family medicine and primary care*, 9(7), 3450–3457. <https://doi.org/10.4103/jfmpc.ifmpc.544.20>

Abstract

Background: Excess risk for cardiovascular disease, especially hypertension, may exist among human immunodeficiency virus infection (HIV)-positive persons. This study was carried out to assess the prevalence of the behavioral risk factors for hypertension, including their awareness of these factors and their attitudes toward them. **Methods:** This descriptive cross-sectional study was conducted among 400 HIV-infected adults who accessed care in nine secondary health facilities in Lagos State, Nigeria. Respondents were selected by multistage sampling and data elicited using a structured, interviewer-administered questionnaire. Blood pressure (BP) was measured thrice and a respondent was considered as having raised BP if the mean of the last two measurements is ≥ 140 mm Hg (systolic BP) or ≥ 90 mm Hg (diastolic BP) or if respondents are currently taking anti-hypertensive. **Results:** Prevalence of key behavioral risk factors for hypertension was high. For instance, 82.0% of the respondents were physically inactive. Stress and physical inactivity were the two most known risks of hypertension, identified by 87.3% and 70.5% of the respondents, respectively. Majority (66.0%) had positive attitudes toward hypertension risk factors and 26.7% of them had raised BP. Lower age, that is, 30 years and below (OR = 2.89, 95% CI = 1.26-6.64), BMI of less than 25 (OR = 1.87, 95% CI = 1.16-3.01), and being diagnosed of HIV for 5 years and less (OR = 1.62, 95% CI = 1.006-2.62) were significantly associated with normal BP measurements among respondents. **Conclusion:** The proportion of people living with HIV/AIDS who show known behaviors that place them at risk for hypertension is high. Measures to address these risk factors among them are warranted.

Keywords: Behavioral; HIV; Nigeria; hypertension; risk factors.

Ogbo, F. A., Mogaji, A., Ogeleka, P., Agho, K. E., Idoko, J., Tule, T. Z., & Page, A. (2017). Assessment of provider-initiated HIV screening in Nigeria with sub-Saharan African comparison. *BMC health services research*, 17(1), 188. <https://doi.org/10.1186/s12913-017-2132-4>

Abstract

Background: Despite Nigeria's high HIV prevalence, voluntary testing and counselling rates remain low. UNAIDS/WHO/CDC recommends provider-initiated testing and counselling (PITC) for HIV in settings with high HIV prevalence. We aimed to assess the acceptability and logistical feasibility of the PITC strategy among adolescents and adults in a secondary health care centre in Idekpa Benue state, Nigeria. **Method:** All patients (aged ≥ 13 years) who visited the out-patient department and antenatal care unit of General Hospital Idekpa, Benue state, Nigeria were offered PITC for HIV. The intervention was implemented by trained health professionals for the period spanning (June to December 2010). **Results:** Among the 212 patients who were offered PITC for HIV, 199 (94%) accepted HIV testing, 10 patients (4.7%) opted out and 3 patients (1.4%) were undecided. Of the 199 participants who were tested for HIV, 9% were HIV seropositive. The PITC strategy was highly acceptable and feasible, and increased the number of patients who tested for HIV by 5% compared to voluntary counselling and testing. Findings from this assessment were consistent with those from other sub-Saharan African countries (such as Uganda and South Africa). **Conclusion:** PITC for HIV was highly acceptable and logistically feasible, and resulted in an increased rate of HIV testing among patients. Public health initiatives (such as the PITC strategy) that facilitate early detection of HIV and referral for early treatment should be encouraged for broader HIV control and prevention in Nigerian communities.

Keywords: AIDS; Benue State; HIV; Nigeria; Provider-initiated testing and counseling.

Oginni, A. B., Adebajo, S. B., & Ahonsi, B. A. (2017). Trends and Determinants of Comprehensive Knowledge of HIV among Adolescents and Young Adults in Nigeria: 2003 - 2013. *African journal of reproductive health*, 21(2), 26–34. <https://doi.org/10.29063/ajrh2017/v21i2.4>

Abstract

This study examined comprehensive knowledge of HIV (CKH) and its determinants among young people aged 15-24 years in Nigeria between 2003 and 2013. Secondary analysis was conducted on three rounds of NDHS 2003, 2008 and 2013 data. CKH increased significantly between 2003 and 2013, but the level reached in 2013 fell short of the global expectation for young people. Its significant determinants included gender, age, educational attainment, place and region of residence, household wealth status and uptake of HIV test. There is need to sustain all on-going effective youth-focused interventions and programmes to meet the comprehensive knowledge needs for all young people in Nigeria.

Keywords: Comprehensive knowledge; Determinants; HIV and AIDS; Nigeria; Young people.

Ogonor, E., Abiodun, P., & Sadoh, W. (2021). Evaluation of Glutathione Levels in HIV Infected Children in Benin City, Nigeria. *West African journal of medicine*, 38(8), 719–725.

Abstract

Introduction: Glutathione is a powerful naturally occurring anti-oxidant in the human body and is important in immunological response to infection. Glutathione depletion may play a pivotal role in the pathogenesis and progression of HIV disease. This study was done to compare plasma glutathione levels between HIV infected and uninfected children, correlate their glutathione levels with their WHO immunologic and clinical stages and determine prevalence of glutathione deficiency in HIV infected and uninfected children. **Methods:** A cross-sectional study was conducted among 258 HIV infected children and their age and sex-matched controls in the two major hospitals providing paediatric HIV care in Benin City, Nigeria. Information was obtained using questionnaire. Plasma glutathione levels were determined in both groups using the spectrophotometric method involving the Dithio-bis -2-nitrobenzoic acid/Glutathione reductase enzyme (DTNB/GR) technique. Data was analyzed using paired t-test and spearman rank correlation. **Results:** The mean plasma glutathione level was $8.82 \pm 2.39 \mu\text{mol/l}$, and $13.11 \pm 3.20 \mu\text{mol/l}$ in HIV infected and uninfected children respectively, $p < 0.0001$. There was no significant correlation between plasma glutathione and both WHO immunologic staging ($r = 0.011$, $p = 0.869$) and clinical staging of HIV ($r = 0.053$, $p = 0.379$). Glutathione deficiency was present in 10.10% of HIV infected children and 0.70% of HIV uninfected children, $p = 0.0001$. **Conclusion:** Glutathione depletion occurs in children with HIV/AIDS and it has no relationship with clinical and immunologic staging of HIV in this study. Further studies are needed to ascertain the benefit of glutathione supplementation in HIV infected children.

Keywords: Africa; Children; Glutathione; HIV; Immunology; Pathogenesis.

Ogunmodede, J. A., Kolo, P. M., Katibi, I. A., Salami, A. K., & Omotoso, A. (2017). Structural echocardiographic abnormalities seen in HIV/AIDS patients are independent of cd4 count. *Nigerian journal of clinical practice*, 20(6), 716–723. <https://doi.org/10.4103/1119-3077.208954>

Abstract

Introduction: The human immunodeficiency virus (HIV) infection remains one of the most daunting public health challenges today. Cardiac involvement in HIV/acquired immune deficiency syndrome (AIDS) is frequent and has been recognized on autopsy since the emergence of the pandemic. The objective of the study was to assess the pattern of structural echocardiographic (echo) findings in HIV/AIDS patients and compare this to the echo findings in apparently healthy HIV-negative controls. **Materials and methods:** One hundred and fifty HIV-positive patients were recruited consecutively from the HIV patients attending the University of Ilorin Teaching Hospital, Ilorin, North Central, Nigeria. One hundred and fifty

age- and sex-matched controls were also recruited from the surrounding community. All the individuals had clinical examination, electrocardiography (ECG) and echocardiography (echo) done. **Results:** ECG abnormalities were seen in 55.3% of the HIV-positive patients compared with 2.7% of controls ($P < 0.001$). The overall prevalence of echo abnormalities among the patients was 54%, against 15.3% ($P < 0.001$) of the controls. All the structural dimensions of the cardiac chambers were significantly greater than the cardiac chamber dimensions in the controls except for left atrial dimension (LAD). When the patients were considered in two groups of those with CD4 count less than 200 cells/mm³ than those with CD4 count more than 200 cells/mm³, the structural chamber dimensions were similar between both groups. **Conclusions:** Echo is an important tool for detecting cardiac abnormalities in HIV/AIDS patients. There is a high prevalence of echo abnormalities among HIV patients seen in our centre. The HIV infection was associated with increased structural dimensions of cardiac chambers compared with HIV-negative controls. This however did not seem to be related to disease severity as the chamber dimensions were similar between those with CD4 count below and above 200 cells/mm³.

Okafor, U. O., Crutzen, R., Ifeanyi, O., Adebajo, S., & Van den Borne, H. (2017). HIV prevalence and high-risk behaviour of young brothel and non-brothel based female sex workers in Nigeria. *BMC research notes*, 10(1), 380. <https://doi.org/10.1186/s13104-017-2712-8>

Abstract

Background: Female sex workers (FSWs) have been identified as a core group in the transmission of HIV and other sexually transmitted infections (STIs). Young FSWs are particularly more vulnerable to HIV due to the combination of vulnerabilities associated with their youth and the sex work they engage in. This study aims to give more insight into HIV prevalence and sexual risk behaviour of young FSWs in Nigeria, by focusing on the differences between BB and NBB young FSWs. **Methods:** Data was obtained from the Nigeria Integrated Biological and Behavioural Surveillance Survey (IBBSS) for high-risk groups conducted in 2010. IBBSS is a quantitative survey conducted amongst identified high-risk sub populations within Nigeria. HIV prevalence and risk behaviour data for young BB and NBB FSWs aged 15-24 years for nine states was extracted and analysed. **Results:** A total of 1796 FSWs aged 15-24 years were interviewed during the survey, 746 (41.5%) were BB while 1050 (58.5%) were NBB. The HIV prevalence was higher among BB FSWs compared to the NBB FSWs (21.0% vs. 15.5%). BB FSWs reported less condom use with boyfriends and casual partners than NBB FSWs (26.3% vs. 45.5%) and (55.1% vs. 61.1%) respectively while risk of HIV infection due to injecting drug use was higher in NBB compared to BB FSWs (6.6% vs. 1.2%). **Conclusion:** Existing and future interventions on HIV prevention should focus on empowering young FSWs with innovative and sustainable approaches aimed at improving their health and wellbeing.

Oke, O. O., Akinboro, A. O., Olanrewaju, F. O., Oke, O. A., & Omololu, A. S. (2019). Assessment of HIV-related stigma and determinants among people living with HIV/AIDS in Abeokuta,

Nigeria: A cross-sectional study. *SAGE open medicine*, 7, 2050312119869109. <https://doi.org/10.1177/2050312119869109>

Abstract

Introduction: HIV/AIDS-related stigma remains an essential barrier to the formulated care delivery and improved quality of life of people living with HIV/AIDS in sub-Saharan Africa. Only a few studies have evaluated stigma and its determinants as concerns people living with HIV/AIDS in Nigeria. **Methods:** A cross-sectional design study recruited 386 people living with HIV/AIDS attending the government clinic, Federal Medical Centre, Abeokuta, Nigeria, for the assessment of stigma using Berger's HIV stigma scale and United States Agency International Development-recommended indicators and questions on HIV-related stigma among people living with HIV/AIDS. Data were analyzed using SPSS 21. **Results:** Of the 386 people living with HIV/AIDS, 322 (83.4%) were females and 64 (16.6%) were males, and 96.9% had disclosed their HIV status. Overall, mean perceived stigma score was moderately high at 95.74 (standard deviation = ± 16.04). Majority (77.2%) of the participants experienced moderately perceived stigma. Among the subscales, disclosure concerns contributed the most to stigma score at 68.9%. Enacted stigma in the last 12 months was documented in 35.8% (138). There was no association observed between age, gender, marital status and HIV-related stigma. However, low education was associated with higher negative self-image perception (31.83 ± 5.81 vs 29.76 ± 5.74 , $p < 0.001$). Furthermore, higher perceived stigma score was associated with abandonment by spouses ($p < 0.001$), isolation from household members ($p < 0.001$) and social exclusion ($p < 0.001$). We demonstrated a correlation between the domains of enacted stigma and Berger HIV stigma scales except for the loss of resources. **Conclusion:** Perceived HIV-related stigma is moderately high among people living with HIV/AIDS. Low education, disclosure concerns, spousal or household abandonment and social exclusion are the significant contributors. HIV-related stigma preventive interventions at different levels of care are advocated.

Keywords: Abeokuta; Berger stigma scale; HIV-related stigma; disclosure; people living with HIV/AIDS.

Okunade, K. S., Olowoselu, O. F., John-Olabode, S., Hassan, B. O., Akinsola, O. J., Nwogu, C. M., Ugwu, A. O., Moses, O. E., Rabi, K. A., Ajepe, A., Adenekan, M. A., Adejimi, A. A., Akanmu, S. A., & Kanki, P. J. (2021). Effects of selenium supplementation on pregnancy outcomes and disease progression in HIV-infected pregnant women in Lagos: A randomized controlled trial. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, 153(3), 533–541. <https://doi.org/10.1002/ijgo.13514>

Abstract

Objective: To examine the effects of selenium supplementation on pregnancy outcomes and disease progression among HIV-infected pregnant women in Lagos. **Methods:** A randomized, placebo-controlled trial conducted among HIV-positive pregnant women between September

2018 and August 2019. At enrollment, 90 women were randomly assigned into each treatment arm to receive either a daily tablet of 200 µg elemental selenium or a placebo. Relevant participants' sociodemographic and clinical data were collected at enrollment and delivery. **Results:** Women in the selenium arm had a significantly lower risk of preterm delivery (relative risk [RR] 0.32, 95% confidence interval [CI] 0.11-0.96) and a non-significant reduction in the risk of delivering term neonates with a low delivery weight (RR 0.24, 95% CI 0.05-1.19). Supplemental selenium does not increase the risk of perinatal death and adverse drug events. **Conclusion:** The study reported a beneficial effect of prenatal selenium supplements on the risk of preterm delivery with no further reduction in risk among HIV-infected women who used the supplements for more than 14 weeks. **Trial registration:** Pan African Clinical Trial Registry (PACTR201809756724274).

Keywords: CD4+ cell count; Lagos; Lagos University Teaching Hospital; low birth weight; preterm delivery; selenium; viral load.

Okunola, T. O., Ijaduola, K. T., & Adejuyigbe, E. A. (2019). Unmet need for contraception among HIV-positive women in Ile-Ife, Nigeria. *Tropical doctor*, 49(1), 26–31. <https://doi.org/10.1177/0049475518809605>

Abstract

As mother-to-child transmission of HIV is difficult to predict and also hard to prevent in practice, pregnancy among women living with HIV/AIDS (WHA) needs to be taken with considerable forethought. The prevention of unwanted pregnancy among WHA is therefore a public health issue. The aim of our study was to determine the unmet need for contraception among HIV-positive women and the associated factors. Ours was a cross-sectional study involving 425 non-pregnant WHA attending an adult HIV clinic in Nigeria. Interviewer-administered, structured questionnaires designed for the study were used to obtain data. The contraceptive uptake was 47% while the unmet need for contraception was 20%. There were significant associations between unmet need for contraception and age group ($P < 0.001$), religion ($P < 0.001$), ethnic group ($P < 0.001$), knowledge about contraceptives ($P = 0.02$), educational status ($P = 0.01$) and partners' retroviral status ($P = 0.008$) The unmet need for contraception was high. Advocacy programs should perhaps be focused on older women, Christians and those with little or no education.

Keywords: HIV/AIDS; Unmet need for contraception; unplanned pregnancy.

Oladeinde, B. H., Omoregie, R., Odiya, I., & Osakue, E. O. (2017). Public Knowledge of HIV/AIDS in Three Rural Communities of Nigeria. *Social work in public health*, 32(2), 131–140. <https://doi.org/10.1080/19371918.2016.1230083>

Abstract

This study aimed at assessing knowledge of HIV/AIDS among residents of three rural communities in Nigeria. A total of 371 persons residing in selected rural communities were recruited for this study. A structured questionnaire was used to collect data from all participants. Results of the study showed a generally high level of awareness of HIV/AIDS in all communities surveyed. However, among study participants, knowledge of mode of prevention and management of HIV infection was poor as was knowledge of HIV status and readiness to utilize free voluntary counseling and testing for HIV/AIDS services. Scale-up of HIV/AIDS education by relevant health authorities is strongly advocated.

Keywords: HIV management; HIV status; HIV transmission and prevention; HIV/AIDS knowledge; Nigeria; rural communities.

Oladeji, B. D., Taiwo, B., Mosuro, O., Fayemiwo, S. A., Abiona, T., Fought, A. J., Robertson, K., Ogunniyi, A., & Adewole, I. F. (2017). Suicidal Behavior and Associations with Quality of Life among HIV-Infected Patients in Ibadan, Nigeria. *Journal of the International Association of Providers of AIDS Care*, 16(4), 376–382. <https://doi.org/10.1177/2325957415617829>

Abstract

Background: Suicidality has rarely been studied in HIV-infected patients in sub-Saharan Africa. This study explored suicidal behavior in a clinic sample of people living with HIV, in Nigeria. **Methods:** Consecutive patients were interviewed using the Composite International Diagnostic Interview (CIDI-10.0) and the World Health Organization Quality of Life (WHO-QOL-HIV-BREF). Associations of suicidal behavior were explored using logistic regression models. **Results:** In this sample of 828 patients (71% female, mean age 41.3 ± 10 years), prevalence of suicidal behaviors were 15.1%, 5.8%, and 3.9% for suicidal ideation, plans, and attempts, respectively. Women were more likely than men to report suicidal ideation (odds ratio 1.7; 95% confidence interval 1.05-2.64). Depression and/or anxiety disorder was associated with increased odds of all suicidal behaviors. Suicidal behavior was associated with significantly lower overall and domain scores on the WHO-QOL. **Conclusion:** Suicidal behaviors were common and significantly associated with the presence of mental disorders and lower quality of life.

Keywords: HIV/AIDS; depression; quality of life; suicidal behavior.

Oladele, E. A., Badejo, O. A., Obanubi, C., Okechukwu, E. F., James, E., Owhonda, G., Omeh, O. I., Abass, M., Negedu-Momoh, O. R., Ojehomon, N., Oqua, D., Raj-Pandey, S., Khamofu, H., & Torpey, K. (2018). Bridging the HIV treatment gap in Nigeria: examining community antiretroviral treatment models. *Journal of the International AIDS Society*, 21(4), e25108. <https://doi.org/10.1002/jia2.25108Abstract>

Introduction: Significant gaps persist in providing HIV treatment to all who are in need. Restricting care delivery to healthcare facilities will continue to perpetuate this gap in limited resource settings. We assessed a large-scale community-based programme for effectiveness

in identifying people living with HIV and linking them to antiretroviral treatment. **Methods:** A retrospective secular trend study of 14 high burden local government areas of Nigeria was conducted in which two models of community antiretroviral treatment delivery were implemented: Model A (on-site initiation) and Model B (immediate referral) clusters. Model A cluster offered services within communities, from HIV diagnosis to immediate antiretroviral therapy initiation and some follow-up. Model B cluster offered services for HIV diagnosis up to baseline evaluation and provided referral for antiretroviral therapy initiation to nearest health facility providing HIV services. For controls, we selected and cluster-matched 34 local government areas where community antiretroviral treatment delivery was not implemented. Outcomes of interest were: the number of people identified as HIV positive and the number of HIV-positive individuals started on antiretroviral treatment; from June 2014 to May 2016. We used interrupted time-series analysis to estimate outcome levels and trends across the pre-and post-intervention periods. **Results:** Before community antiretroviral treatment introduction, Model A cluster identified, per 100,000 catchment population, 500 HIV-positives (95% CI: 399.66 to 601.41) and initiated 216 HIV-positives on antiretroviral treatment (95% CI: 152.72 to 280.10). Model B cluster identified 32 HIV-positives (95% CI: 25.00 to 40.51) and initiated 8 HIV-positives on antiretroviral treatment (95% CI: 5.54 to 10.33). After commART introduction, Model A cluster showed an immediate significant increase in 744 HIV-positive persons ($p = 0.00$, 95% CI: 360.35 to 1127.77) and 560 HIV-positives initiated on treatment ($p = 0.00$, 95% CI: 260.56 to 859.64). Model B cluster showed an immediate significant increase in 30 HIV-positive persons identified ($p = 0.01$, 95% CI: 8.38 to 51.93) but not in the number of HIV-positives initiated on treatment. Model B cluster showed increased month-on-month trends of both outcomes of interest (3.4, $p = 0.02$, 95% CI: 0.44 to 6.38). **Conclusion:** Both community-models had similar population-level effectiveness for rapidly identifying people living with HIV but differed in effectively transitioning them to treatment. Comprehensiveness, integration and attention to barriers to care are important in the design of community antiretroviral treatment delivery.

Keywords: HIV positive; Universal Access; antiretroviral therapy; community-based; community-models; local government areas.

Oladele, R., Ogunisola, F., Akanmu, A., Stocking, K., Denning, D. W., & Govender, N. (2020). Opportunistic fungal infections in persons living with advanced HIV disease in Lagos, Nigeria; a 12-year retrospective study. *African health sciences*, 20(4), 1573–1581. <https://doi.org/10.4314/ahs.v20i4.9>

Abstract

Introduction: Nigeria has a large estimated burden of AIDS-related mycoses. We aimed to determine the proportion of patients with AIDS-related opportunistic fungal infections (OFIs) at an urban antiretroviral treatment (ART) centre in Nigeria. **Methods:** A retrospective analysis of a cohort of ART-naïve, HIV-infected patients, assessed for ART eligibility and ART experience at the PEPFAR outpatient clinic at Lagos University Teaching Hospital over a 12-year period (April 2004-February 2016) was conducted. **Results:** During this period, 7,034 patients visited the clinic: 4,797 (68.2%) were female; 6161 patients had a recorded baseline

CD4 count, and the median CD4 count was 184 cells/ μ l (IQR, 84-328). A baseline HIV-1 viral load (VL) was recorded for 5,908 patients; the median VL was 51,194 RNA copies/ml (IQR, 2,316-283,508) and 6,179/7046(88%) had initiated ART. Some 2,456 (34.9%) had a documented opportunistic infection, of whom 1,306 (18.6%) had an opportunistic fungal infection. The total number of OFI episodes was 1,632: oral candidiasis (n=1,473, 90.3%), oesophageal candidiasis (n=118; 8%), superficial mycoses (n=23; 1.6%), Pneumocystis pneumonia (PJP) (n=13; 0.8%), and cryptococcal meningitis (CM) (n=5; 0.4%). 113 (1.6%) were known to have died in the cohort. **Conclusion:** Approximately 1 in 5 HIV-infected patients in this retrospective cohort, most of whom had initiated ART, were clinically diagnosed with an OFI. Improved access to simple accurate diagnostic tests for CM and PJP should be prioritised for this setting.

Keywords: ART Adherence; Advanced HIV disease; Opportunistic fungal infections.

Oladunni, A. A., Sina-Odunsi, A. B., Nuga, B. B., Adebisi, Y. A., Bolarinwa, O. A., Adeola, A. A., & Lucero-Prisno, D. E., 3rd (2021). Psychosocial factors of stigma and relationship to healthcare services among adolescents living with HIV/AIDS in Kano state, Nigeria. *Heliyon*, 7(4), e06687. <https://doi.org/10.1016/j.heliyon.2021.e06687>

Abstract

Background: Stigma associated with HIV shapes all aspect of prevention and treatment, yet there are limited data on how HIV-infected adolescents are affected by stigma. Stigma increases risk of psychological problems among HIV-infected individuals which can affect access to treatment and social support services. This study aimed at identifying psychosocial factors of stigma and relationship to healthcare services among adolescents on antiretroviral therapy (ART) in Gwale Local Government Area (LGA) of Kano state, Nigeria. **Methods:** A facility-based cross-sectional survey was carried out from January 26 to February 28, 2020 across six health facilities providing ART service in Gwale local government. A structured interviewer-administered questionnaire was used to collect the data. ART clients attending clinics were interviewed following an informed consent. Descriptive statistics was used to summarize the data and results are presented using simple frequency tables and percentages. Upon completion of univariate analysis, the data was analyzed at the bivariate level using chi-square test to determine associations between different variables. **Results:** One hundred and eight (108) clients voluntarily participated in the study of which 54 (50%) are male respondents and 54 (50%) are female respondents. Under the internalized stigma item, 67% of HIV-infected adolescents who have lost their father or mother to AIDS reported feeling less valuable than other children who are not infected with HIV. Under the perceived stigma items, 86% of participants who have lost their father or mother to AIDS reported to have excluded themselves from health services and social activities in the last twelve months due to fear of being insulted. Under the experienced stigma items, 62% of participants who have lost their father or mother to AIDS reported to have been avoided by friends and colleagues in the last twelve months. **Conclusion:** The study revealed that loss of intimate relation (father or mother) to AIDS and equal treatment with other HIV negative siblings were found to be significantly associated with the three forms of stigma (internalized stigma, perceived stigma,

and experienced stigma) including access to healthcare services. There is a need for social and psychological support programs among HIV-infected adolescents.

Keywords: Adolescents living with HIV; HIV/AIDS; Nigeria; Psychosocial factors; Stigma.

Olakunde, B. O., Adeyinka, D. A., Oladele, T., & Ozigbu, C. E. (2018). HIV testing among male partners of pregnant women in Nigeria: a missing link in the elimination of mother-to-child transmission of HIV. *International journal of STD & AIDS*, 29(4), 404–409. <https://doi.org/10.1177/0956462417739752>

Abstract

In this study, we assessed male partner testing and the serodiscordance rate among pregnant women and their partners in the prevention of mother-to-child transmission (PMTCT) programme in Nigeria. We conducted a retrospective analysis of the consolidated national health sector PMTCT data over a five-year period (2012-2016). Over the period, a total of 11,833,062 pregnant women were tested for HIV with a positivity rate of 2.2%. About 266,188 (2.2%) of sexual partners of pregnant women who presented at PMTCT clinics had an HIV test within the period. The uptake of male partner testing varied across the years, ranging from 22,269 (1.7%) in 2012 to 90,603 (2.9%) in 2014 (χ^2 for trend = 1320; $p < 0.001$). Overall, the proportion of partners of HIV-negative pregnant women who tested was higher than the proportion of partners of HIV-positive pregnant women (81% versus 19%, respectively). The serodiscordance rate among partners who tested over the five-year period was 18%. The serodiscordance rate declined from 24% in 2012 to 13% in 2016 (χ^2 for trend = 1202; $p < 0.001$). Partner testing in the PMTCT programme in Nigeria has remained low in the last five years while the clinic-based serodiscordance rate among partners appears to be declining. There is a need for multilevel interventions to address the possible barriers to partner testing in the PMTCT programme and intensification of the HIV combination prevention approach in the HIV response.

Keywords: HIV; Nigeria; male involvement; partner testing; prevention of mother-to-child transmission; serodiscordance.

Olakunde, B. O., Adeyinka, D. A., OlaOlorun, F. M., Oladele, T. T., Yahaya, H., & Ndukwe, C. D. (2021). Integration of family planning services into HIV services in Nigeria: Evidence from the Performance Monitoring and Accountability 2020 survey in seven states. *African journal of AIDS research : AJAR*, 20(2), 181–188. <https://doi.org/10.2989/16085906.2021.1925312>

Abstract

Despite global calls for stronger linkages between family planning and HIV, a growing body of evidence in sub-Saharan Africa suggests that the integration of family planning and HIV service delivery is suboptimal in some countries. In this study, we assess the integration and quality of family planning services in health facilities that provide HIV-related services in

Nigeria. This study analysed secondary data from the Performance Monitoring and Accountability 2020 cross-sectional survey conducted between May and July 2016 in seven states in Nigeria. Our study sample was restricted to 290 health facilities providing HIV services. We performed descriptive statistics and binary logistic regression analyses. Ninety-five per cent of the health facilities reported offering family planning counselling, provision of family planning methods, and/or referral for family planning methods to clients accessing HIV services. About 84% of these health facilities with integrated family planning and HIV services reported that they discussed the preferred method, dual methods, instructions and side effects of the chosen method, and the reproductive intentions with clients during an HIV consultation. None of the health facilities' characteristics was significantly associated with the integration of family planning services into HIV services. Private health facilities (aOR 0.3, 95% CI 0.07-0.92), urban health facilities (aOR 3.8, 95% CI 1.64-8.76), and provision of postnatal care (aOR 3.9, 95% CI 1.10-13.74) were statistically associated with the quality of family planning services provided to clients accessing HIV services. Family planning services were integrated into HIV services in a majority of the health facilities in our study. However, our findings indicate the need for improvement in the quality of family planning services provided to clients accessing HIV services.

Keywords: HIV; contraception; linkage.

Olakunde, B. O., Adeyinka, D. A., Olawepo, J. O., Pharr, J. R., Ozigbu, C. E., Wakdok, S., Oladele, T., & Ezeanolue, E. E. (2019). Towards the elimination of mother-to-child transmission of HIV in Nigeria: a health system perspective of the achievements and challenges. *International health*, 11(4), 240–249. <https://doi.org/10.1093/inthealth/ihz018>

Abstract

Despite its scaled-up response for prevention of mother-to-child transmission of HIV (PMTCT), Nigeria still contributes the greatest number of infants infected with HIV worldwide. Drawing on our knowledge, and review of policy documents and research papers, we explored the achievements and challenges in the elimination of mother-to-child transmission of HIV in Nigeria using the WHO's health systems framework. We found that Nigeria has increased the number of PMTCT sites, decentralized and integrated PMTCT care for expanded service delivery, adopted task-shifting to address the shortage of skilled healthcare providers, explored alternative sources of domestic funding to bridge the funding gap and harmonized the health management information system to improve data quality. Some of the challenges we identified included: difficulty in identifying HIV-infected pregnant women because of low uptake of antenatal care; interrupted supplies of medical commodities; knowledge gaps among healthcare workers; and lack of a national unique identifying system to enhance data quality. While there have been some achievements in the PMTCT program, gaps still exist in the different blocks of the health system. Elimination of mother-to-child transmission of HIV in Nigeria will require the implementation of feasible, culturally acceptable and sustainable interventions to address the health system-related challenges.

Keywords: HIV; Nigeria; achievements; challenges; health system; prevention of mother-to-child transmission.

Olakunde, B. O., Adeyinka, D. A., Ozigbu, C. E., Ogundipe, T., Menson, W., Olawepo, J. O., Olakunde, O. A., & Ezeanolue, E. E. (2019). Revisiting aid dependency for HIV programs in Sub-Saharan Africa. *Public health*, 170, 57–60. <https://doi.org/10.1016/j.puhe.2019.02.016>

Abstract

Objective: The overall increase in global domestic HIV expenditure obscures the specific performances of many sub-Saharan Africa (SSA) countries in local resourcing of their HIV programs. In this study, we explored the pattern and correlates of domestic HIV expenditure in SSA. **Study design:** This is a cross-sectional ecological study. **Methods:** Data were obtained from the Joint United Nations Programme on HIV/AIDS, World Bank, and the World Health Organization. We included 30 countries with available country-reported HIV expenditures between 2012 and 2017. From the most recent data, we examined the domestic (public and private) HIV expenditure as percentage of the total HIV expenditure. Using Spearman's rho, we assessed the correlation between domestic expenditure as percentage of the total HIV expenditure and HIV prevalence, antiretroviral coverage, gross national income (GNI) per capita, domestic general government health expenditure (GGHE-D) as percentage of general government expenditure, and GGHE-D per capita. Significant correlates at bivariate level were included in a multivariate median regression model. **Results:** The median domestic HIV expenditure as percentage of the total HIV expenditure was 24.9% (interquartile range [IQR]: 8.5-39.3%). In 15 of 30 (50%) countries, domestic HIV expenditure as percentage of the total HIV expenditure was $\leq 25\%$. In 23 of 30 (77%) countries, public source accounted for $>75\%$ of the domestic HIV expenditure. There was a significant positive correlation between domestic expenditure as percentage of total HIV expenditure and GNI per capita ($r = 0.52$, $P = 0.003$) and GGHE-D per capita ($r = 0.494$, $P = 0.005$). In the multivariate median regression model, only GNI per capita remained statistically significant ($\beta = 0.006$, $P = 0.004$). **Conclusions:** Some countries in SSA are still overly dependent on external support for their HIV response. Although increasing domestic HIV expenditure in these countries may require growth in the economy, governments can improve the fiscal space for HIV response by looking inward for innovative and sustainable funding mechanisms.

Keywords: Domestic funding; HIV expenditure; Sub-Saharan Africa; Sustainability.

Olakunde, B. O., Adeyinka, D. A., Olawepo, J. O., & Pharr, J. R. (2020). HIV testing among men in Nigeria: a comparative analysis between young people and adults. *AIDS care*, 32(2), 155–162. <https://doi.org/10.1080/09540121.2019.1622642>

Abstract

HIV testing among men is critical to ending the HIV epidemic in sub-Saharan Africa. Using the Multiple Indicator Cluster Survey, 2016/2017, we examined the uptake and determinants of

HIV testing among sexually active men in Nigeria. A total of 1254 young people (15-24 years) and 7866 adults (25-49 years) were included in the analysis. We conducted binary logistic regression analyses to estimate the odds ratio (OR) and adjusted OR for testing for HIV in the last 12 months preceding the survey. Approximately 18.7% of men had tested for HIV (young people [17%] vs. adult [19%], $p=0.125$). The overall adjusted model showed that the likelihood of HIV testing was significantly higher among those with at least primary education, currently married, who used condom at last sexual intercourse, who drank alcohol one month preceding the survey, with no discriminatory attitudes towards people living with HIV (PLHIV), exposed to media, in the rich and richest quintiles, and in the North Central Zone. Education, geopolitical zone, and discriminatory attitudes towards PLHIV were the significant factors common to both age groups. Our results suggest that HIV testing among sexually active men in Nigeria is low, and the determinants vary between young people and adults.

Keywords: HIV; Nigeria; adult; men; testing; young people.

Olakunde, B. O., Adeyinka, D. A., Ndukwe, C. D., Oladele, T. T., Yahaya, H. B., & Ijaodola, O. A. (2021). Antenatal hepatitis B screening in Nigeria: A comparative analysis with syphilis and HIV. *International journal of STD & AIDS*, 32(14), 1290–1297. <https://doi.org/10.1177/09564624211035922>

Abstract

Nigeria has adopted routine screening of pregnant women for hepatitis B virus (HBV) as part of the interventions to eliminate its vertical transmission. However, there is a dearth of evidence on the coverage of routine antenatal HBV screening as recommended in the national guidelines. This study examined the antenatal HBV screening rate and the positivity rate compared with syphilis and HIV. We conducted a descriptive analysis of the 2019 national HIV/AIDS health sector data. The study included approximately 2.8 million pregnant women who received antenatal care (ANC) in over 6000 health facilities providing prevention of mother-to-child transmission of HIV services in Nigeria. Of the ANC clients, 0.2 million (7.2%) were screened for HBV. At the zonal level, the South West had the highest HBV screening rate (19%), while the lowest rate was in the North East (2.5%). The percentage of pregnant women screened for HBV was lower than those screened for syphilis (16.3%) and HIV (90.3%). Among those screened for HBV, the positivity rate was 5%. The HBV positivity rate ranged from 8.5% in the North Central zone to 1.3% in the South East zone. The positivity rates for syphilis and HIV were 0.4% and 0.5%, respectively. Our results indicate a low antenatal HBV screening rate and a wide disparity compared with HIV and syphilis. This finding highlights the need to understand and address the barriers affecting routine antenatal HBV screening and to strengthen the integration of HBV services into the HIV program in Nigeria.

Keywords: perinatal transmission; pregnant women; testing; viral hepatitis.

Olakunde, B., Wakdok, S., Olaifa, Y., Agbo, F., Essen, U., Ojo, M., Oke, M., & Ibi, S. (2018). Improving the coverage of prevention of mother-to-child transmission of HIV services in Nigeria: should traditional birth attendants be engaged?. *International journal of STD & AIDS*, 29(7), 687–690. <https://doi.org/10.1177/0956462417745200>

Abstract

Traditional birth attendants (TBAs) play an important role in the provision of care to pregnant women in rural parts of Nigeria, but they are barely engaged by the formal healthcare system in expanding the low coverage of prevention of mother-to-child transmission of HIV (PMTCT) services. Using a systematic approach, we engaged TBAs in Abia and Taraba States to scale-up PMTCT services under the National Agency for Control of AIDS Comprehensive AIDS Program with States. We conducted mapping of the TBAs, built their capacities, obtained their buy-in on mobilization of their clients and other pregnant women for HIV testing service outreaches, and established referral and linkage systems. A total of 720 TBAs were mapped (Abia 407; Taraba 313). Three hundred and ninety-nine TBAs who participated in the capacity-building meeting were linked to 115 primary healthcare centers (PHCs) in Abia State, while 245 TBAs were linked to 27 PHCs in Taraba State. From July 2016 to March 2017, the outreaches contributed 20% to the overall total number of pregnant women counseled, tested and received results, and 12% to the total number of HIV-infected women identified. There was a considerable yield of HIV-infected pregnant women among those tested in the TBA outreaches in comparison with the supported antenatal facilities (2% versus 3%, respectively). Engaging TBAs has the potential to improve the coverage of PMTCT services in Nigeria.

Keywords: Nigeria; Traditional birth attendants; prevention of mother-to-child transmission of HIV.

Olley, B. O., Adebayo, K. O., Ogunde, M. J., Ishola, A., & Ogar, A. P. (2017). Psychosocial factors predicting severity of depression among treatment-seeking HIV/AIDS patients: A multi-site Nigerian study. *Nigerian journal of clinical practice*, 20(3), 296–302. <https://doi.org/10.4103/1119-3077.201432>

Abstract

Background and objectives: Depression as major psychological sequelae of the HIV/AIDS infection has continued to attract investigation. With few studies in Nigeria, it is unclear whether levels of perceived stigma, sexual risk behaviors, and anticipated discrimination are differentially associated with severity of depression. **Materials and methods:** The present study using a multivariate design investigated the role of stigma, anticipated discrimination, self-esteem, HIV-related factors (e.g., drug use combination, knowledge of duration of HIV diagnosis) and socio demographic factors (e.g., multiple spouse, age, gender, and ethnicity) in depression among people living with HIV/AIDS (PLWHA) on follow-up management in three tertiary hospitals in Nigeria. Five hundred and two (187 [37.3%] males and 315 [62.7%] females) HIV/AIDS patients participated in the study. **Results:** Mean age and mean time in

months since diagnosis were 36.73 ± 9.38 and 19.42 ± 23.12 , respectively. Three variables: Ethnicity, anticipated discrimination, and HIV-related stigma were related to severity of depression at ($P < 0.05$). Multinomial logistic regression analyses showed that being from Yoruba (odds ratio [OR] = 0.25; 95% confidence interval [CI] = 0.145-0.441), or Igbo extraction (OR = 0.43; 95% CI = 0.214-0.873) reduces the risk of reporting severity of depression by 25% and 43%, respectively. Moreover, low perceived HIV-related stigma (OR = 0.59; 95% CI = 0.355-0.966) and low anticipated discrimination (OR = 0.54; 95% CI = 0.319-0.914) reduced the risk of reporting symptoms of severe depression by 59% and 54%, respectively. **Conclusion:** Intervention to reduce the severity of depression should consider cultural specificity in its design and also evolve educational programs that incorporate discrimination and stigma in managing depression among PLWHAs.

Olufadewa, I. I., Adesina, M. A., Oladele, R. I., Oladoye, M. J., & Eke, N. F. (2021). Global fund: Analyzing 10 Years of bridging health inequalities. *The International journal of health planning and management*, 36(2), 282–287. <https://doi.org/10.1002/hpm.3096>

Abstract

The Global Fund is a non-profit organization founded by Bill Gates, Melinda Gates, Kofi Annan, Amir Attaran, and Jeffrey Sachs on the 28th January, 2002. Each year, about US\$ 4 billion is invested to support programs and organizations led by local experts in various communities towards developing strategies and ways in which these three (HIV/AIDS, Malaria and Tuberculosis) diseases could be fought. The Global Fund has supported various innovative strategies used in tackling these infectious diseases. It is also worthy of note that 38 million lives have been saved through the Global Funds Partnership resulting in a 50% decline in mortality rate caused by tuberculosis, AIDS and Malaria in these reached countries. However, the Global Fund is not without its challenges as there has been lack of fund commitment from the G8 countries who instituted the idea in the first place. Another limitation being experienced is the poor risk management that has resulted in discrepancies of over US\$4 million discovered in the Global Fund grants received by Nigeria as of 2016. This study discusses the current state of the Global Fund and suggests recommendations to policymakers that could be instrumental in strengthening health systems and achieving increased impact.

Keywords: Global Fund; HIV/AIDS; infectious; malaria; tuberculosis.

Olofinbiyi, B. A., Olofinbiyi, S. A., Olatunya, O. S., Rosiji, B. O., Olofinbiyi, R. O., Olofinbiyi, O. B., Akintoye, O. O., & Olaogun, O. D. (2018). Human immunodeficiency virus awareness and condom use among female adolescent prostitutes in Lagos, Nigeria. *The Pan African medical journal*, 31, 178. <https://doi.org/10.11604/pamj.2018.31.178.17034>

Abstract

Introduction: The cornerstone of HIV prevention among female adolescent prostitutes is awareness promotion complemented with advocacy on consistent and correct use of condom. The study aimed at reviewing HIV awareness and condom use among female adolescent prostitutes in Lagos communities, Nigeria. **Methods:** It was a mixed-method study realized through a questionnaire-based survey and in-depth interviews of adolescent sex workers in Oyingbo and Yaba communities of Lagos State, Nigeria; conducted between 1st of April, 2014 and 30th of September, 2014. SPSS version 17.0 and content analysis were used in analyzing quantitative and qualitative data respectively. **Results:** 97.3% had heard about HIV/AIDS; with 86.9% being tested for HIV in the preceding 6 months. While there was consistent use of male condom in 99.7% of the respondents, 90% had experience with the use of female condom, however, 95.5% would allow non- use of condom for higher financial reward. **Conclusion:** Although the level of awareness of HIV/AIDS was high among the respondents, there is need to improve on the level of awareness and preventive strategies for HIV/AIDS, with more emphasis laid on the consistent and correct use of condom in this highly vulnerable class of people.

Keywords: Adolescent; HIV; awareness; condom; prostitutes.

Olowe, O. A., Makanjuola, O. B., Adekanmi, A. S., Adefioye, O. J., & Olowe, R. A. (2017). Epidemiological Characteristics and Clinical Outcome of HIV-Related Tuberculosis in a Population of TB Patients in South-western Nigeria. *European journal of microbiology & immunology*, 7(2), 127–132. <https://doi.org>

Abstract

Tuberculosis (TB) is the second leading cause of death from infectious disease globally with its impact more dramatic in resource limited settings. Individuals with human immunodeficiency virus (HIV) infection who also develop tuberculosis represent a significant challenge to TB control. This study was carried out to determine the prevalence of TB-HIV coinfection and pattern of infection among TB patients. We also compared treatment outcome among coinfecting patients with those not coinfecting. A six-year retrospective review of records of patients managed at the Tuberculosis Treatment Center of the LAUTECH Teaching Hospital, South-Western Nigeria from January 2009 to December 2014 was carried out. One hundred and five (26.3%) of the 399 TB patients seen in the study period were coinfecting with HIV. About 10% of the subjects had extrapulmonary tuberculosis. Treatment failure was significantly worse among patients who had both HIV and TB compared with those who had TB only (49.5% vs. 32%, $p = 0.001$). Death rate was also higher in the coinfecting individuals implying a poorer clinical outcome. High prevalence of TB-HIV coinfection and poor treatment outcome in this group of individuals, though predictable, calls for a more concerted effort in the management of TB-HIV coinfection.

Keywords: HIV/AIDS; TB–HIV coinfection; extrapulmonary TB; treatment outcome; tuberculosis.

Olufadewa, I., Oduguwa, I., Adesina, M., Ibiang, K., Eke, N., Adewumi, B., Ebong, I., Abudu, F., & Adeyelu, N. (2021). COVID-19: Learning from the HIV/AIDS pandemic response in Africa. *The International journal of health planning and management*, 36(3), 610–617. <https://doi.org/10.1002/hpm.3133>

Abstract

About 74.9 million persons were infected during the human immunodeficiency virus/acquired immunodeficiency syndrome HIV/AIDS global pandemic with nearly half of them succumbing to the disease. In 2018 alone, Africa recorded over 400,000 AIDS-related deaths which is more than half of the global total. This reflects years of inequality in the global pandemic response. Also, the international response to AIDS in the early years was very slow, with a global programme only developed 6 years into the pandemic. Many African countries still lack pandemic preparedness plans to handle a global pandemic. Thus, this paper highlights the important lessons that can be learnt from the response to the AIDS pandemic and recommends how they can be applied during the coronavirus disease 2019 (COVID-19) pandemic. Some of the important lessons include: HIV reversed the previous success recorded in health systems of developing countries; the antiretroviral drug development process was prolonged and required long term commitment; and primary healthcare was crucial in preventing and controlling the disease. These lessons can be utilised in the fight against COVID-19 pandemic. It is recommended that: there should be solidarity among the nations of the world to fight COVID-19; health authorities should be proactive in curbing misinformation; and interventions should prioritise human rights and focus on vulnerable communities. HIV treatment services should not be discontinued as it is still an ongoing pandemic. A balance needs to be achieved in combating both pandemics as discontinuation of HIV treatment during the coronavirus pandemic could result in more than 500,000 deaths.

Keywords: Africa; COVID-19; HIV/AIDS; pandemic.

Oluniyi, P. E., Ajogbasile, F. V., Zhou, S., Fred-Akintunwa, I., Polyak, C. S., Ake, J. A., Tovanabutra, S., Iroezindu, M., Rolland, M., & Happi, C. T. (2022). HIV-1 drug resistance and genetic diversity in a cohort of people with HIV-1 in Nigeria. *AIDS (London, England)*, 36(1), 137–146. <https://doi.org/10.1097/QAD.0000000000003098>

Abstract

Objective: This study was designed to provide information on the genetic diversity of HIV-1 and drug resistance mutations in Nigeria, as there is limited understanding of variants circulating in the country. **Methods:** We used an advanced next-generation sequencing platform, Primer ID, to: investigate the presence of high and low abundance drug resistance mutations; characterize preexisting Integrase Strand Transfer Inhibitor (INSTI) mutations in antiretroviral therapy (ART)-experienced but dolutegravir-naïve individuals; detect recent HIV-1 infections and characterize subtype diversity from a cohort of people with HIV-1 (PWH). **Results:** HIV-1 subtype analysis revealed the predominance of CRF02_AG and subtype G in our study population. At detection sensitivity of 30% abundance, drug resistance mutations

(DRMs) were identified in 3% of samples. At a sensitivity level of 10%, DRMs were identified in 27.3% of samples. We did not detect any major INSTI mutation associated with dolutegravir-resistance. Only one recent infection was detected in our study population. **Conclusion:** Our study suggests that dolutegravir-containing antiretroviral regimens will be effective in Nigeria. Our study also further emphasizes the high genetic diversity of HIV-1 in Nigeria and that CRF02_AG and subtype G are the dominant circulating forms of HIV-1 in Nigeria. These two circulating forms of the virus are largely driving the epidemic in the country.

Olusola, F. I., Olusola, B. A., Oladokun, R., & Falade, C. O. (2021). Surveillance of Pretreatment Drug Resistance Among HIV-Infected Children in Ibadan, Nigeria. *AIDS research and human retroviruses*, 37(12), 922–929. <https://doi.org/10.1089/AID.2020.0272>

Abstract

There are about 2.1 million children infected with HIV globally and about 120,000 deaths annually. Nigeria has one of the highest rates of pediatric HIV infection globally. Pretreatment HIV drug resistance data inform the choice of first- and second-line antiretroviral therapy (ART) regimens. This study investigated the prevalence of HIV drug-resistant strains among ART-naïve children in Ibadan, Nigeria. A total of 20 children aged <15 years were enrolled. Demographic, clinical, and laboratory data were documented. Total nucleic acid was extracted from blood samples after which amplification of HIV-1 pol gene was done using polymerase chain reaction. Amplified gene was sequenced using big dye sequencing method. The sequenced HIV-1 pol gene was typed and analyzed for identification of mutations indicative of drug resistance across the different classes of ART. HIV-1 RNA pol gene was successfully amplified in 12/20 (60%) children. All were identified as HIV-1 and the subtypes were G and CRF 02AG, recombinant of 02_AG/G and recombinant of 02_AG/A1. Drug-resistant mutations (DRMs) were identified in 4/12 (33%). Three out of the four mutations were identified as non-nucleoside reverse transcriptase inhibitors DRM (K103N), whereas the fourth had nucleoside reverse transcriptase inhibitors DRM (M184V). Results from this preliminary study show that drug resistance among ART-naïve children is a problem in Ibadan. Pretreatment drug resistance testing is desirable in children before initiation of ART to guide effective treatment.

Keywords: HIV-infected children; NNRTI; NRTI; drug resistance.

Omatola, C. A., Onoja, B. A., & Thomas, T. (2017). High Rate of Hepatitis B Virus Surface Antigenemia Among People Living with HIV/AIDS in Kakuri, Kaduna State, North West Nigeria. *Viral immunology*, 30(7), 516–521. <https://doi.org/10.1089/vim.2016.0163>

Abstract

Globally, increased incidence of liver disease caused by hepatitis B virus (HBV) is responsible for high morbidity and mortality among human immunodeficiency virus (HIV)-infected

individuals. This is because both viruses share common routes of transmission. We determined prevalence of HBV-HIV coinfection and the influence of some risk factors on concomitant infection among people living with HIV in a treatment center in Kakuri, Kaduna State. Two hundred consenting individuals with HIV infection participated in the study. Fifty-seven males and 143 females were screened using commercial hepatitis B virus surface antigen (HBsAg) rapid membrane-based immunoassay kit (Fastep™ HBV). Seventeen patients tested positive to HBsAg (8.5%). There were more males (14.0%) than females (6.3%). Patients within 40-49 years of age had more coinfection (20.6%) compared to those older than 50 years who had the least prevalence (2.7%). Age of HBV/HIV coinfection was statistically significant ($p = 0.02$). Risk factors include no knowledge of HBV infection, sharing sharp objects, history of sexually transmitted diseases, history of surgeries, and no HBV immunization. High infection rate observed in this study underscores the need for public awareness, to educate people on modes of transmission. Routine screening is advocated for early HBV identification, as this will facilitate reduction of comorbidity and mortality resulting from opportunistic infection. Findings from this study support introduction of HBV vaccination as part of the Expanded Programme on Immunization in Nigeria.

Keywords: HBV; HIV; coinfection; risk factors; seroprevalence.

Onadeko, M. O., Balogun, M. O., Onigbogi, O. O., & Omokhodion, F. O. (2017). Occupational exposure, attitude to HIV-positive patients and uptake of HIV counselling and testing among health care workers in a tertiary hospital in Nigeria. *SAHARA J : journal of Social Aspects of HIV/AIDS Research Alliance*, 14(1), 193–201. <https://doi.org/10.1080/17290376.2017.1398104>

Abstract

Health care workers (HCWs) are at risk of occupational exposure to HIV. Their attitude to HIV-positive patients influences patients' willingness and ability to access quality care. HIV counselling and testing (HCT) services are available to inform HCWs and patients about their status. There is little information about HCT uptake and attitude to HIV-positive patients among HCWs in tertiary health facilities in Nigeria. The aim of this study was to determine occupational exposure and attitude to HIV-positive patients and level of uptake of HCT services among HCWs in a tertiary hospital in Nigeria. A cross-sectional design was utilized. A total of 977 HCWs were surveyed using semi-structured, self-administered questionnaires. Nurses and doctors comprised 78.2% of the respondents. Their mean age was 35 ± 8.4 years. Almost half, 47.0%, reported accidental exposure to blood and body fluids (BBFs) in the preceding year. The main predictor of accidental exposure to BBFs in the last year was working in a surgical department, OR = 1.7, 95% CI (1.1-2.6). HCWs aged <40 years, OR = 5.5, 95% CI (1.9-15.9), who had worked for >5 years, OR = 3.6, 95% CI (1.4-9.3) and who work in nursing department, OR = 6.8, 95% CI (1.7-27.1) were more likely to be exposed to BBFs. Almost half, 52.9%, had accessed HCT services. Predictors for HCT uptake were age <40 years OR = 1.6, 95% CI (1.1-2.4), having worked for >5 years OR = 1.5, 95% CI (1.03-2.2) and working in medical department OR = 1.7, 95% CI (1.1-2.8). Respondents in nursing departments were more likely to require routine HIV test for all patients, OR = 3.9, 95% CI (2.4-6.2). HCWs in the

laboratory departments were more likely to believe that HIV patients should be on separate wards, OR = 3.6, 95% CI (1.9-7.0). HCWs should be protected and encouraged to access HCT services in order to be effective role models in the prevention of HIV/AIDS.

Keywords: HIV counselling and testing; attitude to HIV patients; health care workers; occupational exposure.

Onovo, A., Kalaiwo, A., Katbi, M., Ogorry, O., Jaquet, A., & Keiser, O. (2021). Geographical Disparities in HIV Seroprevalence Among Men Who Have Sex with Men and People Who Inject Drugs in Nigeria: Exploratory Spatial Data Analysis. *JMIR public health and surveillance*, 7(5), e19587. <https://doi.org/10.2196/19587>

Abstract

Background: The assessment of geographical heterogeneity of HIV among men who have sex with men (MSM) and people who inject drugs (PWID) can usefully inform targeted HIV prevention and care strategies. **Objective:** We aimed to measure HIV seroprevalence and identify hotspots of HIV infection among MSM and PWID in Nigeria. **Methods:** We included all MSM and PWID accessing HIV testing services across 7 prioritized states (Lagos, Nasarawa, Akwa Ibom, Cross Rivers, Rivers, Benue, and the Federal Capital Territory) in 3 geographic regions (North Central, South South, and South West) between October 1, 2016, and September 30, 2017. We extracted data from national testing registers, georeferenced all HIV test results aggregated at the local government area level, and calculated HIV seroprevalence. We calculated and compared HIV seroprevalence from our study to the 2014 integrated biological and behavioural surveillance survey and used global spatial autocorrelation and hotspot analysis to highlight patterns of HIV infection and identify areas of significant clustering of HIV cases. **Results:** MSM and PWID had HIV seroprevalence rates of 12.14% (3209/26,423) and 11.88% (1126/9474), respectively. Global spatial autocorrelation Moran I statistics revealed a clustered distribution of HIV infection among MSM and PWID with a <5% and <1% likelihood that this clustered pattern could be due to chance, respectively. Significant clusters of HIV infection (Getis-Ord-Gi* statistics) confined to the North Central and South South regions were identified among MSM and PWID. Compared to the 2014 integrated biological and behavioural surveillance survey, our results suggest an increased HIV seroprevalence among PWID and a substantial decrease among MSM. **Conclusions:** This study identified geographical areas to prioritize for control of HIV infection among MSM and PWID, thus demonstrating that geographical information system technology is a useful tool to inform public health planning for interventions targeting epidemic control of HIV infection.

Keywords: Getis-Ord-Gi*; HIV seroprevalence; HIV testing modality; IBBSS; MSM; Nigeria; PWID; geospatial; hotspots; key population.

Onu, D. U., Ifeagwazi, C. M., & Chukwuorji, J. C. (2021). Does Posttraumatic Growth Buffer the Association Between Death Anxiety and Quality of Life Among People living with HIV/AIDS?.

Journal of clinical psychology in medical settings, 28(2), 229–238.
<https://doi.org/10.1007/s10880-020-09708-6>

Abstract

People living with HIV (PLWH) may experience death anxiety (DA), which can be detrimental to quality of life. Posttraumatic growth (PTG), however, is antithetical to DA, with its positive attributes at odds with negative psychosocial outcomes. Previous research has not examined the buffering effect of PTG on the association between DA and quality of life. Therefore, in addition to the direct effects of DA and PTG on health-related quality of life (HRQoL), we investigated the moderating role of PTG on the relationship between DA and HRQoL among people living with HIV/AIDS (PLWH) in Nigeria. Using cross-sectional design and availability sampling method, we selected 201 outpatients (men, n = 63, 31.3%, women, n = 138, 68.7%, mean age = 40.1, SD = 10.5) managed for HIV/AIDS in a Nigerian tertiary healthcare institution. Death Anxiety Inventory-Revised, Posttraumatic Growth Inventory-Short Form, and Patient-Reported Outcome Quality of Life-HIV were used to assess DA, PTG and HRQoL, respectively. Results showed that while adjusting for socio-demographic factors (age, gender, time since diagnosis and educational status), DA was associated with physical health, mental health and social relationships domains of HRQoL as well as overall HRQoL. In contrast, PTG did not evidence significant association with HRQoL dimensions and overall HRQoL. The moderation effect of PTG on the association between DA and HRQoL was not supported. Independent of PTG, alleviating DA may be an important target in terms of therapeutic intervention towards improving quality life of PLWH.

Keywords: Death anxiety; Health-related quality of life; Intervention; People living with HIV/AIDS; Posttraumatic growth.

Onwuamah, C. K., Okwuraiwe, A. P., Ahmed, R. A., Sokei, J. O., Ponmak, J., Okoli, L. C., Kagurusi, B. A., & Anejo-Okopi, J. (2020). Laboratory Optimization Tweaks for Sanger Sequencing in a Resource-Limited Setting. *Journal of biomolecular techniques : JBT*, 31(4), 157–164. <https://doi.org/10.7171/jbt.20-3104-006>

Abstract

Despite various challenges that hinder the implementation of high-tech molecular methods in resource-limited settings, we have been able to implement and achieve International Organization for Standardization 15189:2012 accreditation for genotypic HIV drug resistance testing in our facility. At the Center for Human Virology and Genomics, Nigerian Institute of Medical Research, Nigeria has recorded a high sequencing success rate and good quality sequence data. This was achieved by optimizing laboratory processes from 2008 to the current date. We have optimized sample preparation, RT-PCR, several post-PCR processes, and the cycle sequencing to improve the sensitivity of amplification even with limited plasma samples and low viral copy numbers. The optimized workflow maximizes output, minimizes reagent wastage, and achieves substantial cost savings without compromising the quality of the sequence data. Our performance at our last external quality assurance program is a

testimonial to the efficiency of the workflow. For the 5-sample panel, each with 67-68 mutation points evaluated, we scored 100% for all 5 specimens. Our optimized laboratory workflow is thus documented to support laboratories and to help researchers achieve excellent results the first time and eliminate contamination while minimizing the wastage of costly sequencing reagents.

Osaigbovo, I. I., Lofor, P. V., & Oladele, R. O. (2017). Fluconazole Resistance among Oral *Candida* Isolates from People Living with HIV/AIDS in a Nigerian Tertiary Hospital. *Journal of fungi (Basel, Switzerland)*, 3(4), 69. <https://doi.org/10.3390/jof3040069>

Abstract

Oropharyngeal candidiasis, a common fungal infection in people living with HIV/AIDS (PLWHA), arises from *Candida* species colonizing the oral cavity. Fluconazole is the preferred treatment and is often used empirically. Few studies have investigated the prevalence of fluconazole resistance in Nigeria. This study aimed at determining the burden of fluconazole resistance among *Candida* species in the oral cavities of PLWHA. We sampled the oral cavities of 350 HIV-infected adults and an equal number of HIV-negative controls. *Candida* isolates were identified using germ tube tests, CHROMagar *Candida* (CHROMagar, Paris, France), and API *Candida* yeast identification system (BioMérieux, Marcy-l'Étoile, France). Fluconazole susceptibility was determined using the Clinical and Laboratory Standards Institute disc diffusion method. Data were analysed using SPSS version 21 (IBM, New York, NY, USA). The significance level was set at $p \leq 0.05$. The isolation rates for *Candida* amongst HIV-infected subjects and controls were 20.6% and 3.4%, respectively ($p < 0.001$). In PLWHA, *Candida albicans* was most frequently isolated (81.3%) and fluconazole resistance was present in 18 (24%) of the 75 *Candida* isolates. Resistance to fluconazole was present in half of the non-*albicans Candida* isolates. Fluconazole resistance is prevalent among oral *Candida* isolates in PLWHA in the study area with a significantly higher rate among non-*albicans Candida* spp.

Keywords: *Candida* species; HIV; Nigeria; fluconazole resistance; oropharyngeal candidiasis.

Osasona, O. G., Adewale-Fashoro, O., Olumade, T. J., Oguzie, J., George, U., Ariyo, O. E., & Oguntoye, O. O. (2021). Comparative serologic profiles of hepatitis B Virus (HBV) between HIV/HBV co-infected and Hbv mono-infected patients in Ile-Ife, Nigeria. *Journal of immunoassay & immunochemistry*, 42(6), 633–647. <https://doi.org/10.1080/15321819.2021.1924197>

Abstract

Hepatitis B virus (HBV) infects about 2 billion people globally and accounts for mortality of about 800,000 from liver cirrhosis and hepatocellular carcinoma. Sub-Saharan Africa accounts for 70% of the Human Immunodeficiency Virus (HIV) global burden. HIV/HBV co-infection

results in the early development of HBV complications, alterations of serological biomarkers of HBV. Two hundred and fifty patients with HIV/AIDS were screened for HBV and 20 (8%) were identified. The same number of HBV mono-infected individuals were recruited into the study and subsequently, HBV serological profiles which include HBsAg, HBsAb, HBeAg, HBeAb, HBcAbIgM, and HBcAbIgG were assayed using HBV ELISA kits. Mean age of patients in the HBV/HIV cohort was 45.5 years while the HBV mono-infected cohort was 30.5 years. The majority of the HBV/HIV co-infected individuals were females (85%). The frequency of HBeAg among HIV/HBV co-infected cohort was 25% and 15% for HBV mono-infected, while the frequency of HBeAb was higher (60%) among the cohort of HBV/HIV co-infected patients in comparison with the HBV mono-infected cohorts (50%). Two patients among the HIV/HBV co-infected cohort have the isolated anti-HBcAg serologic pattern. The study broadened the available evidence of comparative serologic profiles of Hepatitis B virus between cohorts of HBV/HIV co-infected individuals and HBV mono-infected patients in Nigeria.

Keywords: Co-infection; Comparative; HBV; HIV; serologic.

Oseni, Y. O., & Erhun, W. O. (2021). Assessing community pharmacists' involvement and clients' opinion on HIV/AIDS services in community pharmacies in Nigeria: a cross-sectional survey. *International journal of STD & AIDS*, 32(6), 538–550. <https://doi.org/10.1177/0956462420981527>

Abstract

The World Health Organization is promoting community-based services to end HIV/AIDS by 2030. In Nigeria, studies on community pharmacists' involvement in HIV testing services (HTS) and antiretroviral (ARV) medication therapy management (MTM) are scarce, and no study had evaluated the clients' opinion on community pharmacy HTS. We assessed the community pharmacists' involvement in HIV/AIDS services and clients' opinions of community pharmacy HTS. Semi-structured questionnaires on a five-point Likert scale were administered to 701 selected community pharmacists and 5840 clients in southwest Nigeria in 2019. Data were analyzed with descriptive and inferential statistics. Response rates were 68.6% and 69.8% for community pharmacists and clients, respectively. Only 18.5% of community pharmacists offered rapid HTS and 30% refills of ARV. The total score of their involvement on the HTS was 20.94 ± 17.521 (range 8-40; midpoint 24) and on ARV/MTM was 22.98 ± 19.61 (range 9-45; midpoint 27), while 91% were willing to participate in training. Barriers to integrating services into practice were lack of clinical tools (46.8%), lack of collaboration with other healthcare professionals (39.1%), and lack of training on HIV/AIDS services (36.2%) among others. Also, 77% of the clients were willing to participate in community pharmacy HTS, and about 83% of them responded that knowing their HIV status will help them to take necessary precautionary actions. Community pharmacists' involvement in HIV/AIDS services was low. However, they showed willingness to participate in training to improve services. Also, clients were willing to receive community pharmacies HTS to know their status.

Keywords: HIV testing; antiretrovirals; clients; community pharmacists; medication therapy management.

Oyebade, A. O., Bello, M. A., & Familusi, I. O. (2021). Effect of the antenatal HIV testing scale up community intervention in South West, Nigeria: a cross-sectional study. *The Pan African medical journal*, 40, 90. <https://doi.org/10.11604/pamj.2021.40.90.30230>

Abstract

Introduction: HIV/AIDS is a major killer of under five children, with about 25-30% of children born to infected mothers becoming infected with HIV in the absence of Prevention of Mother to Child Transmission of HIV (PMTCT) intervention. This study was carried out to assess the effectiveness of the Antenatal HIV Testing scale up community intervention to increase the uptake of Antenatal HIV Testing. The intervention was implemented to increase the low coverages of Antenatal HIV Testing and PMTCT services in Osun State, South West, Nigeria. **Methods:** the cross-sectional design was utilized for the study. Data was collected using data collection instruments administered to 600 respondents from the 30 Local Government Areas (LGAs) of the State. Data was also extracted from Medical Records generated from the Health Facilities where pregnant women received HIV Testing. **Results:** the study revealed that 72% of adult respondent had adequate knowledge of the importance of Antenatal HIV Testing while 98% of female respondent had accepting attitude to getting tested for HIV during their next pregnancy. The number of pregnant women who received HIV Testing increased from 6,254, pre-intervention (April to August 2019) to 8,240, post-intervention (September 2019-January 2021). **Conclusion:** the Antenatal HIV Testing scale up community intervention is effective in increasing the utilization of Antenatal HIV Testing by increasing awareness and attitude to HIV testing in the community. Thus, efforts to scale it up in Nigeria should be accelerated to improve PMTCT services and reduce Mother to Child Transmission of HIV. **Keywords:** Antenatal HIV testing; HIV/AIDS; community intervention; cross-sectional study; health facility; medical records; post-intervention; prevention of mother to child transmission; scale up; structural barriers.

Oyedemi O. A. (2019). Malaria in a 2-Month-Old HIV-Exposed Nigerian Infant: Challenges of Care. *Journal of the International Association of Providers of AIDS Care*, 18, 2325958219849052. <https://doi.org/10.1177/2325958219849052>

Abstract

Background: Reports on malaria and HIV coinfections in exposed infants from tropical countries are scarce. **Results:** The case of a 2-month-old HIV-exposed Nigerian infant who presented with intermittent fever at a Nigerian tertiary hospital is reported. The rarity of the case and the challenges associated with making the diagnosis informed our decision to report the case. **Conclusion:** Diagnosing malaria in HIV-exposed infants in early infancy requires a high index of suspicion, good knowledge of the clinical presentation, and appropriate microbiological investigations for sepsis and malaria. Further studies need to be conducted on the association between malaria and HIV exposure.

Keywords: HIV; exposure; infancy; malaria.

Reward, E. E., Ike, A. C., Muo, S. O., Soga-Oke, B. F., & Mbaawuaga, E. M. (2020). Coinfection of Tuberculosis and HIV in Nigeria: A Systematic Review and Meta-analysis. *AIDS reviews*, 23(2), 82–90. Advance online publication. <https://doi.org/10.24875/AIDSRev.20000068>

Abstract

Tuberculosis (TB) and HIV/AIDS are major public health issues globally. The burden of these diseases is particularly significant in Nigeria due to the high TB and HIV/AIDS prevalence. This meta-analysis for the 1st time addressed the TB/HIV coinfection prevalence in Nigeria at the regional level. A total of 58 relevant publications comprising 80 studies (n = 44,508) were obtained from PUBMED, ScienceDirect, African Journals Online, and Cochrane Library databases using carefully constructed keywords combinations. The PRISMA guideline was followed for this meta-analysis. Two independent reviewers conducted the publication screening, data extraction and methodological quality appraisal with a third reviewer serving as arbitrator. The pooled estimates were calculated using the random effects model. Heterogeneity was assessed using Cochran's Q and I² statistic. Univariate and multivariate meta-regressions were done to predict sources of between-study heterogeneity. Overall, the pooled prevalence of TB/HIV coinfection was 25.8%. The highest coinfection prevalence of 34.3% was recorded among the North Central States of Nigeria, while the least prevalence of 19.3% was recorded among the Southeastern states of Nigeria. There was a paucity of published articles from the Northeastern states of Nigeria. There was a significant heterogeneity between studies (I² > 90%, p < 0.001), but meta-regression analysis only explained < 10% of it. This study has shown that the prevalence of TB/HIV coinfection remains significantly high in Nigeria. Constant surveillance should be rigorously implemented with special attention given to the Northeast due to the ongoing crises that are compounding the problem.

Keywords: HIV/AIDS; Tuberculosis; Coinfection; Systematic Review; Meta-analysis.

Salihu, H. M., Yusuf, Z., Dongarwar, D., Aliyu, S. H., Yusuf, R. A., Aliyu, M. H., & Aliyu, G. (2022). Development of a Quality Assurance Score for the Nigeria AIDS Indicator and Impact Survey (NAIIS) Database: Validation Study. *JMIR formative research*, 6(1), e25752. <https://doi.org/10.2196/25752>

Abstract

Background: In 2018, Nigeria implemented the world's largest HIV survey, the Nigeria AIDS Indicator and Impact Survey (NAIIS), with the overarching goal of obtaining more reliable metrics regarding the national scope of HIV epidemic control in Nigeria. **Objective:** This study aimed to (1) describe the processes involved in the development of a new database evaluation tool (Database Quality Assurance Score [dQAS]) and (2) assess the application of

the dQAS in the evaluation and validation of the NAIS database. **Methods:** The dQAS tool was created using an online, electronic Delphi (e-Delphi) methodology with the assistance of expert review panelists. Thematic categories were developed to form superordinate categories that grouped themes together. Subordinate categories were then created that decomposed themes for more specificity. A validation score using dQAS was employed to assess the technical performance of the NAIS database. **Results:** The finalized dQAS tool was composed of 34 items, with a total score of 81. The tool had 2 sections: validation item section, which contains 5 subsections, and quality assessment score section, with a score of "1" for "Yes" to indicate that the performance measure item was present and "0" for "No" to indicate that the measure was absent. There were also additional scaling scores ranging from "0" to a maximum of "4" depending on the measure. The NAIS database achieved 78 out of the maximum total score of 81, yielding an overall technical performance score of 96.3%, which placed it in the highest category denoted as "Exceptional." **Conclusions:** This study showed the feasibility of remote internet-based collaboration for the development of dQAS—a tool to assess the validity of a locally created database infrastructure for a resource-limited setting. Using dQAS, the NAIS database was found to be valid, reliable, and a valuable source of data for future population-based, HIV-related studies.

Keywords: Delphi method; Nigeria AIDS Indicator and Impact Survey; database quality assurance; quality assurance tool.

Sanwo, O., Persaud, N. E., Nwaokoro, P., Idemudia, A., Akpan, U., Toyo, O., Imohi, P., Badru, T., Obiora-Okafo, C., Uzochukwu, C. E., Aliu, O., Olatunbosun, K., Pandey, S. R., Khamofu, H., Chiegil, R., James, E., Iyortim, I., Oqua, D., & Bateganya, M. (2021). Differentiated service delivery models among PLHIV in Akwa Ibom and Cross River States, Nigeria during the COVID-19 pandemic: descriptive analysis of programmatic data. *Journal of the International AIDS Society*, 24 Suppl 6(Suppl 6), e25820. <https://doi.org/10.1002/jia2.25820>

Abstract

Introduction: The rapid increase in the number of people living with HIV (PLHIV) on antiretroviral therapy (ART) in Akwa Ibom and Cross River states in Nigeria led to overcrowding at clinics. Patients were devolved to receive ART refills through five differentiated service delivery (DSD) models: fast-track (FT), adolescent refill clubs (ARCs), community pharmacy ART refill programs (CPARPs), community ART refill clubs (CARCs) and community ART refill groups (CARGs) designed to meet the needs of different groups of PLHIV. In the context of COVID-19-related travel restrictions, out-of-facility models offered critical mechanisms for continuity of treatment. We compared retention and viral suppression among those devolved to DSD with those who continued standard care at facilities. **Methods:** A retrospective cohort study was conducted among patients devolved to DSD from January 2018 to December 2020. Bivariate analyses were conducted to assess differences in retention and viral suppression by socio-demographic characteristics. Kaplan-Meier assessed retention at 3, 6, 9 and 12 months. Differences in proportions were compared using the chi-square test; a p-value of <0.05 was considered significant. **Results:** A total of 40,800 PLHIV from 84 facilities received ART through the five models: CARC (53%), FT (19.1%),

ARC (12.1%), CPARP (10.4%) and CARG (5.4%). Retention rates at 6 months exceeded 96% for all models compared to 94% among those continuing standard care. Among those using DSD, retention rate at 12 months was higher among adults than children (97.8% vs. 96.7%, $p = 0.04$). No significant sex differences in retention rates were found among those enrolled in DSD. Viral suppression rates among PLHIV served through DSD were significantly higher among adults than children (95.4% vs. 89.2%; $p < 0.01$). Among adults, 95.4% enrolled in DSD were virally suppressed compared to 91.8% of those in standard care ($p < 0.01$). For children, 89.2% enrolled in DSD were virally suppressed compared to 83.2% in standard care ($p < 0.01$). **Conclusions:** PLHIV receiving ART through DSD models had retention but higher viral suppression rates compared to those receiving standard care. Expanding DSD during COVID-19 has helped ensure uninterrupted access to ART in Nigeria. Further scale-up is warranted to decongest facilities and improve clinical outcomes.

Keywords: COVID-19; Nigeria; differentiated service delivery; people living with HIV; treatment retention; viral suppression.

Tahlil, K. M., Ong, J. J., Rosenberg, N. E., Tang, W., Conserve, D. F., Nkengasong, S., Muessig, K. E., Iwelunmor, J., Ezechi, O., Gbaja-Biamila, T., Aliyu, S. H., Obiezu-Umeh, C., Kapogiannis, B., & Tucker, J. D. (2020). Verification of HIV Self-Testing Use and Results: A Global Systematic Review. *AIDS patient care and STDs*, 34(4), 147–156. <https://doi.org/10.1089/apc.2019.0283>

Abstract

HIV self-testing (HIVST) allows individuals to interpret and report their own test results, thus decentralizing testing. Yet, this decentralization can make it difficult to verify self-testing results, which is important for linkage to care and surveillance. The aim of this systematic review is to summarize methods for verifying HIVST use and results. We followed guidance from the Cochrane Handbook 5.1 on systematic reviews. We searched four journal databases (PubMed, Embase, Scopus, and Cochrane Library), one clinical trials database (ClinicalTrials.gov), two conference abstract databases (International AIDS Society and Conference on Retroviruses and Opportunistic Infections) and one gray literature database (OpenGrey). We included studies that verified opening of kits or test results. Two researchers independently screened articles and extracted data regarding HIVST location, method of verification, who performed verification, proportion of results verified, and primary or secondary kit distribution. The search yielded 3853 unique citations, of which 40 contained information on HIVST verification and were included. Among these 40 studies, 13 were in high-income countries, 16 were in middle-income countries, and 11 were in low-income countries. Seventeen studies included key populations and two focused on youth. Three methods verified results: supervision by a health provider, returning used test kits, and electronic transmission of photographs. One method verified opening of kits using Bluetooth sensors. Although HIVST has increased worldwide, strategies to verify self-testing results remain limited. These findings suggest a need for additional innovative strategies for verifying HIVST use and results and linkage of self-testing results to surveillance and care systems.

Keywords: HIV; self-test; verification.

Udeh, E. O., Obiezue, R., Okafor, F. C., Ikele, C. B., Okoye, I. C., & Otuu, C. A. (2019). Gastrointestinal Parasitic Infections and Immunological Status of HIV/AIDS Coinfected Individuals in Nigeria. *Annals of global health*, 85(1), 99. <https://doi.org/10.5334/aogh.2554>

Abstract

Background: Parasitic infections of the gastrointestinal tract is one of the highest causes of morbidity and mortality among HIV infected individuals. This is due to the colonization of the intestinal tract by parasites influenced by induced enteropathy caused by HIV infection. CD+4 t-lymphocytes count is a marker of the immune status of HIV infected individuals. **Objective:** This study investigated the prevalence of gastrointestinal parasitic infections among HIV coinfecting individuals in relation to their immunological status. **Methods:** CD+4 t-lymphocytes count was determined using fluorescence-activated cell sorting (FACS) count system. Parasitological examination of faecal samples was conducted using direct wet mount, modified Z-N and Giemsa stain techniques. All prepared slides were examined under x10 and x40 objectives. **Findings:** Out of the 891 HIV seropositive participants on antiretroviral therapy that were studied, 641 (71.9%) had CD+4 counts equals to or greater than 500 cells/mm³. All other seropositive participants had CD+4 counts below 500 cells/mm³. Gastrointestinal parasitic infections were recorded in 187 (20.9%) seropositive participants, with females (n = 108, 12.1%) having more infections than males. Multiple gastrointestinal parasitic infections were recorded in 28 (3.1%) seropositive participants. Out of the 150 seronegative participants, 79 (52.7%) of them had at least one gastrointestinal parasitic infection. Female seronegative participants also accounted for higher infection rate (n = 42, 28.0%) than males (n = 37, 24.7%). Multiple infections were also recorded in 18 (12.0%) seronegative individuals. The overall prevalence rate of infection between both positive and negative individuals was 25.5%. There was statistical significant difference in the infections of *Cryptosporidium parvum* (p < 0.003), *Cyclospora cayentanensis* (p < 0.011) and *Cystoisospora belli* (p < 0.011) between HIV seropositive and HIV seronegative individuals. Also, there was statistical significant difference in the infections of hook worm (p < 0.002) and *Trichuris trichiura* (p < 0.020) between seronegative and seropositive individuals. Gastrointestinal parasitic infection rate was significantly higher among seropositive participants with CD+4 counts between 200 and 350 cells/mm³ (n = 109, 58.3%). **Conclusion:** The study shows that HIV infected individuals continue to experience gastrointestinal infections even with antiretroviral treatment, especially those with CD+4 counts below 350 cells/mm³. Health care providers should prioritise routine screening of HIV patients for gastrointestinal parasites and provide prompt treatment. Antiparasitic drugs should also be provided as prophylaxis.

Tomescu, S., Crompton, T., Adebayo, J., Kinge, C. W., Akpan, F., Rennick, M., Chasela, C., Ondura, E., Dauda, D. S., & Pisa, P. T. (2021). Factors associated with an interruption in treatment of people living with HIV in USAID-supported states in Nigeria: a retrospective study from 2000-2020. *BMC public health*, 21(1), 2194. <https://doi.org/10.1186/s12889-021-12264-9>

Tun, W., Vu, L., Dirisu, O., Sekoni, A., Shoyemi, E., Njab, J., Ogunsola, S., & Adebajo, S. (2018). Uptake of HIV self-testing and linkage to treatment among men who have sex with men (MSM) in Nigeria: A pilot programme using key opinion leaders to reach MSM. *Journal of the International AIDS Society*, 21 Suppl 5(Suppl Suppl 5), e25124. <https://doi.org/10.1002/jia2.25124>

Abstract

Introduction: HIV self-testing (HIVST) offers an alternative to facility-based HIV testing services, particularly for populations such as men who have sex with men (MSM) who may fear accessing testing due to stigma, discrimination and criminalization. Innovative HIV testing approaches are needed to meet the goal of 90% of people living with HIV being diagnosed. This study piloted an intervention to distribute oral HIVST kits to MSM through key opinion leaders (KOLs) in Lagos, Nigeria and assessed the feasibility, acceptability, uptake of HIVST and linkage to HIV treatment. **Methods:** A cohort study was conducted (May through September 2017) with 319 participants who were recruited by 12 KOLs through their networks. A baseline survey was conducted at the time of the oral HIVST kit (OraQuick® HIV antibody test) distribution to eligible MSM followed by a 3-month follow-up survey to assess usage of and experience with the HIVST kits. Each participant was given two kits. **Results:** The median age of the participants was 25 years, 88.7% were literate and 17.9% were first-time testers. Of the 257 participants (80.7% retention) who completed the three-month follow-up interview, 97.7% reported using the HIVST kit and 14 (5.6%) self-reported an HIV positive result. A quarter (22.7%) tested themselves the same day they received the kit, and 49.4% tested within one week. Almost all participants reported that the HIVST kit instructions were easy or somewhat easy to understand (99.6%) and perform the test (98.0%). The most common reasons they liked the test were ease of use (87.3%), confidentiality/privacy (82.1%), convenience (74.1%) and absence of needle pricks (64.9%). All 14 participants who tested positive had sought confirmatory testing and initiated HIV treatment by the time of the three-month survey. **Conclusions:** HIVST distribution through KOLs was feasible and oral self-testing was highly acceptable among this urban MSM population. Despite concerns about linkage to treatment when implementing self-testing, this study showed that linkage to treatment can be achieved with active follow-up and access to a trusted MSM-friendly community clinic that offers HIV treatment. HIVST should be considered as an additional option to standard HIV testing models for MSM.

Keywords: HIV; MSM; HIV positivity rate; Nigeria; feasibility; linkage to treatment; self-testing.

Uchekwue Onu, D., Iorfa, S. K., & Ugwu, D. I. (2020). Negative centralisation of HIV/AIDS trauma and health-related quality of life: do post-traumatic stress symptoms explain the link?. *African journal of AIDS research : AJAR*, 19(3), 206–213. <https://doi.org/10.2989/16085906.2020.1797842>

Abstract

Over-integration of HIV-related trauma into the client's memory in a negative emotional valence could be a serious health debilitating process which may result in negative post-traumatic health outcomes, affecting health-related quality of life (HRQoL) of people living with HIV (PLWH). We hypothesized that post-traumatic stress disorder (PTSD) symptoms are the mediating link between negative event centrality (NEC) and HRQoL among PLWH. Nine hundred and sixty-nine PLWH in Nigeria completed measures of NEC, PTSD symptoms and HRQoL. Model 4 of Hayes' regression-based PROCESS macro version 3.0 for SPSS was employed to investigate relationships between variables of interest. NEC was positively associated with all domains of HRQoL. PLWH who had high negatively centralized identity on HIV also had high scores on PTSD symptoms. PTSD symptoms were also positively associated with all domains of HRQoL. PTSD symptoms also mediated the relationship between NEC and all domains of HRQoL. Assessing and treating PTSD symptoms among PLWH by clinicians could be helpful in enhancing HRQoL.

Keywords: centrality of event; health outcome; mediation; valence; well-being.

Ugochukwu, E. F., Onubogu, C. U., Edokwe, E. S., Ekwochi, U., Okeke, K. N., Umeadi, E. N., & Onah, S. K. (2021). A Review and Analysis of Outcomes from Prevention of Mother-to-Child Transmission of HIV Infant Follow-up Services at a Pediatric Infectious Diseases Unit of a Major Tertiary Hospital in Nigeria: 2007-2020. *International journal of MCH and AIDS*, 10(2), 269–279. <https://doi.org/10.21106/ijma.510>

Abstract

Background and objective: Above 90% of childhood HIV infections result from mother-to-child transmission (MTCT). This study examined the MTCT rates of HIV-exposed infants enrolled in the infant follow-up arm of the prevention of mother-to-child transmission (PMTCT) program in a teaching hospital in Southeast Nigeria. **Methods:** This was a 14-year review of outcomes of infants enrolled in the infant follow-up arm of the PMTCT program of Nnamdi Azikiwe University Teaching Hospital Nnewi, Nigeria. The majority of subjects were enrolled within 72 hours of birth and were followed up until 18 months of age according to the National Guidelines on HIV prevention and treatment. At enrollment, relevant data were collected prospectively, and each scheduled follow-up visit was recorded both electronically and in physical copy in the client's folders. Data were analyzed using SPSS version 20. The major outcome variable was final MTCT status. **Results:** Out of 3,784 mother-infant dyads studied 3,049 (80.6%) received both maternal and infant Antiretroviral (ARV) prophylaxis while 447 (11.8%) received none. The MTCT rates were 1.4%, 9.3%, 24.1%, and 52.1% for both mother and infant, mother only, infant only, and none received ARV prophylaxis respectively. There was no gender-based difference in outcomes. The MTCT rate was significantly higher among mixed-fed infants ($p < 0.001$) and among those who did not receive any form of ARVs ($p < 0.001$). Among dyads who received no ARVs, breastfed infants significantly had a higher MTCT rate compared to never-breastfed infants (57.9% vs. 34.8%; $p < 0.001$). The MTCT rate was comparable among breastfed (2.5%) and never-breastfed (2.1%) dyads who had received

ARVs. After logistic regression, maternal ($p < 0.001$, OR: 7.00) and infant ($p < 0.001$, OR: 4.00) ARV prophylaxis for PMTCT remained significantly associated with being HIV-negative. **Conclusion and global health implications:** Appropriate use of ARVs and avoidance of mixed feeding in the first six months of life are vital to the success of PMTCT programs in developing countries. PMTCT promotes exclusive breastfeeding and reduces the burden of pediatric HIV infection, thereby enhancing child survival.

Keywords: Antiretroviral Prophylaxis; Early Infant Diagnosis; Exclusive Breastfeeding; HIV-Exposed Infants; Mixed Feeding; Mother-Infant Pairs; Nigeria; PMTCT Outcome.

Umeokonkwo, C. D., Aniebue, P. N., Onoka, C. A., Agu, A. P., Sufiyan, M. B., & Ogbonnaya, L. (2018). Patients' satisfaction with HIV and AIDS care in Anambra State, Nigeria. *PLoS one*, 13(10), e0206499. <https://doi.org/10.1371/journal.pone.0206499>

Abstract

Introduction: HIV and AIDS care requires frequent visits to the hospital. Patient satisfaction with care services during hospital visits is important in considering quality and outcome of care. Increasing number of patients needing treatment led to the decentralization of care to lower level hospitals without documented patient perception on the quality of services. The study determined and compared patient satisfaction with HIV and AIDS care services in public and private hospitals and identified the factors that influence it. **Method:** This was a cross-sectional comparative study of patients receiving antiretroviral treatment in public and private hospitals in Anambra State. The sampling frame for the hospitals consisted of all registered public and private hospitals that have rendered antiretroviral services for at least one year. There were three public urban, nine public rural, eleven private urban and ten private rural hospitals that met the criteria. One hospital was selected by simple random sampling (balloting) from each group. Out of a total of 6334 eligible patients (had received ART for at least 12 months), 1270 were recruited by simple random sampling from the hospitals proportionate to size of patient in each hospital. Adapted, validated and pretested Patient Satisfaction Questionnaire (PSQ18) was interviewer-administered on consenting patients as an exit interview. A Chi-square test and logistic regression analysis were conducted at 5% level of significance. **Result:** There were 635 participants each in public and private hospitals. Of the 408 patients who had primary education or less, 265(65.0%) accessed care in public hospitals compared to 143(35.0%) who accessed care in private hospital ($p < 0.001$). Similarly, of the 851 patients who were currently married, 371 (43.6%) accessed their care in public compared to 480 (56.4%) who accessed care in private ($p < 0.001$). The proportion of participants who were satisfied were more in public hospitals (71.5%) compared to private hospitals (41.4%). The difference in proportion was statistically significant ($\chi^2 = 116.85$, $p < 0.001$). Good retention in care [AOR: 2.3, 95%CI: 1.5-3.5] was the only predictor of satisfaction in public hospitals while primary education [adjusted odds ratio (AOR); 2.3, 95%CI: 1.5-3.4], residing in rural area [AOR: 2.0, 95%CI: 1.4-2.9], and once-daily dosing [AOR: 3.2, 95%CI: 2.1-4.8] were independent predictors of patient' satisfaction among private hospital respondents. **Conclusion:** Satisfaction was higher among patients attending public hospitals. Patient's satisfaction was strongly associated with retention in care among patients

in public hospitals. However, in private hospitals, it was influenced by the patient's level of education, place of residence, and antiretroviral medication dosing frequency.

Umeokonkwo, C. D., Onoka, C. A., Agu, P. A., Ossai, E. N., Balogun, M. S., & Ogbonnaya, L. U. (2019). Retention in care and adherence to HIV and AIDS treatment in Anambra State Nigeria. *BMC infectious diseases*, 19(1), 654. <https://doi.org/10.1186/s12879-019-4293-8>

Abstract

Background: Retaining patients on antiretroviral treatment in care is critical to sustaining the 90:90:90 vision. Nigeria has made some progress in placing HIV-positive patients on treatment. In an effort to increase access to treatment, ART decentralization has been implemented in the country. This is aimed at strengthening lower level health facilities to provide comprehensive antiretroviral treatment. We determined the level of retention and adherence to treatment as well as the associated factors among private and public secondary level hospitals in Anambra State. **Method:** We conducted a cross-sectional study among patients who had taken antiretroviral treatment for at least one complete year. A structured questionnaire and patient record review were used to extract information on patient adherence to treatment, and retention in care. Adherence to treatment was ascertained by patient self-report of missed pills in the 30 days prior to date of interview. Retention in care was ascertained using the 3-month visit constancy method reviewing the period spanning 12 months prior to the study. **Result:** We found a comparable level of retention in care (private 81.1%; public 80.3%; $p = 0.722$). However, treatment adherence was significantly higher amongst participants in the private hospitals compared to those in the public hospitals (private: 95.3%; public: 90.7%; $p = 0.001$). Determinants of good retention in the private hospitals included disclosure of one's HIV status (AOR: 1.94, 95% CI: 1.09-3.46), being on first-line regimen (AOR: 3.07, 95% CI: 1.27-7.41), whereas being on once-daily regimen (AOR: 0.58, 95% CI: 0.36-0.92), and being currently married (AOR: 0.54 95% CI: 0.32-0.91) determined poor retention. In the public hospitals, only disclosure (AOR: 3.12 95% CI: 1.81-5.56) determined good retention, whereas, spending less than N1000 on transport (AOR: 0.230 95% CI: 0.07-0.78) and residing in a rural area (AOR: 0.64 95% CI: 0.41-0.99) determined poor retention. None of the factors determined adherence. **Conclusion:** Retention in care was high and comparable among the different hospital types and HIV disclosure status was an important factor relating to retention in care. The other factors that determined retention were however different at public and private hospitals. The HIV program manager should consider these variations in designing programs to improve patient retention in care and adherence to treatment.

Keywords: Adherence to treatment; HIV; Hospital; Retention in care.

Utuk, I. G., Osungbade, K. O., Obembe, T. A., Adewole, D. A., & Oladoyin, V. O. (2017). Stigmatising Attitudes Towards Co-workers with HIV in the Workplace of a Metropolitan

State, Southwestern Nigeria. *The open AIDS journal*, 11, 67–75. <https://doi.org/10.2174/1874613601711010067>

Abstract

Background: Despite demonstrating global concerns about infection in the workplace, very little research has explored how co-workers react to those living with HIV in the workplace in sub-Saharan Africa. This study aimed to assess the level of stigmatising attitude towards co-workers living with HIV in the workplace. **Methods:** The study was a descriptive cross-sectional survey involving 403 respondents. They were recruited from selected companies through a multistage sampling technique. Survey was carried out using pre-tested semi-structured questionnaires. Data were analyzed using the Statistical Package for the Social Sciences to generate frequencies, cross tabulations of variables at 5% level of significance. Logistic regression model was used to determine the predictors at 95% confidence intervals. **Results:** Mean age of respondents was 32.9 ± 9.4 years with 86.1% being females. Overall, slightly below two-third (63.0%) had good knowledge on transmission of HIV/AIDS while 218 (54.1%) respondents had a high stigmatising attitude towards co-workers with HIV in the workplace. More female respondents (69.6%) demonstrated high stigmatising attitudes towards co-workers with HIV in the workplace ($p = 0.012$). Female workers were twice more likely to have high stigmatising attitudes towards co-worker with HIV [OR 2.1 (95% CI: 1.13 - 3.83)]. **Conclusion:** Stigma towards people living with HIV/AIDS is still very persistent in different settings. Good knowledge amongst our participants about HIV/AIDS did not translate to low stigmatising attitudes among workers. Concerted efforts and trainings on the transmission of HIV/AIDS are essential to reduce stigma that is still very prevalent in workplace settings.

Keywords: Attitude; HIV/AIDS; Knowledge; Stigma; Transmission; Workplace.

Uwishema, O., Taylor, C., Lawal, L., Hamiidah, N., Robert, I., Nasir, A., Chalhoub, E., Sun, J., Akin, B. T., Adanur, I., Mwazighe, R. M., & Onyeaka, H. (2022). The syndemic burden of HIV/AIDS in Africa amidst the COVID-19 pandemic. *Immunity, inflammation and disease*, 10(1), 26–32. <https://doi.org/10.1002>

Abstract

Introduction: The human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) has long affected millions of individuals across the globe. Historically, the prevalence of this disease is particularly noted within the African continent. Before the coronavirus disease 2019 (COVID-19) pandemic, many African countries struggled to effectively manage the increasing burden associated with HIV/AIDS. There is now a need to reassess this in a COVID-19 pandemic context so that the impact of COVID-19 on HIV/AIDS healthcare within Africa can be adequately evaluated. **Methods:** Data collection was performed on the PubMed, Ovid MEDLINE and Embase bibliographical databases with a predefined search strategy. Searches were performed in blind duplicate and all articles considering COVID-19 and HIV/AIDS within African healthcare were considered. **Results:** The

COVID-19 pandemic has severely exacerbated the many issues surrounding HIV/AIDS care within many African countries. These impacts are noticeable in medical, psychological, and socio-political contexts. **Conclusions:** Before efforts are made to improve the provision of HIV/AIDS and COVID-19 care within Africa, it is important that this issue is brought to the attention of the scientific and clinical community so that the continent can receive the necessary support and aid. **Keywords:** Africa; COVID-19; HIV/AIDS; acquired immune deficiency syndrome; antiretroviral therapy; coronavirus; human immunodeficiency virus.

Yaya, S., Ghose, B., Udenigwe, O., Shah, V., Hudani, A., & Ekholuenetale, M. (2019). Knowledge and attitude of HIV/AIDS among women in Nigeria: a cross-sectional study. *European journal of public health, 29*(1), 111–117. <https://doi.org/10.1093/eurpub/cky131>

Abstract

Background: The Human Immunodeficiency Virus (HIV)/acquired immunodeficiency syndrome (AIDS) epidemic is one of the world's most serious public health and social problems. Promoting knowledge and attitude towards HIV/AIDS is a key strategy to control the prevalence of this growing epidemic. This study aimed to measure knowledge and attitude about HIV/AIDS along with the factors of association Nigerian women. **Methods:** This is a cross-sectional study based on data from the 2013 Demographic Health Survey (DHS) conducted among community dwelling women in Nigeria. A set of 13 questions was identified relevant to knowledge and attitude about HIV/AIDS. Each correct answer was scored as 1 and wrong answer as '0'. Normality of the variables was examined using Shapiro-Wilks tests. The socioeconomic and community factors associated with HIV/AIDS knowledge and attitude were examined by linear regression with dummy variables model. **Results:** Means score (SD) on knowledge of transmission was 6.4 (2.0) and that for attitude was 2.1 (1.2). In the regression models, knowledge and attitude of HIV/AIDS were positively associated with survey years and respondents' age; geographical region was significantly associated with HIV/AIDS knowledge and attitude; rural respondents had significant reduction in knowledge [Exp(B)=0.86; 95% confidence interval (CI)=0.83-0.89] and positive attitude to HIV/AIDS [Exp(B)=0.91; 95% CI=0.89-0.93] compared with the urban counterpart, respectively. **Conclusion:** Findings of the present study suggested that women's knowledge and attitude about HIV/AIDS in Nigeria needs more attention to attain the global target to end its epidemics and other communicable diseases by 2030.

Zirimenya, L., Mahmud-Ajeigbe, F., McQuillan, R., & Li, Y. (2020). A systematic review and meta-analysis to assess the association between urogenital schistosomiasis and HIV/AIDS infection. *PLoS neglected tropical diseases, 14*(6), e0008383. <https://doi.org/10.1371/journal.pntd.0008383>

Abstract

Background: Urogenital schistosomiasis and HIV/AIDS infections are widespread in sub-Saharan Africa (SSA) leading to substantial morbidity and mortality. The co-occurrence of both diseases has led to the possible hypothesis that urogenital schistosomiasis leads to increased risk of acquiring HIV infection. However, the available evidence concerning this association is inconsistent. The aim of this study was to systematically review and quantitatively synthesize studies that investigated the association between urogenital schistosomiasis and HIV/AIDS infection. **Methods:** A systematic review basing on PRISMA guidelines was conducted. It is registered with PROSPERO, number CRD42018116648. We searched four databases, MEDLINE, EMBASE, Global Health and Global Index Medicus for studies investigating the association between urogenital schistosomiasis and HIV infection. Only studies published in English were considered. Results of the association were summarised by gender. A meta-analysis was performed for studies on females using random-effects model and a pooled OR with 95% confidence interval was reported. **Results:** Of the 993 studies screened, only eight observational studies met the inclusion criteria. Across all studies, the reported unadjusted OR ranged from 0.78 to 3.76. The pooled estimate of unadjusted OR among females was 1.31 (95% CI: 0.87-1.99). Only four of the eight studies reported an adjusted OR. A separate meta-analysis done in the three studies among females that reported an adjusted OR showed that the pooled estimate was 1.85 (95% CI: 1.17-2.92). There were insufficient data to pool results for association between urogenital schistosomiasis and HIV infection in the males. **Conclusion:** Our investigation supports the hypothesis of an association between urogenital schistosomiasis with HIV/AIDS infection in females. Due to insufficient evidence, no conclusion could be drawn in males with urogenital schistosomiasis. Large-scale prospective studies are needed in future.