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Examining HIV Essential Medicines Access in Nigeria: A Comparative Study of South-South and North-East Regions through WHO Health Systems Framework

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Abstract

Availability and accessibility of essential medicines for HIV recipients of care varies across regions in Nigeria. This study seeks to compare access and availability of medicines for HIV in the South south and Northeast regions of Nigeria. Data were collected from 120 health facilities and 385 respondents using structured questionnaires and analysed using descriptive statistics and thematic analysis. The study methodology included an exploratory sequential mixed of quantitative and qualitative methods, including facility assessments, in-depth interviews, client satisfactory questionnaire conducted amongst HIV program stakeholders and HIV recipients of care. The study found that the HIV program in the regions have made progress in improving the accessibility of essential medicines for HIV patients. The North-East had an average access rate of 87.1%, while the South-South had a slightly higher average access rate of 85.6%. The North-East had a prescription rate of 100% for antiretroviral therapy (ART) for adolescents and for the preventive treatment for tuberculosis (INH + Pyridoxine). On the other hand, access to micronutrient supplementation was higher in the South-South region at 94.7%, compared to the North-East region with a rate of 74.2%. In conclusion, this study highlights that the availability of essential medicines such as ART drugs, micronutrients and prophylaxis for opportunistic infections, medicine supply, storage and documentation has improved overtime with support from donor agencies, though still challenged with electronic management systems and need for adequate procurement, quantification, additional technical assistance, funding and supply chain infrastructure is recommended to be addressed towards achievement of HIV epidemic control in Nigeria.

Keywords*: Essential medicines, Health systems, HIV, North-East, South-South.*

Introduction

The Nigerian health system has made progress in addressing HIV, with a focus on prevention, treatment, care, and support. However, the health system in Nigeria faces several challenges, including inadequate funding, limited human resources, weak infrastructure, and a high burden of disease. Nigeria is home to the second-largest HIV epidemic in the world, with an estimated 1.8 million people living with HIV in 2021 [1].

The Nigeria AIDS indicator study (NAIIS) conducted in 2018 by the government of Nigeria revealed that the HIV prevalence rate in Nigeria among persons aged 15-64 was 1.4%. (1.9 percent among females and 1.1 percent among males). The South-South region in Nigeria has the highest HIV prevalence at 3.1%, followed by the North Central region at 2.0% and in the Southeast region (1.9%). Both the Southwest zone and the Northeast zone have a lower HIV prevalence of 1.1% and the North West zone (0.6%) [1].

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HIV in Nigeria can be described as a mixed epidemic, with only 7 out of the 36 states in the country accounting for over 50% of this burden (UNAIDS, 2020). In 2012, Rabkin et al. Noted that the expansion of HIV services in various sub-Saharan African nations has stimulated the growth of efficient health care systems. The ministries of Health, with the assistance of donors and partners, have developed locally owned, and contextually appropriate care programs for HIV, many of which have been adapted to support continuity of care for other communicable and non-communicable/chronic diseases. However, there is still much work to be done for improved health outcomes in Nigeria [2].

In the North-East region of Nigeria, the HIV prevalence rate is estimated at 1.1% in a population of about 26 million people. This region has faced several challenges in the delivery of HIV services due to the ongoing insurgency and insecurity in the area. The conflict has caused the displacement of people, which has disrupted the continuity of HIV care, treatment, and prevention services. Efforts have been made, however, to strengthen HIV programming in the region, including the deployment of community ART programmes in hard-to-reach locations [3].

The HIV prevalence rate in Nigeria's South-South area is estimated to be 3.1%, which is also higher than the national average. With the establishment of multiple treatment centres and programs, including prevention of mother-to-child transmission (PMTCT) services, the region has achieved tremendous success in HIV prevention, care and treatment because of the HIV surge activities implemented by PEPFAR in recent years. Yet, the region continues to experience obstacles such as stigma and prejudice, limited budget, and insufficient health care facilities [4].

In some metrics, the Nigerian health system has grown well, whereas in many other indicators, the focus is misdirected. In a recent study by Aregbeshola, (2021), reviewing the Nigerian national health system from 1960 to 2021, he argued that the focus of the Nigerian health system has been on inputs rather than outputs, and that the fragmentation and duplication of responsibilities among the three tiers of government have hindered effective health service delivery and accountability. Nigeria's health care systems have grown in part because of the increased demand brought on by the country's expanded HIV programs [5]. According to Rabkin et al., (2012) the scale-up of HIV services in sub-Saharan Africa has catalysed the development of highly effective chronic care systems [2, 5]. The strategies, systems, and tools developed to support life-long HIV care and treatment are locally owned contextually appropriate resources, many of which could be adapted to support continuity care for other diseases. However, the increased demand due to the national HIV burden places a greater strain on healthcare systems as antiretroviral therapy (ART) access expands. A decrease in provider-patient contact time and consequently poor programmatic and patient outcomes characterize these consequences [6].

Quality of life for HIV/AIDS patients improves with the expansion of the ART program, but this is contingent on the proper implementation of the recommended components of care, such as quality service delivery, improved health workforce, access to information, adequate financing, and proper governance structure. Ahmed et al., 2019 opined that while it is an important target to scale-up HIV services nationally, implementing a system that ensures continuous quality of care is highly imperative. Hence, there is strong consensus in the global health community, among donors, recipient countries, and policy makers, about the need for health-system strengthening in low-income and middle-income countries.

The number of organizations providing aid to those with HIV/AIDS in Nigeria has grown rapidly in the last 10 years. Significantly, more resources have been received from donor and partners which has resulted in positive outcomes

such as an increased awareness of HIV/AIDS among the public and a greater emphasis on HIV/AIDS prevention and treatment. On the other hand, comprehensive reviews of health system strengthening (HSS)

Medical products, vaccines, and technologies play crucial role in the health systems strengthening framework [7]. This building block is to guarantee access to necessary medical products, vaccinations, and technology. However, a number of medical disorders, particularly infectious diseases, have put the public health of individuals at risk on a global scale due to a lack of appropriate medications. According to estimates, 30% of the world's population has insufficient access to basic medical supplies, which understates the true extent of their advantages. Although it is well known that immunization is one of the most cost-effective interventions to stop the spread of diseases and generally improve health, particularly among children, the challenge is much more widespread in low income and middle-income Countries. These countries have extremely low immunization coverage rates [8]. The selection, procurement, distribution, and inventory management of medications and vaccines can be challenging in Nigeria for a number of reasons such as a lack of suitable storage facilities, budgetary limitations, security issues, transportation difficulties, a lack of adequate personnel resources, and weak or poorly enforced policies [9].

Documented and published HIV intervention in Nigeria is uncommon, this is partially due to lack of clarity in the definition of the terms, but it is also due to the potentially enormous scale of the evidence. The purpose of this research is to carry out an evidence-based review by conducting a comparative analysis of the two geopolitical zones (the South-South and the North-East), both of which have a high HIV burden compared to their population size and have also received significant aids and technical assistance for HIV program and other disease areas.

The comparative analysis of the HIV program in Nigeria will be carried out within the context of access and the availability to essential medicines for persons living with HIV in the South-South and North-East, Nigeria. The overall goal of this study will be to determine the extent of access, availability, and use of essential medicines for HIV program in South-South and North-East, Nigeria.

Materials and Methods

This study adopted an exploratory sequential mixed quantitative and qualitative methods, including facility assessments, in-depth interviews, client satisfactory questionnaire conducted amongst HIV program stakeholders and HIV recipients of care, including a retrospective comparative research design with a focus on member states in the South-South and North-East geopolitical zones of Nigeria. Atotal of four states from the two regions were purposively selected based on HIV prevalence within the state. Specifically, health facilities in Akwa-Ibom, Adamawa, Taraba, and CrossRivers state were visited for this study.

The population of the study included health workers and HIV program managers in the South-South and North-East geopolitical zones of Nigeria, as well as people living with HIV within the geopolitical zones. Qualitative and quantitative data were collected retrospectively to gain insight on HIV program using the WHO health system strengthening framework. The study adopted both probability and non-probability sampling techniques. Purposive sampling was used to select the sample states in each geopolitical zone and also to select respondents for the qualitative data collection. Cluster random sampling was used to select the respondents for the quantitative data collection. The sample size was determined using Smith's approach, and 385 respondents were selected. Key Informant Interviews (KIIs), client satisfaction survey questionnaires and a desk review of literature were the main instruments of data collection. Multi-method approaches were

employed to ensure that the tools measured what they were intended to measure. Ethical considerations of anonymity and confidentiality on validated data collection tools. Recordings and accurate descriptions of individuals and circumstances using participant records was also validated for reliability.

Results

Table 1 presents the findings for the comparative analysis of the access to essential medicines for HIV/AIDS patients in the North-East and South-South regions of Nigeria. The data suggests that the two regions have made significant progress in improving the accessibility of essential medicines for HIV patients. The North-East had an average access rate of 87.1%, while the South-South had a slightly higher average access rate of 85.6%. Both regions had a prescription rate of 100% for antiretroviral therapy (ART) for adolescents and for the preventive treatment for tuberculosis (INH + Pyridoxine). However, the provision of palliative care was higher in the North-East region (93.5%) compared to the South-South region (78.9%). The North-East region also had a higher rate of provision of systematic intravenous treatment for specific fungal infections (74.2%) compared to the South-South region (65.7%). On the other hand, access to micronutrient supplementation was higher in the South-South region at 94.7%, compared to the North-East region with a rate of 74.2%. The provision of nutritional rehabilitation services had a rate of 74.2% in the North-East region and 86.8% in the South-South region, while the provision of fortified protein supplementation was 80.9% in the North-East region and 76.3% in the South-South region.

From the KIIs and client satisfaction survey conducted, all the study participants (both North-East and South-South) stated that they had adequate supply of ART drugs in their health facility. A state coordinator from the North-East further narrated how the coming of donor funding and interventions in the communities has helped in improving the supply of these drugs. The respondent stated, *"Yeah from the beginning we were having issue with it, we have challenge about the anti-retroviral therapy, nevirapine for our babies. At times, one local government would call us to get nevirapine here, put it in a vehicle and take it to them, but with the coming of USAID of donor project in the state at least from that time anti-retroviral therapy, nevirapine, prophylaxis, we don't have any shortage or complain yet on the shortage of the treatment, but previously you find out that when you work with the facility they would just give you like one month drugs or two weeks drugs, at times for one week nevirapine for the baby but now I think they have excess, to the extent that the six months is been given to us, but for those that have other complains then they would just give them for three months, even in the local government its accessible."* This suggests that donor funding and intervention programs have played a significant role in improving the supply and accessibility of ART drugs in the North-East region.

Table 1. Access to Essential Medicines

Access to Essential Medicines	**North-East (%)**	**South-South (%)**
Prescription of ART to Adolescents	100	98.1
Provision of Palliative care	93.5	78.9
Provision of Systematic Intravenous treatment for specific fungal infections	74.2	65.7
Provision of nutritional rehabilitation services	74.2	86.8
Provision of Fortified Protein Supplementation (FPS)	80.9	76.3
Prescription of preventive treatment for TB (INH + Pyridoxine)	100	94.7
Access to micronutrient supplementation	74.2	94.7

Provision of services to prevent mother to child transmission (PMTCT)	100	89.5
Average	**87.1**	**85.6**

Inferential statistics was done to determine whether there is a significant difference in the extent of access to essential medicine for HIV programming in South-South and North-East, Nigeria. The findings of the hypothesis testing can be found in Table 2.

Table 2. Test for Relationship between the Results from the North-East and South-South, Nigeria

Region	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]	p-value
North-East	87.125	4.387187	12.40884	76.75095	97.49905	0.728
South-South	85.5875	3.932258	11.12211	76.28919	94.88581	-
Diff	1.5375	4.243943	12.00368	-8.49783	11.57283	

t = 0.3623, degree of freedom (df) = 7

Table 2 shows the p-value for the extent of access to essential medicines for HIV programming in South-South and North-East, Nigeria. The p-value for extent of access to essential medicines is 0.728 which is higher than 0.05 level of significance. Hence, the null hypothesis is accepted. The findings presented on table 2 implies that there is no significant difference in the extent of access to essential medicines for HIV programming in the North-East and South-South.

In conclusion, the findings from Table 1 and 2 suggest that progress has been made in improving the accessibility of essential medicines for HIV services in the North-East and the South-South regions of Nigeria. The availability of essential medicines such as ART drugs has improved, thanks to the efforts of various partners and funding agencies. However, there is still room for improvement, especially in the provision of palliative care and systematic intravenous treatment for specific fungal infections.

Stock Management System in Place

Stock management is an essential component of any program that distributes drugs, including those used in HIV therapy. Good stock management ensures that essential medicines are available when they are needed and that there is no excess or shortage of supplies.

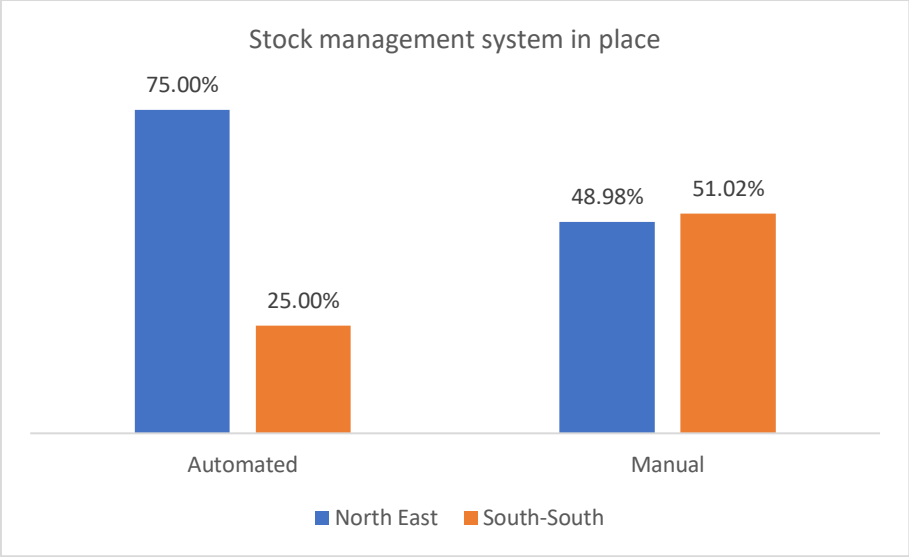

Figure 1. Stock Management System used for HIV Program in the North-East and South-South, Nigeria

The findings in Figure 1 shows that 75% of the respondents in the North East reported that they had an automated stock management system in place in their region while 25% of the respondents in the South-South reported that they had an automated stock management system in place in their region. On the other hand, 48.98% and 51.02% of the respondents reported that they had a manual stock management system in place in the North East and South-South region respectively.

Essential Medicines Procurement for HIV Care

In the context of HIV programming, the availability and accessibility of essential medicines is critical to ensuring that people living with HIV can access the treatment and care they need to manage their condition and live healthy lives. The policies and guidelines for medicine procurement and distribution in the target states are therefore particularly important for HIV programming.

In Figure 2, all four states surveyed reported a significant percentage of health facilities with HIV/AIDS medicine stockouts in the past six months. Taraba State had the highest percentage of facilities with a stockout at 79%, followed by Adamawa State at 85%. Followed by Cross River State at 59%, then Akwa Ibom State at 50%. From the data, the North East states also experienced more stockouts in the past 6 months compared to the south south states. These data highlight the challenge of ensuring a consistent supply of essential medicines for HIV/AIDS treatment and care in these states, which can have negative consequences on the health of people living with HIV/AIDS. It is important for policymakers and health managers to address these stockout issues to ensure that HIV/AIDS patients have access to the necessary medicines for their treatment and care.

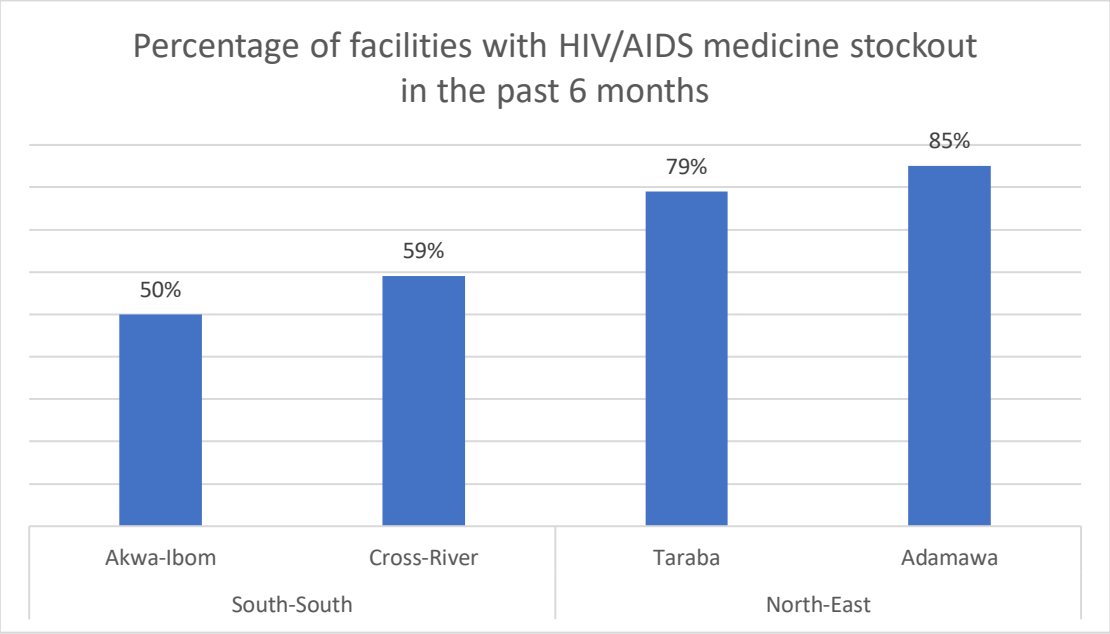

Figure 2. Percentage of Facilities with HIV/AIDS Medicine Stockout in the Past 6 Months

Discussion

Antiretroviral therapy, opportunistic infection prophylaxis and treatment, pre-exposure prophylaxis, post-exposure prophylaxis, and treatment for HIV-related consequences are Essential medicines required for HIV programs [10]. These medications are essential for ensuring that individuals with HIV have access to adequate care and treatment, which can enhance their quality of life and health outcomes [11].

Antiretroviral therapy (ART) is the cornerstone of HIV care and entails the

administration of three or more antiretroviral medications in combination to suppress the virus, halt the course of the disease, and lessen the risk of transmission. HIV patients are also more susceptible to opportunistic diseases such tuberculosis, pneumonia, and fungal infections [12]. Thus, HIV programming requires the use of medications for the prevention and treatment of these illnesses [13, 14]. Antiretroviral therapy (ART) and programs for the prevention of mother-to-child transmission (PMTCT) are two of the initiatives that the government and its partners have put into place to combat the epidemic. With the assistance of various funders and partners, these interventions are often provided through a combination of public and private healthcare facilities [15].

In the context of HIV program, the availability and accessibility of essential medicines is critical to ensuring that people living with HIV can access the treatment and care they need to manage their condition and live healthy lives [16]. The policies and guidelines for medicine procurement and distribution in the target states are therefore particularly important for HIV programming. All four states surveyed reported a significant percentage of health facilities with HIV/AIDS medicine stockouts in the past six months. Taraba State had the highest percentage of facilities with a stockout at 79%, followed by Adamawa State at 85% then Cross River State at 59%, and Akwa Ibom State at 50%. These data highlight the challenge of ensuring a consistent supply of essential medicines for HIV/AIDS treatment and care in these states, which can have negative consequences on the health of people living with HIV/AIDS. It is important for policymakers and health managers to address these stockout issues to ensure that HIV/AIDS patients have access to the necessary medicines for their treatment and care [17,18]. In addressing the stockout of essential medicines, a review of regions supply chain system involving medicine procurement and last mile distribution to health facilities should be reviewed extensively by the government and partners in the regions. Findings from KII and HIV client perspectives, donor agencies and government operate a central store system in each state, distributions are made from the central medical stores by a subcontracted vendor, who distributes using utilisation and projected data from health providers across each facility [19]. If consumption of essential medicines contributes to utilisation data, then stock out of medicines will impact on the utilisation figures that is used for projections of supply [20]. Other gaps identified from this study are challenges in distributions of essential medicines from the central store to facilities in hard-to-reach locations [21], these locations are hard to reach due to poor road infrastructure, unavailability of information technology to document distributions and utilisations in real time, unavailability of electronic reporting devices and in adequate capacity and storage facilities in the rural facilities mostly affected by lack of power [22]. These challenges present an opportunity for government and donor agencies to reviews distribution of essential medicines in the hard-to-reach areas and deploy locally contextual solutions to bridge the gaps [23]. In the Northeast security insurgency may have contributed to the access and availability of essential medicines, hence a programmatic integration of strategies between the HIV/AIDS public health interventions and humanitarian interventions may be necessary. The South south region poor economic situations and lack of coordination between HIV/AIDS sector and other development sectors managed by government may be contributing to the availability of essential medicines in the region. Findings from this study also showed that the availability of essential medicines for HIV though partially integrated with other disease programs can be better improved to achieve full integration [24].

The differentiated service delivery model of HIV care was noted to be convenient for HIV recipient of care, acknowledging the DSD models for direct distributions and

accountability may also contribute to improving medicine access [25].

Conclusion

Access to essential medicines for HIV treatment was high in both regions, but access to micronutrient supplementation was higher in the South-South region. Donor funding and intervention programs played a significant role in improving the supply and accessibility of ART drugs in the North-East region. Nigeria's HIV program is largely donor-dependent, about 70% of funding coming from external sources.

Although Nigeria has made significant progress in improving access to essential medicines, including antiretroviral therapy for HIV treatment, stockouts remain a challenge in some states. There is a need to improve the availability and accessibility of essential medicines, including those needed for HIV/AIDS treatment and care, by strengthening the procurement and supply chain systems.

Conflict of Interest

Regarding this study, we hereby declare that there are no conflicts of interest. None of the authors has any financial or interpersonal ties to people or businesses that might affect their work or how the findings are interpreted. Furthermore, the authors received no funding or assistance from any organization or institution that might profit from the publication of this study. The sole objective of this study was to produce knowledge and advance the field of public health.

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