

Identification, Distribution and Modes of HIV Transmission Among 212 HIV-infected Children Initiated on ART in Selected Project Communities in Akwa Ibom, Rivers, and Imo States of Nigeria

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Abstract

Introduction: Nigeria has 220,000 children between 0 to 14 years who are HIV positive and only 26% of these are receiving Antiretroviral Treatment (ART) (UNAIDS 2017). An estimated 210 000 new HIV infections occurred in Nigeria in 2017, among them 37,000 children due to mother-to-child transmission. Despite regular global emphasis and updates on guidelines recommending earlier initiation of ART in HIV-infected children, this was not heeded as a priority in Nigeria therefore ART initiation for HIV-positive children lags behind that of adults. The 212 HIV-positive children studied here were part of the 218 positive children identified and enrolled first into family OVC care and support, and later into ART care

Objectives: This study described the characteristics of 212 HIV positive children initiated into ART in selected Orphan and Vulnerable Children (OVC) project communities in Akwa Ibom, Rivers and Imo states of Nigeria. The study documented their awareness of their HIV status before and after enrollment on OVC care, demographic characteristics (ages, sex, educational level, and vulnerability status), their distribution, treatment adherence and the reported modes of infection.

Methodology: A cross-sectional descriptive study using structured interviewer-administered questionnaire was conducted among HIV positive vulnerable children aged 0-17 years.

Results: Of the 212 HIV-positive children, only 57 (26.9%) knew their HIV status before they were enrolled into OVC home care. The greater majority 155(73.1%) were tested, confirmed HIV-positive and linked to ART care after they were enrolled into OVC care. More than half (54.7%) of the positive children were female and the largest proportion (35.8%) were within age 5-9 years. The mean age of the children was 9.7 years. About three-quarters (74.1%) of the positive children were actively enrolled in school. Of the 212 children surveyed, two-thirds (139) were from Akwa Ibom state in South-south Nigeria. Oron local government and Ikot Ekpene, both in Akwa Ibom State reported the highest HIV infections among the children. More than three quarter of the children reported how they were infected. More than half, (53.3%) were infected through mother-to-child transmission, 20.8% through sharing of sharp objects. Five percent reported acquiring the infection through unprotected sexual intercourse, while 19.3% did not know how they got infected. Close to four-fifth (78.8%) of the children had disclosed their HIV status to relatives at the time of the study. Almost two-third (61.6%) of the children voluntarily and readily showed their test results, while 86.3% presented their drugs and remembered their last and next refill dates.

The rate of enrolment of HIV-positive children into ART in this project (99.5%) was high. Only one out of 212 HIV-positive children was yet to be enrolled into ART care at the time of the study. A large proportion (93.4%) of the respondents reported adherence to their medication, and about two thirds (67.8%) of the children knew their viral load.

Discussion and Conclusion

Almost all the HIV-positive children identified in this study were initiated on ART and followed up for viral load testing. This is a departure from what used to be the case in the larger population. Not many children used to be tested, and even when tested and confirmed HIV-positive, initiating them on ART was never a priority (UNAIDS 2016).

This study has shown that finding, tracking and escorting HIV positive children from their homes and communities to ART sites is an effective strategy in ensuring ART initiation, treatment adherence and viral load testing for HIV infected children. The strategy provides a continuum and holistic approach to OVC services for HIV positive children. The study has shown that skilled local nongovernmental organizations working on OVC programs at the community level can achieve more by combining community OVC services, HIV testing and

health facility linkage. As the number of adults who die of HIV increases, there will be a corresponding increase in the number of children orphaned by the scourge. Strengthening community-based OVC programs to include HIV care and support for HIV positive children will provide a one stop shop “OVC under one Roof” for vulnerable children infected with HIV.

Introduction

Enrolment of HIV-positive children into ART care was not seen as a priority in Nigeria compared to adult HIV clients. In 2017, the United Nations reported that 220,000 Nigerian children (ages 0 to 14 years) were living with HIV and only 26% of them were receiving antiretroviral treatment (ART) (UNAIDS 2017). In the same year (2017) an estimated 1.8 million children in Nigeria were orphaned by AIDS. Orphanhood has a huge impact on the health, safety and wellbeing of children. About 3.1 million people are reported to be living with HIV in Nigeria, among whom 30% were accessing antiretroviral therapy (UNAIDS, 2017). Nigeria’s HIV epidemic affects all population groups and geographic areas of the country. It is the second largest epidemic globally. Six states in Nigeria account for 41% of people living with HIV. The states include Kaduna, Akwa Ibom, Benue, Lagos, Oyo, and Kano (NACA, 2017). HIV prevalence is highest in Nigeria’s South-south zone, and stands at 5.5%. It is lowest in the southeast where there is a prevalence of 1.8%. HIV rates are higher in rural areas (4%) than in urban ones (3%). Unprotected heterosexual sex accounts for 80% of new HIV infections in Nigeria, with the majority of remaining HIV infections occurring in key affected populations such as sex workers (NACA, 2015). Key populations are disproportionately impacted by the epidemic. In 2017, Nigeria had 210 000 new HIV infections and 150 000 AIDS-related deaths. Among pregnant women living with HIV only 32% were accessing treatment or prophylaxis to prevent transmission of HIV to their children. An estimated 37 000 Nigerian children were newly infected with HIV due to mother-to-child transmission (Avert, 2017).

Economic and social marginalization drives the HIV epidemic around the world. Research findings are in agreement that low income, unemployment, food insecurity and lack of access to education and health care, among other factors, increase vulnerability to HIV. According to Jonathan Mann the founding director of World Health Organization Global Program on AIDS (1996), those people who were marginalized before the advent of HIV became those at the highest risk of HIV infection after the epidemic began. Orphans and children made vulnerable by HIV/AIDS are among the hardest hit.

Rationale

Health outcomes for children and adolescents living with HIV in Nigeria are poor. Nigeria is reportedly the only country in the world where mortality in 10-14 year olds is rising (CIPHER, 2018). Despite their elevated risk, reports show that few adolescents test for HIV regularly. In 2017 only 2% of males between 15 and 19 and 4% of females had tested for HIV in the last 12 months (UNICEF, 2017).

Young women have a higher HIV prevalence and are infected earlier in life than men of the same age group (NACA, 2015). In 2016, more than 46,000 young women were infected with HIV in Nigeria compared to 33,900 young men (UNAIDS, AIDSinfo, 2017).

Most studies on children enrolled in ART care focused on HIV infected children at specific secondary or tertiary health facilities, with little or no studies at the community level. The present study focused on identifying and tracking HIV positive children from their individual homes and communities in the course of providing them OVC services and escorting them to their preferred ART sites for enrollment, adherence counseling and viral load monitoring. The study population is therefore children enrolled in OVC care and support (Health, Nutrition, Education, Psychosocial support, protection, safety and economic strengthening) and then ART. This strategy ensures holistic and comprehensive care for the children. They also have opportunities to choose where they receive ART services. This enhances shared commitment and willing participation in the health behaviour change.

Study Objectives

This study described the socio-demographic characteristics of orphans and vulnerable children (OVC), who were HIV-positive, investigated the routes of their infection, the frequency of enrolment into ART and care, and documented their adherence to treatment. There have been a few studies conducted on characteristics of children with HIV infection in health care facilities in Nigeria (Nnamdi Benson Onyire, U Anyanwu Onyinye, OW Daniyan, C Onwe Ogah, ML Orji, 2016; Orenuga, et al, 2012), but these studies focused on children in health facilities (tertiary), and did not target community-based children. The current study is focused on HIV-positive OVC who were identified at the community level and followed up to the clinic level by the researchers.

Methods: A cross-sectional descriptive study was carried out on children, 0-17 years, confirmed positive for HIV and living in communities where LOPIN 2 Project is implemented in Imo, Akwa Ibom and Rivers States of Nigeria. A structured interviewer-administered questionnaire was used to collect data. Although a total of 218 children reported to be HIV-positive in the three states, only the 212 children who willingly volunteered to participate in this study were interviewed. Children below 10 years were interviewed by proxy as their caregivers responded to the questions. Informed consent was obtained from caregivers and guardians of the children.

Study Area and Study Population: Widows and Orphans Empowerment Organization (WEWE) implemented the Local Partners Initiative for Orphans and Vulnerable Children (LOPIN 2) Project funded by USAID in four states south of Nigeria. The states include Akwa Ibom and Rivers in the South-south, and Anambra and Imo in the South-east. This study on HIV-positive children was conducted in three of the states. The study was conducted in 9 local governments (Akwa Ibom=4, Rivers=3, Imo=2). Table 1 represents the distribution of the study population. Each of the households was identified and enrolled into OVC care and support based on President’s Emergency Preparation for AIDS Relief (PEPFAR) Reauthorization Act 2008 and PEPFAR 2012 OVC Guideline which categorizes vulnerable children under 18 as those who (i) have lost a parent to HIV/AIDS, and (ii) are otherwise directly affected by the disease. Using approved National Vulnerable Children Enrolment Form, the households and vulnerable children were enrolled into OVC care based on the stipulated variables of Vulnerability status, child’s HIV status, Child’s Birth registration and education, Household and Caregiver Information including Caregiver’s HIV status. In each community, the enrolled children were identified with the support of community leaders and volunteers who served as key informants in those communities.

Table 1: Distribution of the Study Population by State and LGA

		Frequency		Percent
State name	Akwa Ibom	139		65.6
	Imo	7		3.3
	Rivers	66		31.1
Total		212		100.00
Local government Area	Ikot Ekpene	38		17.9
	Uyo	29		13.7
	Oron	71		33.5
	IbesikpoAsutan	1		.5
	Owerri West	6		2.8
	Ohaji/Egbema	1		.5
	Eleme	20		9.4
	Obio-Akpor	32		15.1
	Phalga	14		6.6
Total		212		100.00

Results

Characteristics of the Respondents

Sex and Age: A majority 116(54.7%) of the HIV-positive children were female while 45.3% were males, giving a female to male ratio of 1:1.2. Among the positive children, the largest proportion (35.8%) fall within the 5-9 year age group, followed by the 10-14 year age group (Table 2). The mean age of the children is 9.7 years.

About two-third 139(65.6%) of the 212 HIV-positive children were from Akwa Ibom state, and almost one-third 66(31.1%) from Rivers State, both in the South-south geo-political zone of Nigeria. Imo state in the South-east reported 7 positive children. Table 1 shows that at the Local Government levels, Oron, in Akwa Ibom State reported the highest proportion (33.5%) of the total number of HIV-positive children, followed by Ikot-Ekpene also in Akwa Ibom, then Obio-Akpor in Rivers State (15.1%), before Uyo LGA (13.7%), also in Akwa Ibom. These findings support the evidence that the South-south has a high burden of HIV cases compared to the south-east.

Table 2 shows that more than half of the positive children (56.6%) resided in the urban areas compared to 43.4% in the rural areas.

Education and Schooling:

Table 2 further shows that nearly three-quarters (74.1%) of the positive children were actively in school. A large proportion of the children (39.3%) was still at the primary school level, while more than a quarter (27.5%) were yet to complete secondary education.

Table 2 Percentage distribution of Clients (HIV+ Children) 0-17 years of age according to socio-demographic characteristics

		Number	%
State	Akwa Ibom	139	65.6
	Imo	7	3.3
	Rivers	66	31.1
Location	Urban	120	56.6
	Rural	92	43.4
Sex	Males	96	45.3
	Female	116	54.7
Age	1-4	31	14.6
	5-9	76	35.8
	10-14	61	28.8
	15-17	44	20.8
Mean Age		9.7 years	
School Status	Yes, in school	157	74.1
	No, not in school	55	25.9
Level of Education	No Education	31	14.7
	Primary Not Completed	83	39.3
	First School Leaving	9	4.3
	Secondary not Completed	58	27.5
	SSCE	17	8.1
	Others	13	6.2
Sex of Caregiver	Male	19	9.0
	Female	193	91.0
Caregivers Age	18-25	11	5.2
	26-35	91	43.3
	36-45	77	36.7
	46-55	17	8.1
	55+	14	6.7
Mean Age of Caregivers		37.97 ±9.90	
Child's Relationship to Caregiver	Aunty	8	3.8
	Uncle	1	.5
	Mother	167	78.8
	Father	16	7.5
	Sister	1	.5
	Grand Mother	14	6.6
	Grand Father	2	.9
	Guardian	3	1.4

Caregivers' Age and Sex:

Only nine percent of the caregivers were males. The remaining 91% were females, giving a caregiver male/female ratio of 1:10: A high proportion of the caregivers (43.3%) were aged between 26 and 35 years, while one third (36.7%) were between ages 36 and 45 years. The mean age of the caregivers was 37.9 years (Table 2). Overall, a high majority (85.2%) of caregivers were still of child-bearing age. The finding that male caregivers constituted less than ten percent of the total (Table 2) corroborates the other finding that there were more paternal than maternal orphans. This also means that the traditional bread winners were dead, leaving very vulnerable households in a society where the women were not traditionally empowered to own property. The study also surveyed the relationship between the children and their caregivers. Table 2 showed that more than three-quarters (78.8%) of the children were cared for by their biological mothers. Less than one-tenth (7.5%) were cared for by their biological fathers. This statistic confirms the ratio of female caregivers to males.

Fourteen children (6.6%) were living with their grandmothers, while three children (1.4%) were living with persons not related to them.

Table 3: Distribution of respondents by orphanhood status

Child's Parent's Status		Number	%
	Paternal Orphans		56
Maternal Orphans		19	9
Double Orphans		15	7
Non Orphan		122	58
Total		212	100.00

The study also documented the orphanhood status of the positive children. Ninety (42%) of the HIV-Positive children were orphans. There were more paternal than maternal or double orphans. Among the HIV-positive orphans, 56(62%) were paternal orphans; 19(21%) had lost their mothers, while 15(17%) had lost both parents. Table 3 shows that more than half, 122 (58 %) of the HIV-positive children, though not orphans, were vulnerable.

Table 4 reports other HIV-related variables of interest. Of the 212 HIV-positive children, only 57 (26.9%) knew their HIV status before they were enrolled into OVC home care. The greater majority 155(73.1%) were tested, confirmed HIV-positive and linked to ART care after they were enrolled into OVC care. The researchers saw the HIV test results of close to two-thirds (61.6%) of the respondents.

Status Disclosure and related information

The study investigated the status disclosure of the respondents. Findings showed that close to four-fifth (78.8%) of the children had disclosed their HIV status to relatives at the time of the study. However, only a quarter of the positive children belonged to support groups. Seventy-four percent of the children did not belong to any support groups. Almost two-third (61.6%) of the respondents voluntarily and readily showed their test results, while 86.3% presented their drugs and remembered their last and next refill dates.

More than three quarter of the children were able to report how they were infected. More than half, (53.3%) reportedly got infected through mother-to-child transmission. Forty-four (20.75%) children reportedly acquired the virus through sharing of sharps, while five percent of the children reported acquiring the infection through unprotected sexual intercourse. Further analysis showed that those reporting infection through unprotected sexual intercourse were mainly adolescents. Table 4 showed that close to one-fifth of the respondents did not know how they acquired the virus.

Table 4: HIV-related knowledge and Information of Children

		Number	%
Knew HIV status before enrolling into OVC program	Yes	57	26.9%
	No	155	73.1%
Status Disclosure to Individuals	Yes	167	78.8
	No	45	21.2
Availability of test result	Test result Not Seen	81	38.2
	Test result seen	131	61.8
Child on ART	Yes	211	99.5
	No	1	.5
Sighting Drugs	Drug Seen	182	86.3
	Not Seen	29	13.7
Knowledge of Viral Load	Yes	141	67.8
	No	67	32.2
Route of Infection	Mother-to-Child	113	53.3

Membership of Support Group	Unprotected Sex	11	5.2
	Infected Blood Transfusion	3	1.4
	Sharing of Sharp Object	44	20.8
	Don't Know	41	19.3
	Yes	55	25.9
	No	157	74.1

Enrolment into Anti Retroviral Treatment (ART):

At 99.5%, the rate of enrolment of the HIV-infected children into ART care was high. Only one out of the 212 infected children was yet to be enrolled for ART at the time of the study. Table 4 posits that a large proportion (86.3%) of the children collected their drugs on timely basis. The table further reveals that about two thirds (67.8%) of the children reportedly knew their viral load.

Table 5: Adherence to drugs

		Number	%
Adherence	Yes	198	93.4
	No	14	6.6
Missed Taking Drugs	Yes	36	17.0
	No	176	83.0
Number of Times Child Missed Drugs	1-3 Times	24	66.7
	4-6 Times	12	33.3
Health Improvement	Yes, I am Improving daily	205	96.7
	No, I am not Improving	1	0.5
	I am not sure	6	2.8

Adherence and Reported Improvement in Health

A large proportion (93.4%) of the respondents reported adherence to their medication. However, an appreciable fraction (17.0%) reported ever missing their drugs and a disproportionate number (36) reportedly missed their drugs more than once. Despite the non strict adherence to medications, 96.7% of respondents opined that they were improving in health (Table 5).

Discussion and Conclusion

The finding that a greater proportion of the HIV infected children are females concurs with similar findings by Fru, et al (2014) who reported 57.4% female and 42.6% male predominance among 61 HIV positive children at the Yaounde Gynaeco-Obstetric and Pediatric Hospital, Cameroon. But the finding differs from those of Orenuga et al (2012), who reported 52.7% male dominance among children infected with HIV at Lagos University Teaching Hospital and Onyire, et al (2016) who documented a male ratio of 60.7% to female 39.3% (1.5: 1) among HIV positive children studied at the Federal Teaching Hospital, Abakaliki, Nigeria. The difference in sex dominance in the current study may be due to the intense identification of positive cases at the community level rather than from the health facility level.

More than one in every ten of the children who should be in school were not in schools for many reasons ranging from ill health to financial lack. There is need for targeted support for HIV-infected children to remain in school.

The finding that as many as 85.2% of the female caregivers were of childbearing age suggests need for intensified HIV prevention, safe sex and Family planning education among the caregivers.

Although all the children surveyed were from vulnerable households already receiving intervention, 42% were also orphans. Onyire, et al reported 28.1% orphans among 89 HIV-infected children surveyed at the Federal Teaching Hospital, Abakaliki. Among the 90 orphans in our study, 56(62.2%) were paternal orphans. This depicts the loss of the traditional bread winner in the household. Orphanhood has a huge impact on the health, safety and wellbeing of children. Around 20% of orphans and vulnerable children do not attend school regularly and around 18% are sexually abused (NACA, 2015). HIV also has an indirect impact on children in Nigeria. Most of them become the caregivers for parents who are living with HIV. Most often this infantile responsibility lies more with girl child than with the boys and can contribute to the imbalance in schooling between the two genders in Nigeria, with girls missing out on HIV education that could teach them how to protect themselves from infection (NACA, 2014).

The finding that more than half of the HIV positive children acquired the infection through their mothers agrees with similar findings by Fru, et al who reported that 88.5% of HIV-infected children acquired the virus through mother-to-child transmission and depicts a gap in PMTCT intervention. It could also reflect a paucity of use of antenatal care facilities during pregnancy. It is particularly common knowledge that Akwa Ibom state harbours a large number of Traditional Birth Attendants who provide antenatal and delivery services to pregnant women. The finding is also consistent with the data reported by UNICEF (2014) that 90% of HIV infections in children occur through vertical transmission. Reducing mother-to-child transmission remains a major challenge in Nigeria because over a quarter (26.9%) of all cases of mother-to-child transmission (MTCT) of HIV in the world happen in Nigeria (UNAIDS, 2018). The rate of mother-to-child transmission has remained high, and estimated at 22% in 2016 (UNAIDS, 2018). The number of pregnant women visiting health facilities remains low, as does the number of health facilities providing PMTCT services.

We recommend increased HIV education and integration/reinforcement of PMTCT intervention at all facets of OVC and HIV program particularly at the community level.

Two out of every three HIV-positive children reportedly knew their viral load. This is outstanding when compared to the general HIV population in Nigeria which has only approximately 24% known suppressed viral load (UNAIDS, 2016). Individual knowledge of viral load signifies a personal interest in one's health issues and could lead to a conscious commitment to maintain improved health. This accounts for the finding that 96.7% of respondents reported improved health.

Overall, the findings portrayed many best practices that led to the impressive outcomes recorded.. For example, the greater majority 155(73.1%) of the HIV-infected children were tested, confirmed HIV-positive and linked to ART care only after they were enrolled into OVC care. This implies that service provision at home led to confidence and trust between OVC care providers and beneficiaries allowing the care providers to refer/escort the beneficiaries to health facility service delivery points (HTS, ART). These successes were a result of strong referral systems developed by WEWE and interpersonal follow-ups as well as linkages and partnerships with different health care facilities. Secondly, the high level of ART enrollment among HIV-positive children is a positive departure from the normal when HIV-positive children were not considered for initiation into ART. Thirdly, the fact that most respondents know the quantity of drugs they receive and when the drugs are supposed to finish, to enable them go for refill, and clinical follow-up is a commitment to adherence to treatment. The data collectors actually sighted the drugs, checked the dates of collection and the balance at hand, to enable them confirm patient's adherence to the medications. The fourth interesting finding is the relatively high rate of HIV status disclosure among the clients. HIV status disclosure signifies a penetration of HIV education leading to a breaking of the barriers which militate against disclosure and adherence to treatment. Both willingness to disclose status and to show both test result and drugs (by those on ART) implies a thawing of stigma, and denotes positive behaviour change. It also represents a penetration of Family Life and HIV Education which is integrated into the monthly adolescent classes and "better parenting" teaching for caregivers.

Voluntary HIV status disclosure is considered necessary, particularly among the adolescent positive cases as studies have shown that timely disclosure may help in preventing high-risk behaviour, thereby curbing disease spread. Among the children, researchers also believe that disclosure to a child has the advantage of a greater ability to cope and provide support to each other (caregiver and child); increase intimacy between caregiver and child, resulting in stronger family ties; empowers the child to participate in health care, increases hope, and enables choices and self-protection (Aneesa Naeem-Sheik, and Glenda Gray, 2005). It is particularly interesting that a high proportion of positive caregivers have disclosed to their adolescent children, as well as to some close friends. However, of more immediate need to the sick child is improved health - what will happen to him in the more immediate future. More emphasis should be on treatment adherence and regaining good health.

The findings also revealed that half of the positive children were infected through mother-to-child transmission of the virus. This finding confirms UNAIDS reports that mother-to-child transmission of the virus has remained high in Nigeria, at an estimated 22% (UNAIDS 2018). Nigeria was selected as one of the UNAIDS 23 priority countries for PMTCT – being one of the countries with HIV burden yet low levels of treatment coverage during pregnancy. Of these 23 countries, Nigeria has the second lowest level of ART coverage in pregnant women (UNAIDS 2017).

Although only about a quarter of the respondents belong to any support group, we believe that membership of a support group engenders numerous benefits such as increase in patient literacy, improvement in the psychosocial needs of patients, increased retention in care, reduced mortality and morbidity, improved disclosure with potential preventive benefits (Moses Bateganya, Ugo, Amanyiwe, Uchechi Roxo, Maxia Dong, 2015). But because children (0-14 years) may not actually benefit by directly sitting with adult group members, we recommend that caregivers of positive children who themselves are positive (and even those who are HIV-negative) be encouraged to join support groups, or form their own.

Escort services from the community to the health facility is recommended as a veritable strategy to increase client identification and linkage to ART care centres and ensure timely initiation on treatment as well as follow up on treatment and adherence. This study has shown that finding, tracking and escorting HIV positive children from their homes and communities to ART sites is an effective strategy in ensuring ART initiation, treatment adherence and viral load testing for HIV infected children. The strategy provides a continuum and holistic approach to OVC services for HIV positive children. The study has shown that skilled local nongovernmental organizations working on OVC programs at the community level can achieve more by combining community OVC services, HIV testing and health facility linkage. As the number of adults who die of HIV increases, there will be a corresponding increase in the number of children orphaned by the scourge. Strengthening community-based OVC programs to include HIV care and support for HIV positive children will provide a one stop shop "OVC under one Roof" for vulnerable children infected with HIV. By this strategy, local and community based organizations will contribute comprehensively to the attainment of the 90-90-90 objective.

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Reference

- [1]. UNAIDS (2017). Data Book 2017 (http://www.UNAIDS.ORG/SITES/DEFAULT/FILES/MEDIA_ASSET/20170720_Data_book_2017_en.pdf)
- [2]. Florence Soh Fru, Andreas Chiabi, Seraphin Nguefack, Evelyn Mah, Virgin Takou, Jean Baptiste Bogne, Marie Lando, Pierre-Fernand Tchokoteu, Elie Mbonda (2014): Bseline demographic, clinical and immunological profiles of HIV-infected children at the Yaounde Gynaeco-Obstetric and Pediatric Hospital, Cameroon. The Pan African Medical Journal. Doi:10. 11604/pamj. 2014.17.87.3264
- [3]. Nigeria National Agency for the Control of AIDS (NACA (2017)). <https://www.childrenandaids.org/sites/default/files/2017-11/NATIONAL-HIV-AND-AIDS-STRATEGIC-FRAMEWORK.pdf>
- [4]. Nigeria National Agency for the Control of AIDS (NACA) (2014). "Country Progress Report 2014 (http://www.unaids.org/sites/default/files/country/documents/NGA_narrative_report_2014.pdf)
- [5]. NACA (2015). http://www.unaids.org/sites/default/files/country/documents/NGA_narrative_report_2015.pdf
- [6]. Avert (2017): HIV and AIDS in Nigeria. Global information and education on HIV and AIDS
- [7]. Mann, Jonathan M.; Tarantola, D (1996) AIDS in the World ii: Global Dimensions, Social Roots and Responses. Oxford University Press.
- [8]. UNAIDS (2016). http://www.unaids.org/sites/default/files/media_asset/2016-prevention-gap-report_en.pdf
- [9]. UNAIDS(2018).http://www.unaids.org/sites/default/files/media_asset/JC2923_SFSFAF_2017progressreport_en.pdf
- [10]. UNAIDS (2017). Ending AIDS: Progress towards the 90-90-90 targets
- [11]. UNAIDS (2017). http://www.unaids.org/sites/default/files/media_asset/20170720_Global_AIDS_update_2017_en.pdf
- [12]. UNAIDS (2018). Start free, Stay Free, AIDS Free: 2017 progress report (http://www.unaids.org/sites/default/files/media_asset/JC2923_SFSFAF_2017_progress_report_en.pdf)
- [13]. UNICEF (2014). Elimination of Mother-To-Child Transmission of HIV (EMTC):2014. Available from <http://www.data.unicef.org/hiv-aids/emtct>
- [14]. National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF)(2017) Multiple Indicator Cluster Survey 2016-17. Survey Findingshttps://www.unicef.org/nigeria/NG_publications_mics_201617.pdf
- [15]. UNICEF (2017). "Statistical Tables"(<https://data.unicef.org/topic/hivaids/global-regional-trends/>)
- [16]. CIPHER (2018) "The epidemiology of adolescents living with perinatally acquired HIV: A cross-region global cohort analysis"

- <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002514#references>, PLOS
Medicine, Vol 15, Issue 3
- [17]. UNAIDS 'AIDSinfo' (2017)<http://aidsinfo.unaids.org/>
- [18]. Nnamdi Benson Onyire, U Anyanwu Onyinye, OW Daniyan, C Onwe Ogah, ML Orji(2016). Sociodemographic Characteristics of pediatric humanimmunodeficiency virus-positive patients in Federal Teaching Hospital, Abakaliki, Ebonyi State, Nigeria. African Journal of Medical and Health Sciences, 15 1 (46-49).
- [19]. Omolola Olubunmi ORENUGA, Christiana Ayomide SOWOLE, Ade SOWOLE (2012). Socio-demographic Characteristics of a Cohort of HIV Positive Nigerian Children. Pesquisa Brasileira em Odontopediatria e Clinica Integrada 12(4): 567 – 571
- [20]. Aneesa Naeem-Sheik, Glenda Gray (2005). HIV Disclosure in Children. The Southern African Journal of HIV Medicine November, 2012; pp46-48
- Moses Bateganya, Ugo Amanyiwe, Uchechi Roxo, Maxia Dong (2015). The Impact of Support Groups for People Living with HIV on Clinical Outcomes: a systematic review of the literature. Journal of Acquired Immune Deficiency Syndrome Apr 15: 68(03): S368-S374