Trends in HIV prevalence from 2008 to 2012 among young adults in Port Harcourt, Nigeria

Iheanyi Omezuruike Okonko, Lasbry Chidi Nnodim

Medical Microbiology Unit, Department of Microbiology, University of Port Harcourt,
P.M.B. 5323, Choba, East-West Road, Port Harcourt, Rivers State, 500102, Nigeria;

Abstract

Background: The pandemic of HIV lines amongst the utmost infectious disease menaces in antiquity. HIV remains a problem worldwide and it's a grave health snags in developing nations particularly in Nigeria.

Objective: This study focused on "trends in HIV reporting from 2008 to 2012 among young adults in Port Harcourt, Nigeria.

Methods: Secondary data were collected from BMSH, Port Harcourt using a Performa specifically intended for this determination. Socio-demographic data for the subjects were recovered from coded patients' medical records kept at BMSH. The data generated was exposed to Fisher's Exact Test.

Results: The study showed that a total of 3081 HIV-positive cases were reported between 2008 and 2012. The HIV trend were not well defined, it peaked in 2009(36.6%) and 2008(32.8%) and a decrease in 2011(16.6%), 2012(8.3%) and 2010(5.7%). A 3.8% increase was observed between 2008 and 2009 and 30.9% decrease between 2009 and 2010. However, the prevalence seemed to stabilize between 2009 and 2012. HIV patterns among various age-groups is not well-defined, it rose with increasing age and peaked at 26-30years (35.7%) after which it declined. Sex differences (P<0.05) in the trend was observed. Males ages 26–30years showed uniform pattern with an increasing trend while 36-40years showed decreasing trend except in 2009(34.1%). Females ages 26-30years showed uniform pattern with an increasing trend from 2008(21.7%) to 2010(41.9%) and decreased from 41.9% (2010) to 36.5%(2012). The low HIV prevalence in 2010 could be attributed to the fact that the proportion of centers giving ART enlarged from 2005 to date. Health care facilities providing HIV/AIDS counselling and testing services also increased.

Conclusion: The long decades fight against HIV especially in Rivers State is making progress, though an unstable one. The observed increase in years with high HIV prevalences calls for an intensified focus of intervention.

Keywords: AIDS, Anti-retroviral therapy (ART), Health facilities, HIV, Prevalence Trends.

Introduction

The United Nations has termed HIV and AIDS the greatest overwhelming public health problems that the world has ever encountered[1,2]. The epidemic of HIV lines amid the paramount infectious disease menaces in the past[1,3]. The HIV widespread lingers to be a load worldwide and offers grave public health glitches in emerging countries particularly in Nigeria[1,4,5].

Corresponding author:
Iheanyi Omezuruike Okonko
Medical Microbiology Unit,
Department of Microbiology,
University of Port Harcourt,
P.M.B. 5323, Choba,
East-West Road, Port Harcourt,
Rivers State, Nigeria;
E-mail: iheanyi.okonko@uniport.edu.ng
Tel.: +234 803 538 0891

Over the years, Rivers State of Nigeria has witnessed a rising trend in HIV/AIDS infection[4]. The plague of HIV and AIDS has persisted to establish grave socio-economic and public health problems for more than two eras. The epidemic is predominated by HIV-1 first found in 1983[6,7]. HIV-1 has remained liable for most HIV occurrences all over the world, whereas HIV-2 is originated principally in West Africa[8] in 1987 and has not revealed any substantial blowout since then[6,7]. HIV-2 is not spread as easily as HIV-1 and the time between first infection and disease is usually elongated compared to HIV-1[6,7,9]. Nevertheless HIV-1/2 is transmitted predominantly by sexual contact, perinatally and blood transfusion. HIV-2, nevertheless, is not proficiently spread likened to HIV-1[1,10]. The study by Olaleye et al.[11] and Abimiku et al.[12] revealed HIV-1 to be most predominant and virulent mainly present in Nigeria, East and Central Africa, United States Europe and Asia, whereas HIV-2 is principally narrowed to West Africa[1].

Nigeria is the largest proportion of black people in the world with a population of more than 162 million[13-16]. The HIV/AIDS epidemic has already devastated Nigeria, with nearly a million people dead and more than two million children orphaned[5]. In unfledged and evolving countries, it has overturned several of the socio-economic, development and health improvements over three decades now as manifested among others in life anticipation at birth and infant death rate[13,17]. HIV is a major factor contributing to the declining life expectancy rate from 54 years in 1991 to 48 years in 2010[13].

The HIV pandemic has likewise enabled the recurrence of pulmonary tuberculosis and other unscrupulous infections. Footings in the proportions of persons with HIV, Nigeria was next to South Africa and India with the uppermost load of HIV in the world[18]. Though, Nigeria was recently rated as second country in the world with the uppermost HIV burden following the current amendment that estimated <3 million people with HIV in India[19]. Previous reports showed that estimation of 33.3 million individuals globally were likely to be plague-ridden with HIV as at 2009[13,17]. About 22.5 million lives in the sub-Saharan Africa while 2.98 million were in Nigeria. Furthermore, Nigeria is second to South Africa (5.6 million) with 3.1 million persons existing with HIV[13-18,20]. Approximately 215,000 people died from HIV in 2010[13]. Thus, Nigeria contributed 10% of the world-wide HIV load[13].

After the index report on AIDS in Nigeria (1986), the spates have unrelenting to advance. The chauffeurs of the widespread of HIV in Nigeria include high rates of STIs in susceptible clusters, high illiteracy, poverty, general lack of apparent personal risk and low condom use[21]. The first HIV/AIDS sentinel study in Nigeria was conducted in 1991 with 1.8% prevalence reported. The index HIV study showed 1.8% prevalence in 1991. This was followed by 3.8% in 1993, 4.5% in 1996, 5.4% in 1999 and a 5.8% peak in 2001. From 2001 a somewhat decline in trends were noted, starting with 5.0% in 2003, 4.4% in 2005, 4.6% in 2008 and 4.1% in 2010[13-17, 22-23]. It stabilized between 4.4% (2005) and 4.1% in 2010[13-17]. However, 4.6% prevalence reported in 2008 presented a slim hitch in the sliding pattern, thus engendering some attention[13-17]. The median HIV prevalence in the country in 2012 was 4.1%[24]. It is now clear that HIV prevalence in the country is relatively stable. This

positive trend is largely attributed to effective reporting and intervention system[25].

In 2010, 4.1% national prevalence of HIV was reported for Nigeria[17]. According to the study, North Central Zone (7.5%) was the highest, and South-South region (6.5%) was next[17]. In relation to location, there were similar trends in all the region with North-Central and South-South regions as having topmost urban prevalence of HIV (8.2% each) while South-South regions top the rural prevalence of HIV (4.2%). In relation to states, Rivers State was found to be 6.0% with Bori (8.0%) leading, followed by Bonny (5.9%) and Port Harcourt (5.5%)[13-17].

In the 2008 HIV sentinel study, HIV was most predominant in females aged 25-29 years (5.6%) and 30-34 years (4.9%). In 2007, 3.6% prevalence of HIV was reported in the national population-based study with no significant sex related disparity[17,26]. Built on the inclusive national prevalence of 4.1% found in 2010, it is projected that 3.1 million persons in Nigeria are existing with HIV and AIDS. And 1.5 million of them need ARV drugs[13-17] while 281,180 novel infections ensued[17]. In the same vein, it is projected that people needing ART has considerably escalated to 1,512,720; somewhat owing to the upsurge in continued existence of person living with HIV/AIDS (PLWHA), the emergent inhabitants as well as the variation in HIV treatment/management plans as specified that HIV persons having CD4 less than 350 should be retained on ART. This number is anticipated to upsurge in the prospect owing to the similar motives[17].

The widespread of HIV, as censored through predominance proportions, seems to indicate some steadiness in the HIV trends at the national level; while extensive discrepancy exist in different States[17]. HIV occurrence has reliably stayed low in some States and high in others. Whereas the occurrence has shown a steady drop in some States, it has been inconsistent in others[13,17].

By States, HIV prevalence as shown in Figure 1 and 2 clearly varies. While HIV/AIDS tends to be generally low in most parts of the country, the highest numbers of HIV prevalence were found mostly in Benue, FCT, Anambra, Baylesa and Akwa Ibom States of the federation[22-23, 25].

These marked differences in the prevalence rates among these states could be due to a number of factors including but not limited to cultural differences, varying levels of education, religion and differing socio-economic structures. Indeed, there must be interplay of these factors on HIV/AIDS outcome in these states. Hence, this retrospective study focused on assessing the trend of HIV among young adults, ages 16-40 years in Port Harcourt, Rivers State, Nigeria over a period of time (2008-2012).

Figure 1: HIV/AIDs prevalence by States in Nigeria, 2012.
Source: Nigeria National Agency for the Control of AIDS, 2012

KEY

>8.0%	■ (red)
6.1%-8.0%	■ (dark purple)
4.1%-6.0%	■ (light purple)
2.1%-4.0%	■ (light blue)
1.0%-2.0%	■ (cyan)
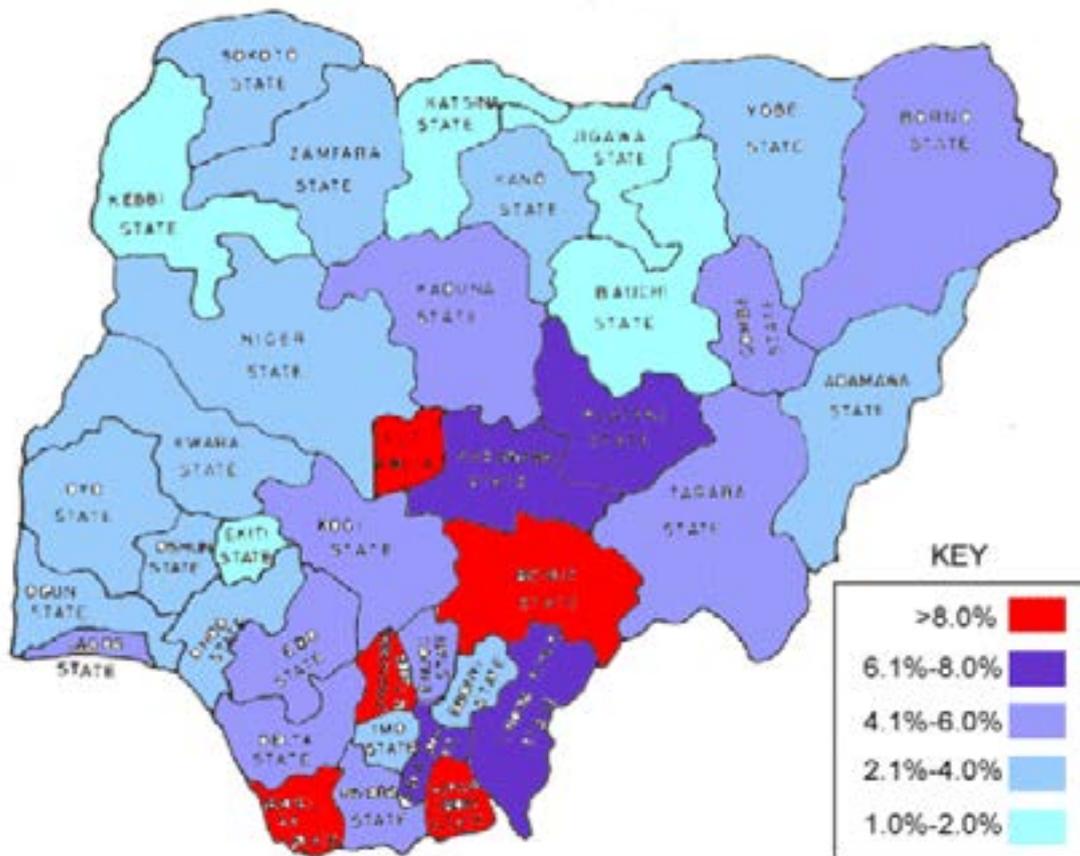
Methodology
Study strategy
This is a retrospective hospital based study. in the imperative to find a sample typical of the state, young adults ages 16-40 years old presenting at the Braitwhyte Memorial Specialist Hospital (BMSH) were selected to discover among younger people as a novel viewpoint to dissect HIV occurrence in Nigeria. To further buttress this, BMSH is a frequently used health-facility in Rivers State, Nigeria, which by feature of its setting delivers tertiary health-care services.

Study area
The trends of HIV prevalence in Port Harcourt was carried out using secondary data collected from Braitwhyte Memorial Specialist Hospital (BMSH), in Port Harcourt, River State, Nigeria. Port Harcourt (Igbo: Diobu, Iguocha or Ugwuocha; Pidgin: "Po-ta-kot") is the capital of Rivers State, Nigeria[27-29]. It lies along the Bonny River in the Niger Delta. Coordinates: 4°53'23"N 6°54'18"E and located in a city360 km2 (139 sq mi). From the Nigeria census in 2006, Port Harcourt had a population of 1,382,592 [30]. Port Harcourt city is in the Port Harcourt City Local Government Area, consisting of the former European quarters now called old Government reservation area (GRA) and New layout areas. The Port Harcourt Urban Area (Port Harcourt metropolis) is made up of the city itself and parts of Obio/Akpor Local Government Area [31]. It also has a tropical climate with very short dry seasons and lengthy and heavy rainy seasons. Only the months of December and January truly qualify as dry season months in

the city. The harmattan, which climatically influences many cities in West Africa, is less pronounced in Port Harcourt. Port Harcourt's heaviest precipitation occurs during September with an average of 370 mm of rain. December on average is the driest month of the year; with an average rainfall of 20 mm. Temperatures throughout the year in the city is relatively constant, showing little variation throughout the course of the year. Average temperatures are typically between 25°C-28°C in the city[28-29].

Ethical considerations

This study was approved by the Research Ethics Committee of the Rivers State Hospital Management Board, Rivers State Ministry of Health, Port Harcourt, Nigeria.

Study population

The trends of HIV prevalence in Port Harcourt was carried out using secondary data collected from BMSH using a Performa specially designed for this purpose. The target population was young adults, ages 16-40 years old. Younger adults constitute the most practical group for this study as they are sexually active, easily defined and accessible. Younger adults were also generally representative of the sexually active population. This group of people was selected to search among younger people as an innovative perspective to dichotomize HIV occurrence in Nigeria. Sexual activities, ease of access, availability and other environmentally friendly issues were real motives for selecting this group of people.

Data collection

Demographic data (age and gender) for participants and their serological outcomes were retrieved from coded patients' medical records kept at BMSH. Data collected were based on age, sex results. Data collection tools were laboratory record book, request form, data form and monthly summary sheets.

Sample collection and plasma preparation

Patients presenting at the Braitwhyte Memorial Specialist Hospital (BMSH) had 5-mL of their blood collected aseptically by venepuncture using a disposable sterile needle and syringe[32]. The sample was transferred into a labeled blood sample tube containing EDTA anticoagulant. Plasma was centrifuged, separated and stored at − 20°C until used for serology[32].

Serological testing

Samples presented at the Braitwhyte Memorial Specialist Hospital (BMSH) were screened for antibodies to HIV-1 & -2 using two rapid kits, based on World Health Organization (WHO) systems. All samples were first screened with DETERMINE® HIV-1/2 test kits (Abbott laboratories). This is an immunochromatography (rapid) technique for measureable recognition of antibodies of all isotopes (IgA, IgG and IgM) precise to HIV-1 and HIV-2 concurrently in serum. Red coloured lines in the control and patient windows is indicative of a positive result while existence of the red coloured line in the control and its lack in the patient window is also indicative of a negative result. Non-Reactive samples were recorded as NEGATIVE. All REACTIVE samples were further tested using HIV-1/2 STAT-PAK® (Chembio Diagnostic Systems, Inc.)' test kits. These kits were intended chiefly to check for the existence of HIV-1 and/or HIV-2 antibodies in the blood. Samples which were REACTIVE with both DETERMINE and STAT-PAK test kits were recorded as POSITIVE. Samples that were REACTIVE with DETERMINE only and NON-REACTIVE with STAT-PAK test kits were recorded as DISCORDANT. All tests were done in line with the manufacturer's stipulations.

Data analysis

The trend analysis of HIV prevalence focused on relevant independent variables such as age, sex and year. The generated data were showed using descriptive statistics and exposed to Fisher's Exact Test for contrast of proportions to define any substantial association amid gender, age and infection rate. To associate the amount of HIV infected persons, the chi-square test was used at 95% confidence level. The analysis was completed after recording the data in a Microsoft Excel worksheet on a Windows- 2010 platform.

Result

The study on trends in HIV reporting among younger adults in Rivers State, Nigeria showed that a total of 3, 081 (100.0%) young adults age bracket (16 – 40 years) were HIV-positive "between" 2008 and 2012. On the overall HIV was most prevalent in females (69.5%) than their male counterparts (30.5%).
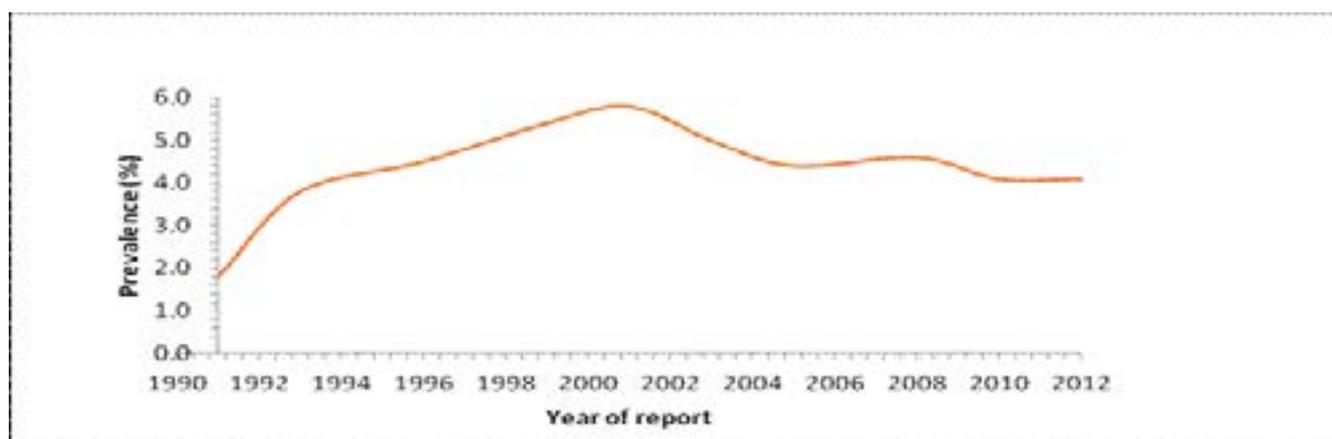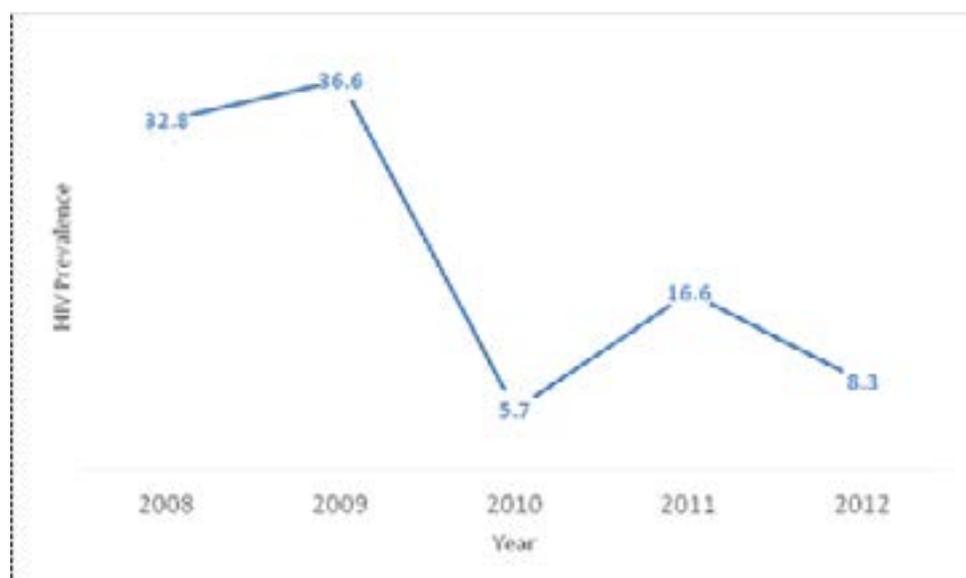
Figure 3 shows the trend of HIV prevalence among young adults. It showed that 1, 010 (32.8%) young adults were confirmed HIV-positive in 2008, 1,127(36.6%) in 2009, 176(5.7%) in 2010, 512(16.6%) in 2011 and 256(8.3%) in 2012. The trend of HIV prevalence among young adults from 2008-2012 were not defined, which showed a peak in 2009 (36.6%), followed by 2008(32.8%), 2011(16.6%), 2012(8.3%) and 2010 (5.7%) [Figure 3].

Figure 3: Trends in HIV prevalence from 2008 to 2012 among young adults in Rivers State
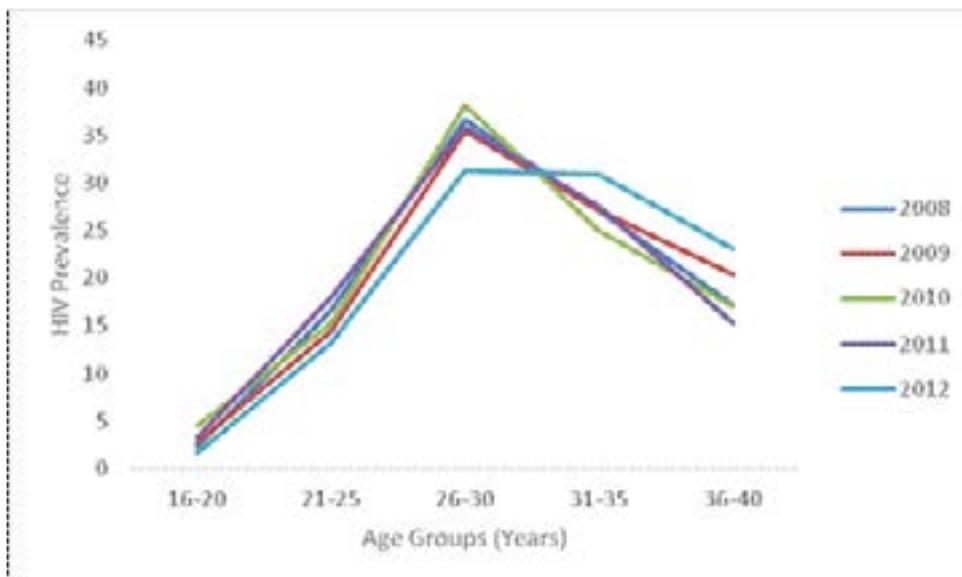

Trends in HIV prevalence among young adults in relation to age

Figure 4 shows the pattern of HIV occurrence among young adults in relation to age. The patterns in HIV occurrence in various age-groups were not well defined, which showed a peak in 26-30 years age-group (35.7%), followed by 31-35 (27.4%), 36-40 years (18.5%), 21-25 years (15.7%) and 16-20 years age-group (2.7%). The yearly HIV prevalence among age group 26-30 years showed the highest HIV prevalence in 2010 (38.1%), 2008 (36.7%), 2011 (35.9%), 2009 (35.4%) and 2012 (31.3%) [Figure 4].

Figure 4: Trends in HIV prevalence among young adults in relation to age groups
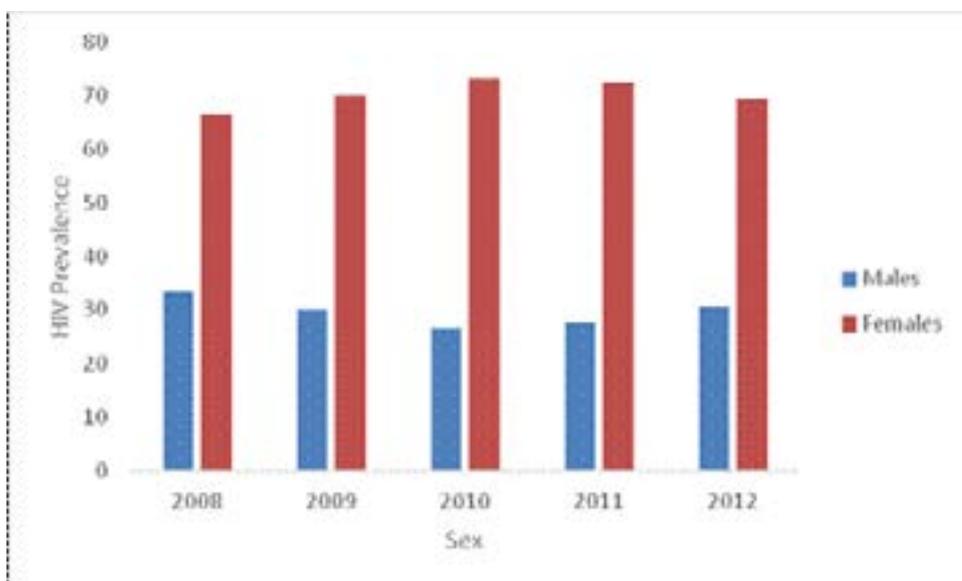

Trends in HIV prevalence among young adults in relation to sex

Figure 5 shows patterns in HIV occurrence in young adults in relation to sex. It indicated that 2,141 (69.5%) HIV positive cases occurred in females and 940 (30.5%) cases occurred in males. The study shows sex differences ($P<0.05$). The patterns of HIV prevalence among various sexes were not well defined, which showed a peak in 2008 (33.4%) among males and in 2010 (73.3%) among females [Figure 5].

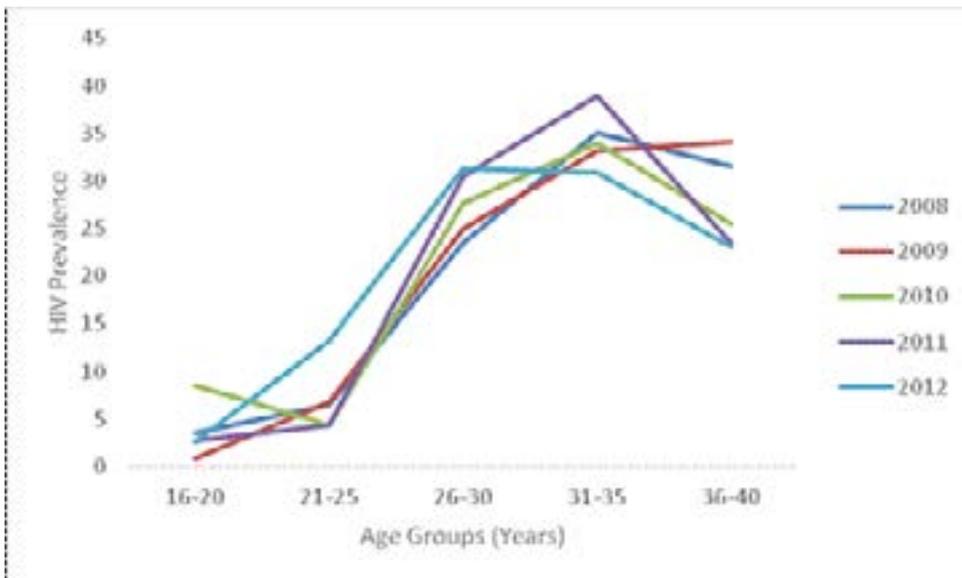**Figure 5: Trends in HIV prevalence among young adults in relation to sex**

Trends in HIV prevalence among males

Figure 6 shows trends in HIV prevalence among males aged 16-40 years. The patterns of HIV prevalence among young adult males were not well defined, which showed a peak in 2008 (33.4%), followed by 2012 (30.5%), 2009 (29.9%), 2011 (27.5%) and 2010 (26.7%).

More especially, among age groups 26–30 years which showed a uniform pattern of HIV prevalence with an increasing trend. While age groups 36-40 years showed a decreasing trend except in 2009 with a higher prevalence (34.1%). Other age groups shows inconsistent trend of HIV prevalence [Figure 6].

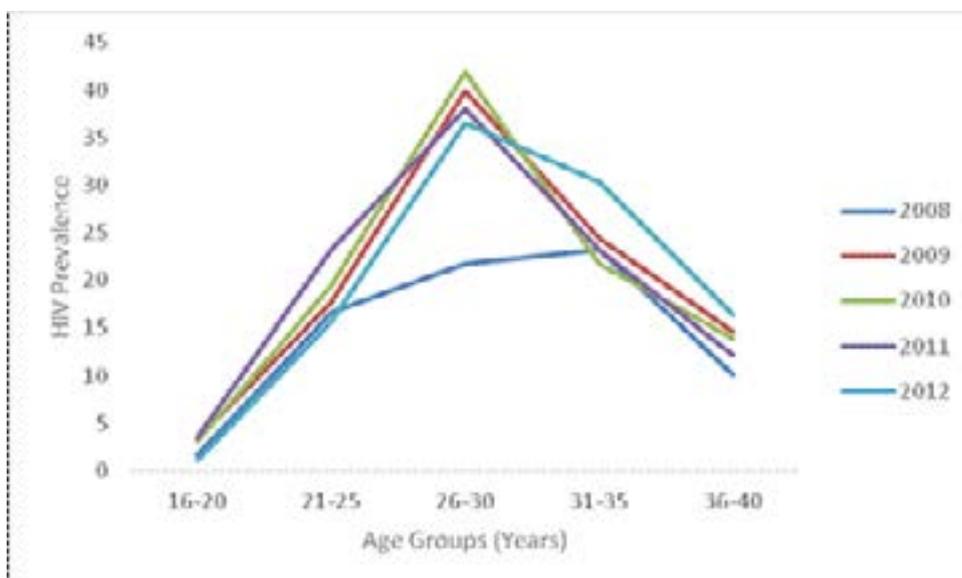**Figure 6: Trends in HIV prevalence among males**

Trends in HIV prevalence among females

Figure 7 shows trends in HIV prevalence among females. The patterns of HIV prevalence among young adult females were not well defined, which showed a peak in 2010 (73.3%), followed by 2011(72.5%), 2009(70.1%), 2012(69.5%) and 2008(66.6%). Similarly to their male counterparts, age groups 26 – 30 years which showed a uniform pattern of HIV prevalence with an increasing trend from 21.7% in 2008 to 41.9% in 2010 and a decreasing trend from 41.9% in 2010 to 36.5% in 2012. Other age groups shows inconsistent trend in HIV prevalence [Figure 7].

**Figure 7: Trends in HIV prevalence among females**

Trends in HIV prevalence among age groups 16-25 years

Figure 8 shows trends in HIV prevalence among younger adults (aged 16-25 years). The HIV occurrence dropped from 33.7% in 2008 to 6.2% in 2010, increased to 19.3% in 2011. However, HIV prevalence did not stabilized between 6.2% (2010) and 6.7% in 2012 [Figure 8].

Figure 8: Trends in HIV prevalence among age groups 16-25 years
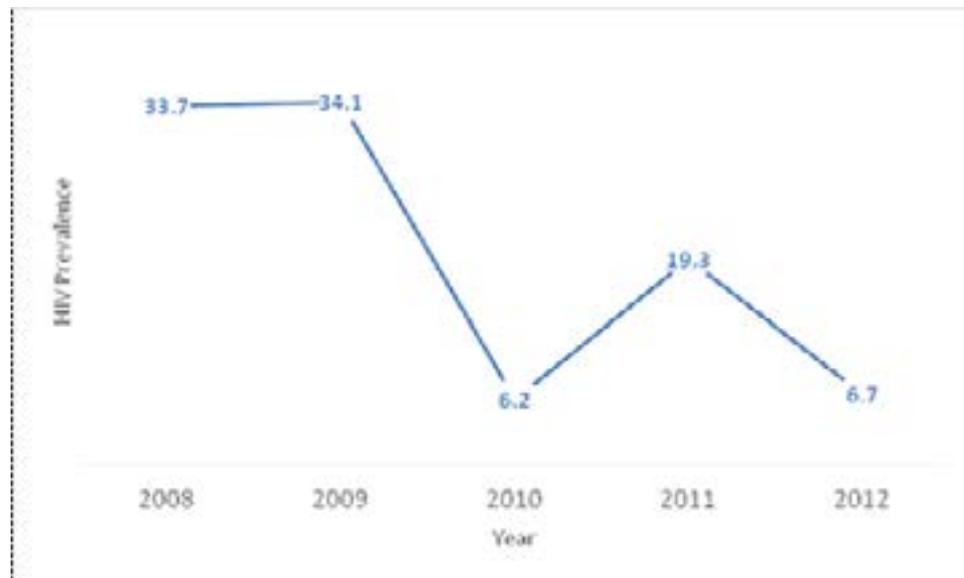
Discussion

Nigeria's HIV widespread is considered as one of the greatest fast cumulative rates of HIV and AIDS cases. Appraisal of the HIV sentinel study in Nigeria shows that HIV occurrence rate amplified progressively from 1.8% in 1991 to 3.8% in 1993, 4.5% in 1996, 5.4% in 1999, 5.8% in 2001, dropped insignificantly to 5.0% in 2003 and steadied between 4.4%(2005) and 4.1% in 2010[17,33-38]. Adeokun[39] reported that geographic disparities in HIV occurrence might be due to earlier pivots of sexually transmitted infections (STIs) or urban expansion in Nigeria. Similarly, evaluation of the HIV national sentinel study revealed that HIV occurrence diverse meaningfully through geopolitical sites and amid dissimilar danger clusters in Nigeria[40-42].

This is a retrospective study which aimed at assessing the trend of HIV prevalence among age groups 16-40 years in Port Harcourt, Rivers State, Nigeria. The trends in HIV prevalence were not well defined, which showed a peak in 2009 (36.6%), followed by 2008(32.8%), 2011(16.6%), 2012(8.3%) and 2010(5.7%). There was a 3.8% increase in HIV prevalence from 32.8% in 2008 to 36.6% in 2009. There was 30.9% decrease in HIV prevalence from 36.6% in 2009 to 5.7% in 2010 and this decrease could have been achieved due to proper awareness and implementation of policies (on patient management and disease control). Between 2010 and 2011 there was10.9% increase in HIV prevalence and 8.3% decrease in HIV prevalence between 2011 and 2012, these changes could also be traced to inconsistency in governance (corruption and frequent change or transfer of health officers). Conversely, the occurrence of HIV appeared to be steady between 2009 and 2012 as presented in previous studies- 36.6% (2009), 5.7% (2010), 16.6% (2011) and 8.3% (2012). It is also striking that HIV occurrences in Rivers State have maintained high prevalence since 2009 compared to some other states in Nigeria[17]. A similar trend in HIV prevalences in Rivers State have maintained high prevalence since 2001 compared to some other states in Nigeria was previously observed[17].

The trend of HIV prevalence among various age-groups were not well defined, which showed that HIV occurrences increased with growing age and highest at age groups 26-30 years (35.7%) after which it declined. This trend deviated from what was observed in the

2010 national sentinel study[17]. In 2010, HIV occurrence was topmost among age-groups 30-34 years[21]. However in 2008, younger people age 20-29 years have the highest HIV prevalence of 4.9%[42] which is still within range in our present findings. The study shows sex differences (P<0.05) in the trend of HIV occurrence in young adults. It indicated that 69.5% cases of HIV occurred in females and 30.5% in males. Similar trend was also reported by United States Embassy in Nigeria[13] with women above age 15 having the higher HIV prevalence (52.0%) than men (37.0%). A similar trend was also observed by FMOH[17]. The trend of HIV prevalence among various sexes were not well defined, which showed a peak in 2008 (33.4%) among males and in 2010 (73.3%) among females. Similar trend was reported by FMOH[17]. In 2007 national sentinel study, higher prevalence was reported among females (4.0%) than males (3.2%)[26].

The trend analysis of HIV prevalence among male age-groups in this study were not well defined, which showed a peak in 2008 (33.4%), followed by 2012 (30.5%), 2009 (29.9%), 2011 (27.5%) and 2010 (26.7%). More especially, among age groups 26–30 years which showed a uniform pattern of HIV prevalence with an increasing trend. While age groups 36-40 years showed a decreasing trend except in 2009 with a higher prevalence (34.1%). Similar trend was observed by FMOH[17]. Also, the trend of HIV prevalence among female age-groups were not well defined, which showed a peak in 2010 (73.3%), followed by 2011(72.5%), 2009(70.1%), 2012(69.5%) and 2008(66.6%). Similarly to their male counterparts, age groups 26–30 years which showed a uniform pattern of HIV prevalence with an increasing trend from 21.7% in 2008 to 41.9% in 2010 and a decreasing trend from 41.9% in 2010 to 36.5% in 2012. Similar trend has also been previously reported[17,43]. The 2008 antenatal clinic (ANC) study presented uppermost HIV occurrence rate in females within 25-29 years (5.6%) and 30-34 years (4.9%) age-groups[43].

Trend analysis of HIV prevalence among age groups 16-25 years presented a steady drop from 2008-2010 (33.7% (2008), 34.1% (2009), and 6.2% (2010). Then, a rise from 6.2% in 2010 to 19.3% in 2011 and decrease again to 6.7% (2012). The occurrence of HIV among various sexes within 16-25 years age-groups were not well defined, which showed a peak in 2012 (21.1%) among males and 2011 (90.8%) among females. Similar trend was reported by FMOH[17]. In the national trend

analysis by FMOH[17], the tendency among females within age groups 15-24 years (who were also seen as an guide to fresh cases of HIV) also progressively dropped from 6.0% in 2001, through 5.3% in 2003 to 4.3% in 2005, to 4.2% in 2008, to 4.1% in 2010[17]. The HIV pattern in age-group 15-24years seemed to stable from 2005 to 2010 (amid 4.3% and 4.1%)[17,21]. This drifts might perhaps owing to the encouraging effects of the several precautionary interventions directed towards the youths and the cumulative access to ART across the nation, thus ensuing in enhanced survival rate amongst PLWHAs. Therefore, the necessity for population centered HIV investigation to advance HIV and AIDS diagnosis, research and scheduling in the country[39,44].

Previously, an evaluation of the HIV sentinel studies in Nigeria indicates that HIV occurrence differed crossways geopolitical places in Nigeria[1,40-42]. Generally, HIV prevalence of 7.3% and 6.0% was reported for Rivers state during the 2008 and 2010 sentinel studies[13,17]. Restrictions have been recognised in the national HIV data for the reason that the proportions were built on HIV prevalence amongst pregnant women presenting at the government based health amenities, thus, slight information is known about HIV occurrences among broad-spectrum population or amongst males[45]. Likewise, information on incidence and prevalence rates among several vulnerable populations were unavailable from the study[45]. Similarly, a retrospective review by Sule et al.[43] in Kogi State revealed increasing HIV seropositivity between 2002 and 2006 from 15.5 to 29.3%.

However, the inconsistency in trend of HIV prevalence observed in this study is expected since Rivers State shared boundaries with state whose HIV prevalence has comparatively stayed higher between 2005 and 2010. There was a steady rising pattern of HIV frequency in states such as Abia, Akwa Ibom and Bayelsa States. Though, Akwa Ibom and Bayelsa States have upheld a piercing upsurge since 2005, Imo State had remained low[17]. In the 2010 National HIV seroprevalence study, no constancy in the HIV trend in Rivers State, Nigeria[17]. The HIV trend had varied between 1995 and 2010 in the Rivers State. According to FMOH[17], there was a reliable rising trend in 3 years, namely 1995/1996 (1.0%), 1999 (3.3%) and 2001 (7.7%). HIV prevalence in Rivers State has relatively dropped to 6.6% in 2003 and 5.4% in 2005. However, it rose to 7.3% in 2008 and dropped again to 6.0% in 2010[13,17].

In the same vein, Port Harcourt shared boundaries with area whose HIV prevalence has relatively remained higher with Bori as highest (8.0%), followed by Bonny (5.9%) then Port Harcourt (5.5%)[13,17]. According to the 2010 National HIV seroprevalence study, Port Harcourt topmost initially (7.0%), then fell to 3.7% in 2003, rose to 5.1 in 2005 and upheld a rising trend getting to 7.0% in 2008 and dropped again to 5.5% in 2010[17]. Bori was initially high (7.9%), then fell to 7.7% (2003), to 5.7 (2005) and upheld a rising trend getting to 8.3% (2008) and fell to 8.0% (2010)[17]. Bonny was initially high (8.2%), then fell to 8.3% in 2003, 6.0% in 2005 and kept a rising trend getting to 8.4% in 2008 and fell again to 5.9% in 2010[17].

Also, according to the 2010 National HIV seroprevalence study, Uyo (Akwa-Ibom State) had taken related high occurrence of HIV 13.0% in 2001, dropped to 5.7% in 2005 and progressively rose to 11.7% in 2010[17]. Sagbama (Bayelsa State) had taken the topmost urban occurrence of HIV (12.7%)[17]. Iquita-Oron (Akwa-Ibom State) was topmost in the rural occurrence rate of HIV (15.9%)[17]. Edeoha (Rivers State) had taken 3.8% prevalence of HIV and upheld the lowest rural prevalence of HIV while Eberi (Rivers State) had taken the topmost HIV prevalence (5.8%) in the rural[17]. More detailed research is required to achieve a better understanding of the reasons for these varying patterns [1,17,35].

All States in Nigeria have taken indiscriminate widespread of HIV since 2003[17]. The national pattern of HIV occurrence presented a stable rise from 1.8% in 1991 to 4.5% in 1995, to a top (5.8%) in 2001 and dropped gradually to 4.4% in 2005. It seemed to have stabilized from 2005-2010 (amid 4.4% and 4.1%)[17]. The low prevalence reported at the national level might be credited to the fact that the proportions of centers giving anti-retroviral therapy (ART) services rose from 24 in 2005 to about 400 in 2011[14,46-48] in addition the United States President's Emergency Plan for AIDS Relief (PEPFAR) is presently assisting about 1,000 HIV counseling and testing centers in Nigeria[14,46-48]. Also in Nigeria, PEPFAR stated assisting over 441,000 persons on ART, 2.3 million on counseling and testing and 34,000 HIV-infected pregnant women on ART prophylaxis under prevention of mother-to-child-transmission programme[14,46-48].

In 2006, the Rivers State Action Committee on AIDS (SACA) commenced the implementation of a Strategic Response Plan to prevent and mitigate the effect of HIV/AIDS by 2009[4]. The proportion of centers giving ART services in Rivers state rose from 2 (2005) to 8 (2009)[4] and has also increased recently. Health care facilities providing HIV/AIDS counselling and testing services also increased from 3.2% in 2005 to 20.5% in 2009, while SACA was changed to State Agency for the Control of AIDS (SACA)[4].

Challenges facing responses to HIV infection in Nigeria has been insufficient quantity and geographical expansion of locations giving ART facilities; set-up, schemes, and staff prerequisite to appropriately monitor treatment maintenance and forfeiture are becoming progressively insufficient as programmes scale up; insufficient admittance to ART for both adults and children; and insufficient medical appointment system and connections between the diverse stages of health care and between facilities and community services[21]. Gaps included inadequate funding by the State government and development partners, poor linkages between SACA and other coordinating entities in the State and the skewed access to antiretroviral therapy services in favour of urban centres of the State[4].

With concerted efforts are now in place to comprehensively tackle the epidemic of HIV; it still remains an issue that demands a systematic and highly tailored intervention. While the prevalence of HIV/AIDS appear stabilizing in Nigeria, to think that the trend cannot take an upward turn will be an understatement. Indeed, 'the prevalence of HIV will increase, while the future rate of new infections is uncertain'[49].

Conclusion
The HIV epidemic in Nigeria is concentrated mainly among heterosexuals, yet the trend is now shifting towards most-at-risk in the populations. The study on the trends in HIV prevalence among young adults in Rivers State, Nigeria showed that, there is unstable progress in the fight against HIV among young adults of age bracket (16–40 years). This trend analysis of HIV prevalence in this study showed that HIV infection has become endemic in Port Harcourt, Rivers State, Nigeria with a stabilizing seroprevelence of 5.7% (2010), 16.6% (2011) and 8.3% (2012). From the results obtained, there was no well defined trend in prevalence of HIV among young adults in Rivers State, Nigeria. Although, there are rising and falling in the number of cases (frequencies), which could be attributed to inconsistency

in policies or programmes concerning HIV victims in the state.

In view of this, it is essential that all the interested parties in Rivers State to uphold the current impetus of intermediations and swiftly increase these intermediations so as to keep the decreasing trend in HIV occurrences in Nigeria. The current struggles targeted at decreasing the prevalence of HIV and refining support services, management, treatment and care should be reinforced and extended. Enhanced and more strengthened surveillance system targeting the whole population and with special attention to the subgroup most-at-risk need to be implemented. Bearing in mind the study outcomes, we suggested that crucial preventive plans and strategies targeted at youth (among other groups) should be reinforced. More prevention campaigns should be planned and carried out while matters arising with increasing access to HIV testing, counselling, ART and care should be accessed. We also recommend that the current findings should be reflected alongside with other population-based study to account for the widespread of HIV in Port Harcourt, Rivers State, Nigeria.

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