

Assessment of Voluntary Counselling and Testing Uptake Among Adults in Osun State Nigeria

¹E.O. Amu, ²K.T. Ijadunola and ¹O.O. Odu

¹Department of Community Medicine, Ekiti State University
Teaching Hospital, Ado-Ekiti, Nigeria

²Department of Community Health, Obafemi Awolowo
University, Ile-Ife, Nigeria

Abstract: In Nigeria less than 10% of people infected with Human Immunodeficiency Virus are aware of their HIV status. This poses a great challenge to effective control of the spread of the disease. The study assessed the uptake of Voluntary Counselling and Testing (VCT) among adults of reproductive age in Osun State, Nigeria. Respondents from three Local Government Areas of Osun State were selected for the study which employed a descriptive cross-sectional design. An interviewer-administered, semi-structured questionnaire was used to elicit information from 720 male and female respondents of reproductive age group. The data were analyzed using SPSS version 15 and the results were analyzed using descriptive and inferential statistics. The results showed that only 17.9% of the respondents had ever accessed VCT. The commonest reasons reported for accessing it were the desire to know their HIV status (36.4%), doctor's request sequel to being sick (24.8%) and ante-natal care screening (22.5%), among others. Respondents with tertiary education were more likely to access VCT. Eighty two percent (82%) of the respondents had never accessed VCT before. The study concluded that adults of reproductive age in Osun State had poor uptake of VCT and those with tertiary education were more likely to access the services. Continuous media education, social marketing of VCT, building more testing sites in rural areas and scaling-up of the services in routine medical and obstetric care, can help to improve the uptake.

Keywords: Adults of reproductive age, assessment of VCT, HIV status, HIV/AIDS, VCT uptake, voluntary counselling,

INTRODUCTION

The battle with Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome has been on for about three decades now. The disease has touched virtually every part of the world but Sub-Saharan Africa has been the worst hit (UNAIDS, 2008, 2010). Perhaps there is no disease that has left many destitute as much as HIV/AIDS. It is one disease in particular that has had devastating effects on families, communities, countries and economies (UNAIDS, 2006, 2008). Several efforts have been made to control and conquer the disease but there is no cure yet, neither is there an effective vaccine to prevent HIV infection because of the persistently changing nature of the virus (Odutolu *et al.*, 2006; WHO *et al.*, 2010). The two main strategies currently adopted for combating this epidemic are preventing new HIV infections and providing antiretroviral drugs for those already infected. Both can only be achieved when people are aware of their HIV status through the Voluntary Counselling and Testing (VCT) process (UNAIDS and WHO, 2004).

Voluntary Counselling and Testing is a confidential process during which an individual or a couple is counselled and encouraged to assess their risk of acquiring or transmitting the virus. It can lead to testing, but the individuals can decide to weigh the options before requesting to be tested (UNAIDS, 2000). Voluntary Counselling and Testing has several benefits which have been documented (Boswell and Baggaley, 2002). Increase in VCT in the United Kingdom and the USA has helped in reducing the incidence of HIV infection, AIDS-associated deaths as well as Mother-To-Child Transmission (MTCT) of HIV in these countries (Chadborn *et al.*, 2004).

Voluntary Counselling and Testing was initially restricted to hospital settings in which people presenting with symptoms and signs suggestive of HIV/AIDS were tested to confirm the diagnosis. Before the advent of rapid test kits, HIV tests were performed in specialized laboratories and confirmed by the Western Blot test. Those tested had to wait for two days to two weeks in anxiety and anticipation of what the results might be, while others never came back for their results (Kipp *et al.*, 2002; Paul *et al.*, 2004).

The advent of rapid kits whereby people can obtain their test results almost immediately and which has made VCT to be available at sites other than the hospital settings, has encouraged more people to test. Moreover, the fact that HIV has become a treatable condition has caused a major change in attitudes towards testing (Turner-Stokes, 2005).

In spite of these facts, however, majority of the people in Nigeria are not aware of their HIV status. The 2005 National HIV/AIDS and Reproductive Health Survey (NARHS) reported an overall uptake of 11 and 10% for men and women respectively (Federal Ministry of Health Nigeria, 2006). In a study of VCT uptake among undergraduates of a tertiary institution in South-Eastern Nigeria, only 26.4% of the students had taken an HIV test at one time or the other before the study. Majority (62.5%) of those who had been tested went for the screening just to know their HIV status while premarital testing (18.8%) was the second commonest reason for having the HIV test (Ikechebelu *et al.*, 2006). A study conducted among married women in South Eastern Nigeria reported an uptake of 10.5%, while another one conducted among urban residents in South Western Nigeria reported a very low uptake of 3.9% (Okpala *et al.*, 2006; Adeneye *et al.*, 2006). A survey of HIV/AIDS knowledge, sexual behavior and attitude towards VCT among out-of-school youth in Kano, Northern Nigeria reported that majority (83.0%) of the youths had never had VCT previously. In the study, 15.0% of the respondents were willing to be tested while 26.4% were unwilling (Iliyasu *et al.*, 2007). The 2008 Nigerian Demographic and Health Survey (NDHS) reported an overall uptake of 7.0% each, for both men and women in the last 12 months preceding the survey (National Population Commission, 2009).

This community based study determined the uptake of VCT among adults in Osun State, located in South Western part of Nigeria. It also explored the reasons why those who accessed the test did so.

MATERIALS AND METHODS

Study location: The study location was Osun State, one of the six states in the Southwest geo-political zone of Nigeria. The state is divided into three political senatorial districts namely Osun East, Osun West and Osun Central and consists of 30 Local Government Areas (LGAs). It has a population of 3,423,535 and the climate is tropical with heavy rainfalls stretching from March to November (NPC, 2007). The vegetation is that of tropical rain forest and majority of the people are of Yoruba ethnic group, but people from other ethnic groups like Hausas, Ibos, Urhobos and Ebiras likewise reside in the state. Most of the inhabitants engage in agriculture and agro-allied industries producing mainly food crops like yams, plantains and maize; but cash crops like cocoa, timber, coffee and cashew are also produced for export. A sizeable proportion of the people are traders and artisans while others work in

government establishments, banks and other private outfits.

Study design: The study employed a descriptive cross-sectional design.

Sampling technique: The study was conducted in three LGAs which were selected by stratified random sampling method, one from each of the three senatorial districts of the state. These were Atakumosa West, a predominantly rural LGA from Osun East, Ayedaade, a semi-urban LGA from Osun West and Olorunda, a predominantly urban LGA from Osun Central senatorial districts (NPC, 2007). A total of 720 respondents were interviewed from the three LGAs using a multistage sampling technique. From each selected LGA, three wards were selected by systematic random sampling from the lists of constituent wards for the survey. From each selected ward, eight streets were selected by systematic random sampling from the list of constituent streets. From each selected street, 10 houses were selected by systematic random sampling from the list of constituent streets. From each selected house, one respondent was chosen by simple random sampling from the list of all the eligible respondents. The inclusion criterion was adults of reproductive age (males aged 18 to 59 years old and females aged 15 to 49 years old).

Data collection methods: A semi-structured questionnaire that was first translated into Yoruba and back translated into English to ensure content validity was used. They were administered to each respondent by research assistants who were previously recruited and trained. The questionnaire elicited information about respondents' previous uptake of VCT, time of testing, mode of offer of the test and reasons why they had the test. Permission to carry out the research was obtained from the Primary Health Care Directors of the LGAs in which the study was conducted. Informed consent was obtained from the respondents prior to data collection.

Data analysis: Data generated were analyzed using the Statistical Package for Social Sciences version 15 (SPSS 15, Chicago Illinois). Descriptive statistics were used to present respondents' socio-demographic variables, uptake of VCT and mode of offer of the VCT while chi-square was used to present the relationship between some socio-demographic variables and VCT uptake. A p value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 720 respondents were interviewed. These consisted of 397 males (55.1%) and 323 females (44.9%). The age distribution ranged between 15-59 years, with a mean age of 29.7+9.8 years. Overall,

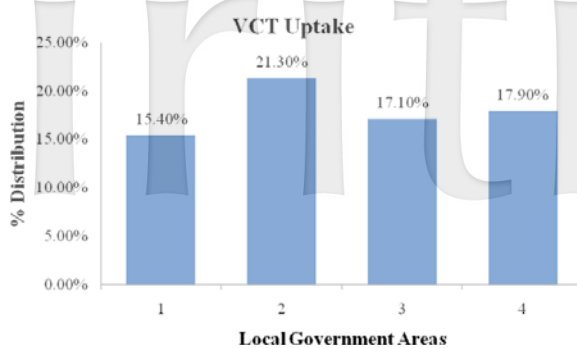


Fig. 1: Uptake of voluntary counselling and testing among adults of reproductive age in Osun state
1: Atakumosa; 2: Olorunda; 3: Ayedaade; 4: Total Uptake (Osun)

about 55% of the respondents were aged less than 30 years. The female respondents tended to be younger than the males. More than half, (55.6%) of the respondents were currently married, while 41.1% were never married. A total of 427 (59.3%) respondents were Christians, 39.0% were Muslims while the rest belonged to other religions. Nine out of ten respondents were Yorubas while the rest belonged to other ethnic groups. Over 94.0% of the respondents had one form of education or the other. Close to half of the respondents, (47.8%) completed secondary school education, while about 12.6% had higher education. Male and female respondents tended to have been educated in comparable proportions. The highest number of

respondents 238 (33.1%), were traders or businessmen/businesswomen; others were artisans (21.1%), students (18.2%) and farmers (12.8%). The unemployed formed about 2.6% of the respondents.

Figure 1 shows the uptake of VCT among respondents. Only 15.4, 21.3 and 17.1% had ever accessed VCT in Atakumosa West, Olorunda and Ayedaade LGAs respectively. Overall, out of 720 respondents, only 129 (17.9%) had ever accessed VCT while 591 (82.1%) had never accessed VCT. Table 1 shows the time of testing among respondents who had VCT. Most of those that were screened in Atakumosa West (37.8%) had the test more than 24 months preceding the survey, while most of those that were screened in Olorunda (54.9%) and Ayedaade (53.7%) had the test less than 12 months preceding the survey. Overall, most of those who had been screened in the three LGAs (48.8%) had the test done less than 12 months preceding the survey.

Table 2 reveals the mode of offer of VCT among respondents who had screened for HIV. Most of the respondents in Olorunda (49.0%) voluntarily requested for the test while most of those who had screened in Atakumosa West (48.6%) and Ayedaade (51.2%) had the test because it was a requirement for them before they could have ante-natal care, medical or surgical attention, or donate blood. Overall, most of those who had screened in the three LGAs (45.7%) did so because the test was required for some medical purposes.

Table 1: Time of testing among respondents who had voluntary counselling and testing in Osun state

Local government area	When the respondents were tested			Total Freq (%)
	<12 months before the survey Freq (%)	12-23 months before the survey Freq (%)	>24 months before the survey Freq (%)	
Atakumosa West	13 (35.1)	10 (27.0)	14 (37.8)	37 (100)
Olorunda	28 (54.9)	9 (17.6)	14 (27.5)	51 (100)
Ayedaade	22 (53.7)	8 (19.5)	11 (26.8)	41 (100)
Total	63 (48.8)	27 (20.9)	39 (30.2)	129 (100)

Table 2: Mode of offer of voluntary counselling and testing among respondents that had the test

Local government area	Mode of offer			Total Freq (%)
	I asked for the test Freq (%)	I was offered and accepted Freq (%)	The test was required Freq (%)	
Atakumosa West	10 (27.0)	9 (24.3)	18 (48.6)	37 (100)
Olorunda	25 (49.0)	6 (11.8)	20 (39.2)	51 (100)
Ayedaade	16 (39.0)	4 (9.8)	21 (51.2)	41 (100)
Total	51 (39.5)	19 (14.7)	59 (45.7)	129 (100)

Table 3: Reasons given by respondents for accessing voluntary counselling and testing

Reasons for accessing voluntary counselling and testing	Local government areas			
	Atakumosa West (n = 37) Freq (%)	Olorunda (n = 51) Freq (%)	Ayedaade (n = 41) Freq (%)	Total (n = 129) Freq (%)
I wanted to know my HIV status	13 (35.1)	23 (45.1)	11 (26.8)	47 (36.4)
I was sick and doctors asked for it	12 (32.4)	14 (27.5)	6 (14.6)	32 (24.8)
For ante-natal care screening	6 (16.2)	9 (17.6)	14 (34.1)	29 (22.5)
I had it prior to blood donation	3 (8.1)	1 (2.0)	5 (12.2)	9 (7.0)
Concern about risk of infection	2 (5.4)	3 (5.9)	3 (7.3)	8 (6.2)
My spouse died of AIDS	0 (0.0)	1 (2.0)	1 (2.4)	2 (1.6)
For insurance and appointment purposes	1 (2.7)	0 (0.0)	1 (2.4)	2 (1.6)

Table 4: Relationship between some socio-demographic variables and voluntary counselling and testing uptake

Variable	Voluntary counselling and testing uptake			χ^2	p value
	Had VCT	Did not have	Total		
Sex				3.92	0.048
Male	61 (15.4%)	336 (84.6%)	397 (100%)		
Female	68 (21.1%)	253 (78.9%)	323 (100%)		
Total	129 (17.9%)	591 (82.1%)	720 (100%)		
Level of education				44.27	0.001
No formal	1 (2.6%)	38 (97.4%)	39 (100%)		
Less than tertiary	90 (15.3%)	500 (84.7%)	590 (100%)		
Tertiary	38 (41.8%)	53 (58.2%)	91 (100%)		
Total	129 (17.9%)	591 (82.1%)	720 (100%)		
Nature of local government area				2.95	0.229
Rural	37 (15.4%)	203 (84.6%)	240 (100%)		
Semi urban	41 (17.1%)	199 (82.9%)	240 (100%)		
Urban	51 (21.3%)	189 (78.7%)	240 (100%)		
Total	129 (17.9%)	591 (82.1%)	720 (100%)		

Table 3 shows the reasons given by respondents for accessing VCT. Respondents' desire to know their HIV status was the most important reason for accessing VCT in Atakumosa (35.1%) and Olorunda (45.1%). However, ante-natal care (34.1%) was the most important reason in Ayedaade. Overall, the most important reasons for accessing VCT were respondents' desire to know their HIV status (36.4%), sequel to being sick (24.8%) and being part of ante-natal care screening (22.5%).

Table 4 shows the relationship between some socio-demographic variables and VCT uptake. Female respondents (21.1%) were more likely to access VCT than their male counterparts (15.4%) though this difference was not too significant (p value = 0.048). Respondents with tertiary education (41.8%) were more likely to access VCT than those with less than tertiary education, (41.8%) and those with no formal education (2.6%). This was highly significant (p value = 0.001). Respondents from the predominantly urban LGA, 51 (21.3%) were more likely to access VCT than those from the semi-urban LGA, 41 (17.1%) and the predominantly rural LGA (15.4%) though the difference in uptake between them was not significant (p value = 0.229).

DISCUSSION

Studies have shown that VCT is a powerful weapon in the battle against HIV/AIDS (Cardonick *et al.*, 1998; Chadborn *et al.*, 2004). High uptake of VCT translates to more people being aware of their status, more infected people having early access to treatment, support and care, reduction in transmission of HIV to children and other previously uninfected people and reduction in AIDS related deaths. It can even translate to positive behavioral change and reduction in stigmatization and discrimination. The converse is the case where there is poor VCT uptake.

The study revealed that less than a fifth of the overall respondents had ever been counselled or tested for HIV, with 15.4 and 21.1% of the male and female

respondents respectively having accessed VCT. Research conducted in some other countries of Sub-Saharan Africa such as Kenya, Ghana and Uganda equally reported low uptakes of VCT as well. For example, in Kenya, the national VCT uptake was reported to be 20%; in Ghana, the VCT uptake was reported to be 16.9 and 12.7% among women and men respectively; while a regional study conducted among men in Uganda reported an uptake of 23.3% (National Council for Population and Development *et al.*, 1999; Ghana Statistical Service *et al.*, 2009; Bwambale *et al.*, 2008). In South Africa on the other hand, the VCT uptake is much higher than that obtained in this study. It was reported to have progressively increased from 25.0% in 2002 to 50.0% in 2008 (Shisana *et al.*, 2009).

Reports from other national and regional studies conducted within the country corroborate the findings in this study. For example, the 2003 Nigerian Demographic and Health Survey (NDHS) reported an overall VCT uptake of three and six percent for men and women respectively, while the 2005 National HIV/AIDS and Reproductive Health Survey (NARHS) reported an overall uptake of 11 and 10% for men and women respectively (Federal Ministry of Health Nigeria (FMH) 2006; National Population Commission, 2004). While a study conducted among married African women in Onitsha, South Eastern Nigeria reported an uptake of 10.5%, another study conducted among urban residents in South Western Nigeria reported a very low uptake of 3.9% (Okpala *et al.*, 2006; Adeneye *et al.*, 2006). The 2008 NDHS reported an overall uptake of seven percent each for both men and women (NPC, 2009). The fact that the national VCT uptake has not shown much improvement over the years reveals that more needs to be done than what obtains presently if we are to meet the target of 40.0% of Nigerians accessing VCT and knowing their HIV status by 2015.

Lower levels of VCT uptake reported in this and other population based studies could be due to differences in the population studied (National Population Commission, 2004, 2009; Federal Ministry of Health Nigeria, 2006). Studies conducted among

homogeneous segments of the population like pregnant women reflected a progressive increase in uptake of VCT among them (Oladokun *et al.*, 2010). The higher uptake level can be explained by the Prevention of Mother-To-Child-Transmission (PMTCT) programme commenced in ante-natal clinic settings across the country in 2003. This made it mandatory for all pregnant women accessing ante-natal care even in the most rural community setting to access VCT at the same time, unless they choose to opt out (Federal Ministry of Health Nigeria, 2005). Studies conducted among pregnant women attending ante-natal care in other countries of Sub-Saharan Africa, where PMTCT had been commenced also reported a similar increase in VCT uptake among them (Creek *et al.*, 2007; Kasenga *et al.*, 2009). This implies that making VCT services readily available where they can be easily accessed, combined with continuous health education as obtained in PMTCT settings, can help to improve the uptake of VCT.

The proportion of respondents that accessed VCT ranged increasingly from 15.4% in Atakumosa West LGA to 21.3% in Olorunda LGA. Atakumosa West is a predominantly rural LGA, Ayedaade is semi-urban while Olorunda is a predominantly urban LGA (NPC, 2007). Higher levels of VCT uptake in Olorunda is probably due to the urban nature of the LGA with residents having better access to health facilities. Olorunda LGA has about five VCT sites while Ayedaade and Atakumosa West LGAs have none except some ante-natal clinics which had commenced Prevention of Mother-to-Child Transmission as at the time this study was conducted. These can account for the differences in the rate of VCT uptake in the three LGAs. This finding in VCT uptake disparity has policy implications for the location of VCT centres. Presence of VCT centres in rural and semi-urban areas can encourage more people in such places to know their HIV status.

Close to a half (48.8%) of those who had accessed VCT did so less than 12 months preceding the survey, about one-third took the test more than 24 months prior to the survey while the rest had their tests between 12 and 23 months before the survey. The 2005 National HIV/AIDS and Reproductive Health Survey also reported similar but lower findings: over one-third (38.0%) had their test less than 12 months before the survey; 29.0% took the test more than 24 months prior to the survey, while 23.0% had their tests between 12 and 23 months before the survey (Federal Ministry of Health Nigeria, 2006). The fact that majority of those who had the test did so less than 12 months preceding the survey showed that more people than ever before are responding to the call for everyone to be aware of his HIV status. This underscores the need for continual and even more aggressive public health campaigns

about the importance of VCT, encouraging more people to access VCT.

Concerning the mode of offer of the VCT among respondents who had been tested, over a third of them asked for the test, less than a fifth were offered the test and accepted, while a little less than half of them had it because it was required. This shows that most of the tests performed might not have been voluntary, indicating some form of coercion. For the purpose of this study, all tests performed in order to detect the presence of HIV, irrespective of the mode of offer, were reported as VCT in accordance with the 2003 NDHS and 2005 NARHS reports (National Population Commission, 2004; Federal Ministry of Health Nigeria, 2006). This was done in order to have sufficient number of people who have been tested for the virus. The World Health Organization (WHO) however recommends that coercive HIV counselling and testing should be discouraged as much as possible in order not to put people off from accessing VCT. Even though VCT services need to be scaled up in all settings, especially where people who require such services are most likely to be found, it should never be coercive and people's right to opt out should be respected (WHO, 2004).

In this study, respondents accessed VCT for various reasons. The major ones were the desire to know their HIV status, sequel to having been ill and VCT being part of ante-natal care screening. Literature shows that different studies elicited information on various reasons for accessing VCT, most of which differed from the questions asked in this study. However, among those that asked questions similar to those in this study, the most important reason for accessing VCT was equally people's desire to know their HIV status (Federal Ministry of Health Nigeria, 2006). Other reasons given for accessing VCT include fear and anxiety over their HIV status; as marriage requirements, for employment purposes, concern about risk of infection and desire to travel overseas (Federal Ministry of Health Nigeria, 2006). According to Meiberg *et al.* (2008), participants in their study expressed willingness to access VCT services if they became very sick; if they became pregnant in order to protect the baby; for marriage purposes and because of concern about infection (after involvement in risky sexual behaviors). Differences in the reasons given for accessing VCT services can be as a result of differences in the population studied, people's perception of their risk of acquiring the disease and misconception about who really needs VCT. Among youths, issues about marriage, employment and desire to travel overseas may rank higher while among pregnant women, ante-natal care requirements may rank higher. Those with poor risk perception may rank concern about risk of infection very low on their list even though they are actually at risk, while those who are of the opinion that VCT is only for the sick might access it only if and when they are sick.

Education significantly influenced uptake of VCT in this study. Those respondents with tertiary education were more likely to access VCT than those with less than tertiary education or those with no formal education. This finding is consistent with those of other studies like the (National Population Commission, 2004; Adeneye *et al.*, 2006; Okpala *et al.*, 2006), which all reported that higher educational levels were positively associated with VCT uptake. The most probable explanation for these findings is that people with higher educational levels were more likely to have correct knowledge of HIV transmission and less of misconceptions; they were more likely to appreciate better the benefits of VCT; and as they are also better exposed, could have better access to VCT services.

CONCLUSION

This study concluded that adults of reproductive age in Osun State had a poor uptake of Voluntary Counselling and Testing and most of them did so because of the desire to know their HIV status. Those with tertiary education were more likely to access VCT than those without it. Continuous media education and intensive social marketing of VCT with provision of more testing sites, especially in rural areas; along with scaling up of Voluntary Counselling and Testing services in routine medical and obstetric care, should be done to improve the uptake of VCT.

REFERENCES

- Adeneye, A.K., P.S. Ogunro, T.O. Ogunbamigbe, P.O. Elemile, O.A. Olowu, A.A. Adeneye and M.A. Mafe, 2006. Willingness to seek voluntary HIV counselling and testing (VCT) among urban residents in South-West Nigeria. Proceedings of the 16th International AIDS Conference, Toronto, Canada, August 13-18.
- Boswell, D. and R. Baggaley, 2002. Voluntary Counselling and Testing (VCT) and Young People: A Summary Overview. Family Health International, USA.
- Bwambale, F.M., S.N. Ssali, S. Byaruhanga, J.N. Kalyango and C.A.S. Karamagi, 2008. Voluntary HIV counselling and testing among men in rural Western Uganda: Implications for HIV prevention. BMC Pub. Health, 8: 263, DOI: 10.1186/1471-2458-8-263.
- Cardonick, E., S. Daly, M. Dooley, K. Elles and N.S. Silverman, 1998. Determinants of ante-partum human immunodeficiency virus testing in a non-medicaid obstetric population. Infect. Dis. Obstet. Gynecol., 6: 209-213.
- Chadborn, T.R., C.A. McGarrigle, P.A. Waight and K.A. Fenton, 2004. On behalf of the HIV testing surveillance collaborative group. Sex. Transm. Infect., 80: 145-150.
- Creek, T.L., R. Ntuny and K. Seipone, 2007. Successful introduction of routine opt-out HIV testing in antenatal care in Botswana. J. Acquir. Immune. Defic. Syndr., 45: 102-107.
- Federal Ministry of Health Nigeria, 2005. National Guidelines on Prevention of Mother to Child Transmission (PMTCT). Federal Ministry of Health Nigeria, Abuja, Nigeria.
- Federal Ministry of Health Nigeria, 2006. National HIV/AIDS and Reproductive Health Survey. Federal Ministry of Health Nigeria, Abuja, Nigeria.
- Ghana Statistical Service (GSS), Ghana Health Service (GHS) and ICF Macro, 2009. Ghana Demographic and Health Survey 2008. GSS, GHS and ICF Macro, Accra, Ghana.
- Ikechebelu, I.J., G.O. Udigwe, N. Ikechebelu and L.C. Imoh, 2006. The knowledge, attitude and practice of voluntary Counselling and Testing (VCT) for HIV/AIDS among undergraduates in a polytechnic in Southeast, Nigeria. Niger. J. Med., 15(3): 245-249.
- Iliyasu, Z., I.S. Abubakar, M. Kabir and M.H. Aliyu, 2007. A survey of HIV/AIDS knowledge, sexual behavior and attitude towards VCT among out-of-school youth in Kano, Northern Nigeria. J. Nat. Med. Assoc., 98: 1917-1922.
- Kasenga, F., P. Byass, M. Emmelin and A.K. Hurtig, 2009. The implications of policy changes on the uptake of a PMTCT programme in rural Malawi: First three years of experience. Glob. Health Action, 2: 1883, DOI: 10.3402/gha.v2i0.1883.
- Kipp, W., G. Kabagambe and J. Konde-Lule, 2002. HIV counselling and testing in rural Uganda: Communities' attitudes and perceptions towards an HIV counselling and testing programme. AIDS Care, 14: 699-706.
- Meiberg, A.E., A.E. Bos, H.E. Onya and H.P. Schaalma, 2008. Fear of stigmatization as barrier to voluntary HIV counselling and testing in South Africa. East Afr. J. Public Health, 5: 49-54.
- National Council for Population and Development (NCPD), Central Bureau of Statistics (CBS) and Macro International (MI), 1999. Kenya demographic and health survey 1998. National Council for Population and Development (NCPD), Central Bureau of Statistics (CBS) (Kenya) and Macro International, Calverton, Maryland.
- National Population Commission (NPC), 2004. Nigerian Demographic and Health Survey, 2003. National Population Commission (NPC) and ORC Macro, Calverton, MD., USA. Retrieved from: <http://www.measuredhs.com/pubs/pdf/GF5/nigeria2003generalfactsheet.pdf>.
- National Population Commission (NPC), 2007. Provisional Results of 2006 Population Census. Federal Government's Extraordinary Gazette, The Federal Government Printer, Lagos, Nigeria, 94(24).

- National Population Commission (NPC), 2009. Nigerian Demographic and Health Survey, 2008. National Population Commission (NPC) and ORC Macro, Calverton, MD., USA, Retrieved from: <http://www.measuredhs.com/pubs/pdf/OF12/OF12.SW.1.english.pdf>.
- Odutolu, O., B.A. Ahonsi, M. Gboun and O.M. Jolayemi, 2006. The National Response to HIV/AIDS. In: Adeyi, O., P.J. Kanki, O. Odutolu and J.A. Idoko (Eds.), AIDS in Nigeria: A Nation on the Threshold. Harvard Centre for Population and Development Studies, Nigeria, pp: 241-279.
- Okpala, P.U., U.E. Ebenebe and C.C. Ibeh, 2006. Voluntary Counseling and Testing Among African Women. Nnamdi Azikiwe University Teaching Hospital Nnewi, Nigeria, Retrieved from: http://www.valleyaids.org/Presentations/VOLUNTARY_COUNSELLING_AND_TESTING_AMONG_AFRICAN_WOMEN.ppt.
- Oladokun, R.E., O. Awolude, B.J. Brown, O. Adesina, A. Oladokun, *et al.*, 2010. Service uptake and performance of the Prevention of Mother-to-Child Transmission (PMTCT) programme in Ibadan, Nigeria. *Afr. J. Med. Med. Sci.*, 39: 81-87.
- Paul, S.M., E.M. Cadoff and E. Martin, 2004. Rapid diagnostic testing for HIV-clinical implications. *Business Briefing. Clin. Virol. Infect. Dis.*, 100(9): 33.
- Shisana, O., T. Rehle, L. Simbayi, W. Parker, S. Jooste *et al.*, 2009. South African National HIV Prevalence, Incidence, Behavior and Communication Survey, 2008. HSRC Press, South Africa, ISBN: 13 978-07969-2291-5.
- Turner-Stokes, L., 2005. HIV Testing for Patients Attending General Medical Services: National Guidelines. Royal College of Physicians, London.
- UNAIDS, 2000. Tools for Evaluating HIV Voluntary Counseling and Testing. UNAIDS, Geneva, Switzerland.
- UNAIDS, 2006. Report on the Global AIDS Epidemic. UNAIDS, Geneva, Switzerland. Retrieved from: <http://earthtrends.wri.org/updates/node/41>.
- UNAIDS, 2008. Report on the Global AIDS Epidemic 2008. UNAIDS, Geneva, Switzerland.
- UNAIDS, 2010. Report on the Global AIDS Epidemic 2010. UNAIDS, Geneva, Switzerland.
- UNAIDS and WHO, 2004. UNAIDS/WHO Policy Statement on HIV Testing. UNAIDS/WHO, Geneva, Switzerland, Retrieved from: <http://www.who.int/hiv/pub/vct/statement/en/index.html>.
- WHO, 2004. Rapid HIV Tests: Guidelines for Use in HIV Testing and Counselling Services in Resources-Constrained Settings. WHO Geneva, Switzerland.
- WHO, UNAIDS and UNICEF, 2010. Towards Universal Access: Scaling up Priority HIV/AIDS Interventions in the Health Sector. WHO, Geneva, Switzerland.