

**KNOWLEDGE OF CAUSES, AND ROUTES OF TRANSMISSION OF HIV/AIDS
AMONG RESIDENTS OF A RURAL COMMUNITY IN ENUGU STATE, SOUTHEAST
NIGERIA**

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Abstract

Human Immunodeficiency Virus (HIV) is an infective organism that usually targets the immune system of the victims, making them more susceptible to a wide range of infections and certain types of cancers. It first came to global prominence in 1981 with rare diseases like Pneumocystis Pneumonia (PCP), and Kaposi Sarcoma reported among gay men in New York and California, United States of America. The major routes of transmission are sexual intercourse, blood transfusion, and from mother-to-child. Nigeria has the second largest HIV epidemic with 3.4 million people living with the virus, and 3.1% adult HIV prevalence. The main objective of this study is to determine the level of knowledge of causes, and routes of transmission of HIV among residents of Egede, a rural community in Udi Local Government Area of Enugu state, Nigeria. Most of the respondents (54.3%) were above 60 years of age, female (69.9%), married (82.8%), had no formal education (52.7%), and farmers by occupation (69.9%). Total knowledge of respondents on causes of HIV/AIDS was 21.3%, knowledge on routes of transmission was 29.5%, while over 70.0% of the respondents had misconceptions about inhaling polluted air, drinking water touched by HIV-infected person, and insect bite being routes of HIV transmission. Awareness and correct knowledge on the causes, and routes of HIV transmission are an essential weapons in the fight against HIV/AIDS pandemic. It is important to develop interventions to address the huge knowledge gap on HIV causes, and routes of transmission in some rural communities.

Keywords: HIV/AIDS, Knowledge, Causes, Transmission, Rural, Community

Introduction

Human Immunodeficiency Virus (HIV) is a viral infective organism that usually targets the immune system of the infected persons, making them more susceptible to a wide range of infections and certain types of

cancers. The most advanced stage of this infection is called Acquired Immunodeficiency Syndrome (AIDS), which manifests by the development of certain infections and cancers, or other severe manifestations.^[1] This infection first

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came to global prominence in 1981 with few cases of rare diseases such as Pneumocystis Carinii Pneumonia (PCP), and Kaposi Sarcoma being reported among gay men in New York and California, United States of America.^[2,3] The disease arising from this infection was given various names in the past, including gay-related immune deficiency (GRID),^[4] but in the year 1982, the Centers for Disease Control named it Acquired Immune Deficiency Syndrome (AIDS) which is still being used today.^[5] AIDS was first to notice among women who have sex with infected men in 1983, suggesting that the disease could also be transmitted through the heterosexual route.^[6] The other major routes of AIDS transmission was identified by CDC in 1983.^[7] Some researchers in the past had identified the organism that causes AIDS, and named it variously; but the International Committee on the Taxonomy of viruses officially named it Human Immunodeficiency Virus (HIV) in 1986.^[8] HIV is found in the following body fluids of infected persons; blood, vaginal fluids, rectal fluids, breast milk, semen and pre-seminal fluid.^[9]

Heterosexual intercourse with an infected person is the main route of HIV transmission, accounting for about 80% of cases. The infection can also be acquired through blood transfusion, contaminated needle/object, transmission from infected mother to the child during gestation, birth, or breastfeeding. It is also transmitted through homosexual relationship, though this route does not appear to contribute significantly to the epidemic in Nigeria.^[10] The first two cases of AIDS in Nigeria were diagnosed in Lagos, in the year 1985, and reported at the International AIDS Conference in 1986. One of these two was a sexually active 13 years old girl.^[10] HIV infection can also be spread through tribal and medicinal scarification, circumcision, and tattooing if infected sharps are used.

Health care workers could get infected by being accidentally struck with infected sharps.^[10] HIV is still of great public health importance, having claimed 35 million lives, and with about 36.7 million people living with HIV globally as at the end of the year 2015. This problem is more in Sub-Saharan Africa.^[11]

Globally, Nigeria has the second largest HIV epidemic with 3.4 million people living with the virus, and 3.1% adult HIV prevalence. The commonest route of transmission in Nigeria is through heterosexual intercourse, followed by mother-to-child transmission, and blood transfusion.^[12] The people that are most at risk of getting infected with HIV in Nigeria include; commercial sex workers and clients, injecting and other drug users, men who have sex with men, mobile populations such as long distance drivers, and uniformed service personnel.^[13]

There have however been misconceptions about the routes of HIV transmission. These misconceptions such as transmission through a mosquito bite, inhaling polluted air, drinking unclean water, among others; abound mostly in the developing countries.^[14,15,16]

Global experience on HIV/AIDS has demonstrated that public knowledge on AIDS is an important tool in fighting the pandemic.^[17] Though awareness of HIV/AIDS is high in Nigeria, correct knowledge about routes of transmission is low.^[18] The prevalence of HIV/AIDS in Nigeria is also higher in the rural areas. It is, therefore, important that the level of knowledge of causes and routes of transmission of HIV among rural dwellers is established, with a view to developing proper interventions that will address the identified gaps. The main objective of this study is to determine the level of knowledge of causes, and routes of transmission of HIV among rural community dwellers in Enugu State, Nigeria.

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Materials and Methods

Enugu State is one of the five states that make up the Southeast zone of Nigeria. Nigeria has thirty-six states that are divided into six geopolitical zones. Enugu state has a land mass of 7,161 Km² and is bounded by Benue and Kogi states on the North, Imo and Abia states on the South, Ebonyi state in the East, and Anambra state in the West. The population of Enugu state was recorded as 3,267,837 during the 2006 national census. This study was conducted in Egede, a rural community in Udi Local Government Area with a population of 238,305 in 2006. Enugu state is made up of seventeen Local Government Areas. ^[19] These figures are however estimated to have increased significantly.

Residents of Egede rural community are predominantly farmers, palm wine tappers, petty traders, and hunters. There are also few teachers who work in the four primary schools and the secondary school in the community. Primary school scholars and secondary school students also make up a significant portion of the population.

This study was conducted among residents of Egede rural community who presented for medical outreach activity in January 2015; and is of a descriptive cross-sectional design. Interviewer-administered, a pre-tested questionnaire was used in collecting data from respondents. A total of 296 respondents were interviewed, and data collected were analyzed using SPSS version 20.0. Research Assistants comprising ten medical interns and five junior resident doctors in the Department of Community Medicine, Enugu state University Teaching Hospital collected data from the respondents. The analysis was done in terms of percentage of respondents with the correct knowledge of causes, and routes of transmission of HIV. Values above 50% were considered good, while values below 50% were considered poor. Knowledge on

misconceptions about inhaling polluted air, drinking water touched by an HIV-infected person, and insect bite being routes of HIV transmission was analyzed in terms of the percentage of respondents with the misconception. During the same outreach activity, data were also collected for more studies on HIV/AIDS, Malaria and Diabetes mellitus.

Results

Socio-demographic variables of respondents: Most of the respondents (54.3%) were above 60 years of age, female (69.9%), married (82.8%), had no formal education (52.7%), and farmers by occupation (69.9%).

Knowledge of respondents on the cause of HIV/AIDS: Only 26.0% of respondents had the correct knowledge that HIV/AIDS is a viral infection that attacks the immune system, while 84.1% believed that HIV/AIDS is a bacterial infection that attacks the immune system. As high as 77.7% submitted that HIV/AIDS originated from dogs, and only 27.7% had the correct knowledge that AIDS is health problems that result from HIV infection. Many of the respondents (78.4%) erroneously see AIDS as the help given to people infected with HIV, but very few (14.2%) had the correct knowledge that AIDS patients are people infected with HIV. Total knowledge of respondents on the cause of HIV/AIDS was found to be 21.3%.

Knowledge of respondents on routes of transmission of HIV: Correct knowledge of the routes of HIV transmission was reported as follows; using needle already used to inject another person (34.5%), sexual intercourse (37.8%), having multiple sexual partners (31.1%), mother to child (25.0%), breast feeding (27%), during pregnancy (mother to unborn child), (25.7%), during delivery of baby (20.9%), being stuck with infected sharp object (29.4%), and blood transfusion (33.8%). Total knowledge of

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respondents on transmission of HIV is 29.5% (poor knowledge)

Misconceptions of respondents about routes of HIV transmission: High percentage of respondents erroneously believed that HIV can be transmitted through the following routes; inhaling polluted air (79.1%), drinking water touched by HIV-infected person (74.3%), and insect bite (77.7%).

Discussions

Most of the respondents in this study being above 60 years do not represent the typical age distribution of residents in the study population. The study was conducted among persons who had a health challenge since it was during a medical outreach activity; and most of those that presented belonged to the older age group.

Table 1: Socio-Demographic variables of respondents

<i>Age range (in years)</i>	Frequency (N = 296)	Percent (100%)
< 19	4	1.4
20 – 29	11	3.7
30 – 39	22	7.4
40 – 49	32	10.8
50 – 59	67	22.6
60 – 69	72	24.6
70 and above	88	29.7
<i>Sex</i>		
Female	207	69.9
Male	89	30.1
<i>Marital status</i>		
Married	245	82.8
Single	13	4.4
Divorced/Separated	3	1.0
Widowed	35	11.8
<i>Educational Status</i>		
No formal Education	156	52.7
Primary level	89	30.1
Secondary level	37	12.5
Tertiary level	6	2.0
Postgraduate level	8	2.7
<i>Occupation</i>		
Farmer	207	69.9
Petty trader	38	12.8
Artisan	16	5.4
Retired	16	5.4
Civil servant	12	4.1
Unemployed/student	7	2.4

Probably some of the students and the other younger persons residing in the community; who were ill, hadn't the patience to stay for a good length of time waiting to be attended to by the health workers. The majority of them not having formal education possibly

contributed to the low knowledge level found in this study as demonstrated in some previous studies.^[16]

Very low percentage (26%) of the respondents had the correct knowledge that

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HIV/AIDS is a viral infection that attacks the immune system.

Table 2: Knowledge of respondents on cause of HIV/AIDS

Questions	Correct response (N = 296)	Percent (100.0%)
It is a viral infection that attacks the immune system	77	26.0
It is a bacterial infection that attacks the immune system	47	15.9
It is a disease that originated from dogs	66	22.3
AIDS is health problems that result from HIV infection	82	27.7
AIDS is the help given to people infected with HIV	64	21.6
AIDS patients are people infected with HIV	42	14.2

Total knowledge of respondents on cause of HIV/AIDS = total correct response/total possible correct response X 100% = 378/1776 X 100% = 21.3% (poor knowledge)

However, a study on HIV/AIDS and sexual behavior among pregnant women in Gwagwalada Area Council of Abuja, Nigeria revealed that over 50% of the respondents had the knowledge that HIV is a virus.^[20] A more worrisome finding of 8.7% on the knowledge level of HIV being a viral infection was recorded among adolescent girls in Benin City, in 1999.^[21] Since the Benin study was among secondary school students who were more literate than the respondents in this study, one would have expected a higher knowledge level. The better knowledge level among respondents in this study, when compared to the Benin City study might be explained by the number of years between the studies. The Benin study was in 1999 while this study was in 2015. Information dissemination activities on HIV/AIDS would have significantly taken place in both study locations, resulting in improved knowledge levels. Repeating the Benin City study now possibly could confirm this thinking. On the other hand, as many as 84.1% of our respondents believed that HIV is a bacterial infection, while only 24.1% of respondents in the Benin City study had same erroneous knowledge. Commonly in the part of Nigeria where this study was conducted, illiterate and persons of low literacy see infections as being caused by "Nje". And for them "Nje" simply means bacteria. The misconception that HIV originated from

dogs was held by as many as 77.7% of respondents. The suspicion that this misconception could be widespread among residents of the study community resulted from some informal discussions between the Corresponding Author, and some members of the community in the past. A misconception such as this is capable of adversely affecting the control efforts in the rural areas.

The finding here, that only 27.7% of respondents had the correct knowledge that AIDS is health problems that result from HIV infection, is another pointer to huge knowledge gap existing in this rural community. The gap becomes a lot more glaring when compared to findings among more educated groups such as the 92% knowledge level seen among undergraduates in Eastern Illinois University two years ago,^[22] and 75% recorded among youths in Stellenbosch Area of South Africa nine years ago.^[23] Another worrisome finding with respect to respondent's knowledge about the cause of HIV/AIDS is that as high as 78.4% believe that AIDS is the help given to people infected with HIV. For this group of respondents, material things and assistance is given to people infected with HIV in what AIDS means. Total knowledge of 21.3% of respondents on the cause of HIV/AIDS is very poor.

This study revealed very poor knowledge on the routes of transmission of HIV, including

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the major routes of sexual intercourse, from transfusion.
 mother to child, and unsafe blood

Table 3: Knowledge of respondents on the routes of transmission of HIV

Question	Correct response (N = 296)	Percent (100%)
HIV transmission can be;		
By using needle already used to inject another person	102	34.5
By sexual intercourse	112	37.8
By having multiple sexual partners	92	31.1
From mother to child	74	25.0
From breastfeeding	80	27.0
During pregnancy (mother to unborn child)	76	25.7
During delivery of baby	62	20.9
By being stuck with infected sharp object	87	29.4
Through blood transfusion	100	33.8

Total knowledge of respondents on routes of transmission of HIV = Total correct response/Total possible correct response X 100% = 785/2664 X 100% = 29.5% (poor knowledge)

Some studies are done about eight years prior to this one, in certain rural areas of China revealed a very high knowledge level (93.1%) on routes of HIV transmission, such as the use of already used injection needle for administering parenteral drugs.^[15] Slum dwellers in India also had high knowledge on transmission of HIV through contaminated injection needle.^[24] The very low level of knowledge of the rural dwellers in this study (34.5%), on the capability of used injection needle infecting somebody with HIV, is alarming. There is a possibility that rural health care providers in that community, especially the untrained ones, may be re-using injection needles freely. The knowledge on this route of transmission among slum dwellers in Mumbai India, which is also a developing country, was a lot higher (72.1%).^[24] An even higher knowledge level (93.1%) of HIV being transmitted by sharing used needles was found among inhabitant of rural China.^[15] It is likely that the high levels of knowledge recorded in India and China were attributable to probably a better organized, and delivered awareness creation activities on HIV/AIDS transmission. Surprising also

is the low knowledge level (37.8%) we found on sexual intercourse being a route for HIV transmission. As high as 90.2% knowledge level was found on this same route of transmission among the rural adult population in southwest Nigeria eight years ago.^[25] The knowledge level was also high, at 80.8% among slum dwellers in Mumbai, India.^[24] The knowledge levels of 27.0%, 25.7%, and 20.9% on mother-to-child transmission through breastfeeding, pregnancy, and child delivery respectively, are very low. A lot higher levels were found in some rural communities in other developing countries such as China, where knowledge levels of 74.6%, 87.6%, and 73.9% respectively were reported.^[15] Better knowledge levels of 50.0%, 62.5%, and 46.2% respectively were found among slum dwellers in Mumbai, India the year our study was conducted.^[24] Being stuck with an HIV-contaminated needle or other sharp objects is an established route of HIV transmission.^[26,27] Knowledge of the rural dwellers in our study community is very low (29.4%) on this route of transmission. Blood transfusion is one of the key routes for HIV transmission. Only 33.8% of the respondents

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in this study knew that HIV can be contracted through blood transfusion. Another study among rural dwellers in southwest Nigeria revealed an encouraging knowledge level of 80.9%.²⁵ Also in China and India, which are developing countries like Nigeria, high knowledge levels of 96.8%, and 74.4% respectively were recorded.^[15,24] The overall knowledge level on HIV transmission of 29.5% is indeed very poor. Knowledge on the route of HIV transmission is an important ingredient in HIV response and control activities. A lot more efforts need to be put in towards

addressing the knowledge gap found among residents of our study community.

A misconception about routes of HIV transmission was found to be very high among residents of our study rural community. There are misconceptions about variously claimed routes of HIV transmission as documented in an extensive study across Vietnam, Zambia, Ethiopia, and Tanzania.^[28] We specifically looked at the level of misconceptions about inhaling polluted air, drinking water touched by HIV-positive person, and insect bite being HIV transmission routes; and found them to be 79.1%, 74.3%, and 77.7% respectively.

Table 4: Misconceptions of respondents about routes of HIV transmission

Question	Yes (N = 296)	Percent (100%)
HIV transmission can be;		
By inhaling polluted air	234	79.1
By drinking water touched by HIV-infected person	220	74.3
From insect bite	230	77.7

These very high levels of misconceptions shall probably lead to significant levels of stigmatization and discrimination of persons living with HIV/AIDS in the study rural community.

Conclusions

Awareness and correct knowledge on the causes, and routes of HIV transmission are an essential weapons in the fight against HIV/AIDS pandemic. The knowledge level is high in many parts of the world, but still very low in our study population and some other locations. High levels of misconceptions on certain perceived routes being HIV transmission routes were also found. This finding has the potential of sustaining stigmatization and discrimination against persons living with HIV/AIDS in the community. In the light of these findings, it is of paramount importance that interventions that will lead to significantly improved knowledge levels on the causes, and routes of transmission of HIV in the

study population is developed, and implemented in the community.

References

1. Park K. Parks Textbook of Preventive and Social Medicine, 21st Edition, M/s Banarsidas Bhanot Publishers, Jabalpur, India, 2013.
2. Hymes K B, Cheung T, Green J B, Prose N S, Marcus A, Ballard H, William D C, Laubenstein L T. Kaposi Sarcoma in homosexual men: A report of eight cases. *Lancet*, 1981, 2(8247): 598 - 600.
3. Centers for Disease Control (CDC). Kaposi Sarcoma and Pneumocystis Pneumonia among Homosexual Men - New York City and California: *MMWR Weekly*, 1981, 30(4): 305 - 308.
4. Centers for Disease Control and Prevention. A cluster of Kaposi saecoma and Pneumocystis Carinii Pneumonia among Male Residents of Los Angeles

“Knowledge of causes, and routes of transmission of HIV/AIDS among residents of a rural community in Enugu State, Southeast Nigeria.”

- and Range Counties, California. *MMWR*, 1982, 31(23): 305 - 307.
5. Centers for Disease Control. Current Trends Update on Acquired Immune Deficiency Syndrome (AIDS). United States *MMWR*, 1982, 31(37): 507 - 508, 513 - 514.
 6. Centers for Disease Control and Prevention. Epidemiologic notes and reports of immunodeficiency among female sexual partners of males with Acquired Immune Deficiency Syndrome (AIDS) - New York *MMWR* weekly, 1983, 31(52): 697 - 698.
 7. Centers for Disease Control and Prevention (CDC). Current Trends Update: Acquired Immune Deficiency Syndrome (AIDS) - United States' *MMWR* Weekly, 1983, 32(35): 465 - 467.
 8. Case K. Nomenclature: Human Immunodeficiency virus. *Annals of Internal Medicine*, 1986, 105(1):133.
 9. Internet. <http://www.avert.org/hiv-transmission-prevention/how-you-get-hiv>. Accessed 15/02/17
 10. Adeyi O, Kanki P J, Odutola O, Idoko J A. AIDS in Nigeria - A Nation on the threshold. Harvard series on Population and International Health. Harvard University Press, 2006.
 11. World Health Organization. HIV/AIDS Fact sheet, November 2016. <http://www.who.int/mediacentre/factsheets/fs360/en/>
 12. National Agency for Control of AIDS. Global AIDS Response, Country Progress Report 2015. Federal Republic of Nigeria, 2015.
 13. National Agency for the Control of AIDS. National Policy on AIDS. Federal Ministry of Health, Nigeria, 2009.
 14. Kumar P, Pore P, Patil U. HIV/AIDS-related KAP among high school students of municipal corporation school in Pune. An intervention study. *Natl. J Comm Med*, 2012, 3: 74 - 79.
 15. Qian H Z, Wang N, Dong S, Chen H, Zhang Y, Chamot E, Shi X, Gao J, Vermund S H, Shao Y. Association of misconceptions about HIV transmission and discriminatory attitudes in rural china. *AIDS Care*, 2007, 19(10): 1283 - 1287.
 16. Sarkar P, Mostofa G, Rahman M. Knowledge of Transmission Routes and Prevention ways of HIV/AIDS: Bangladesh context. *The Soc Sci*, 2010, 5(6): 525 - 531.
 17. UNAIDS China. HIV/AIDS: China's Titanic Peril. 2001 Update of the AIDS situation and Needs Assessment Report. UNAIDS Beijing, China office, 2002.
 18. Federal Ministry of Health. National HIV Seroprevalence Sentinel Survey among pregnant women attending Antenatal Clinics in Nigeria: Technical Report 2010. National AIDS/STI Control Programme, Nigeria, 1 - 4, 2010.
 19. Internet. http://en.wikipedia.org/wiki/enugu_state. Accessed March 7th, 2017.
 20. Otokpa A O, Lawoyin T O, Asuzu M C. Knowledge on HIV/AIDS and sexual Risk Behaviour among Pregnant women in Gwagwalada Area Council of Abuja, Nigeria. *World J Of Prev Med*, 2015, 3(3): 73 - 83.
 21. Unuigbo I E, Ogbeide O. Sexual Behaviour and Perception of AIDS Among Adolescent Girls in Benin City, Nigeria. *African J of Repr Health*, 1999, 3(1): 39 - 44.
 22. Ihuwan A. Knowledge and Attitudes of College Students Concerning HIV/AIDS. 2015 Awards for Excellence in Student Research and Creative Activity - Documents. Paper 2. Eastern Illinois University, USA, 2015. http://thekeep.eiu.edu/lib_awards_2015_docs/2.
 23. Sonrei A. Youth Knowledge on Transmission of HIV/AIDS in Stellenbosch Area, South Africa - Does

“Knowledge of causes, and routes of transmission of HIV/AIDS among residents of a rural community in Enugu State, Southeast Nigeria.”

- Socioeconomics, gender and race play a role. 2008. <http://www.diva-portal.org/smash/get/diva2:206169>. Accessed 21/03/17.
24. Syed S, Gangam S. HIV/AIDS Knowledge and Patterns of Sexual Behaviour Among Adult Slum Dwellers in Mumbai, India. *Int J Med Res Health Sci*, 2015, 4(4): 740 - 743.
25. Asekun-Olarinmoye E O, Bamidele J O, Olowu A O, Odu O O, Egbewale B E, Amusan O A. Sexual Risk Behaviours and Risk Perception of HIV/AIDS among a Rural Adult Population in Southwestern Nigeria. *Res J Med Sci*, 2009, 3(2): 80 - 86.
26. Internet. http://t.cdc.gov/synd.aspx?js=o&rid=cs_3605&url=. Accessed 25/03/17.
27. Internet. <http://www.nhacbb.org/index.php?categoryid=40>
28. Ogden J, Nyblade L. *Common Act Its Core: HIV- Related Stigma Across Context*. Washington: International Center for Research on Women. 2005.
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