



ORIGINAL RESEARCH PAPER

Heamatology

HIV SEROPOSITIVE PREVALENCE IN TSE-KUCHA, AN AFFLUENT CEMENT PRODUCING RURAL COMMUNITY IN BENUE STATE NIGERIA: A HOTSPOT FOR TRANSMISSION

KEY WORDS: HIV/ADS, Rural, Cement producing, Hotspots, Nigeria.

Hembah-Hilekaan SK*

Department of Obstetrics and Gynecology, Benue State University, Makurdi, Nigeria. *Corresponding Author

Mbaave T Peter

Department of Medicine, Benue State University, Makurdi, Nigeria.

Jirgba Bit

Department of Heamatology and blood transfusion, , Benue State University Teaching Hospital, Makurdi, Nigeria

ABSTRACT

High HIV prevalence is associated with factors leading to increased high-risk sexual behavior. Social and economic inequalities fuel the disparities in prevalence rates between rural, semi-urban and urban areas. The relatively affluent nature and lifestyle of the inhabitants of the small rural community of Tse-Kucha near Gboko town, Benue State, with an observed increasing morbidity and mortality from HIV, necessitated this study aimed at evaluating the local prevalence in the community relative to the state and national average prevalence. This was a descriptive, hospital based retrospective study. Subjects were patients who underwent HIV screening at Benue Cement Hospital Tse-Kucha during the 5year period from 1999 to 2003. Records of these patients were retrieved and analysed for Biodata, HIV sero-staus, and indication for HIV screening. Results were calculated in percentages. A total of 5044 clients were screened during the study period out of which 1468 were HIV sero-positive, giving a prevalence of 29.1%, (yearly range of 18% to 35.6%). The majority of clients tested i.e 4576(90.7%) and those sero-positive i.e 1345(91.6%) were from Tse- Kucha and immediate surroundings. The age group of 16-40years was most affected accounting for 1285(62.2%) of sero-positives. The prevalence of HIV/AIDS in this relatively affluent rural community was much higher than the state (10%) and national (5.8%) averages. Interventions in HIV/AIDS care should include search for and special attention to this and similar hotspots with high disparity, to curtail continuous and rapid transmission of the virus.

INTRODUCTION

The HIV/AIDS pandemic has remained a global problem especially in the developing countries, with about 70% of all people living with the disease being from the sub-Saharan African region^{1,2}. The Heterosexual route is the main mode of transmission in Nigeria, accounting for about 80% of the nearly 4.0 million cases while 10% of HIV infections are transmitted by mother-to-child transmission (MTCT) with another 10% by the use of unsterilized needles, blood and blood products and surgical instruments¹. Variability in HIV prevalence has been observed in sub populations in different countries with generalized HIV epidemics in sub-Saharan Africa³ With increasing understanding of HIV infection and better possibilities for treatment, there are now definite advantages to the individual in knowing his/her HIV status⁴. Though Nigeria has witnessed a significant decline in the prevalence of HIV among women attending antenatal clinics (ANC), from 5.8% in 2001 through 5.0% in 2003, to 4.4% in 2005 and 4.1% in 2010, most of these studies were conducted in urban and semi-urban areas and did not include the male sub-population or those in the rural areas⁵. Some of the most predominant factors driving the high HIV prevalence are high risk sexual behavior (transactional sex, multiple sexual partners, unprotected casual sex), socio cultural and economic factors (poverty, low level of education and ignorance, drug abuse, alcoholism, lack of male circumcision, low risk perception, gender based violence, conflict and strife)⁶. Integrated bio-behavioral sentinel surveys (IBBSS) show that female sex workers (FSW), men who have sex with men (MSM) and injection drug users are bridging populations with high prevalence of 27.4%, 17.2% and 4.2% respectively⁶. Community level surveillance may reveal hotspots of HIV infection that can serve to spread the infection in lower risk populations.⁷ The average HIV prevalence for Benue state was 10% while the national prevalence was 5.8% at the time of the study^{1,2,8}.

The aim of the study was to evaluate the prevalence of HIV infection in this community and compare it to the average prevalence in Benue state which was 10% and the national average for Nigeria of 5%^{1,2,8}.

THE STUDY SITE

The study site was the Tse-Kucha community which has been home to the Benue Cement Company (BCC) since 1979, and the immediate environs. The study was carried out at the company hospital. The Benue Cement Company now referred to as Dangote Cement Company is a cement-manufacturing factory located at Tse-Kucha (a rural settlement with an estimated population of over 170,000, located about 12 km from Gboko town on Gboko-Makurdi road in Benue State of Nigeria. It has a 36-bed company hospital with a maternity unit and an operating theatre, among other facilities, that offers primary and secondary level health care. It caters for the health needs of over 1,300 staff, their families, the immediate and surroundings community as well as visitors who come to transact business at the company. The presence of the factory has led to an increase in population, volume of economic and social activities in the locality over the years. The average income and social life style of the people of this rural mainly agricultural settlement has been greatly enhanced by the effect of the economic activities that take place at the factory site.

MATERIALS AND METHOD

This was a hospital based cross sectional retrospective study of all clients who presented to the study site (BCC hospital) between January 1999 and December 2003 and were screened for HIV antibodies. The study subjects were patients or clients who presented in the hospital following referral or for voluntary HIV counseling and testing (VCT), donation of blood, and those who presented with signs and symptoms suggestive of HIV/AIDS or other illnesses and were screened after verbal consent following adequate counseling. Previously diagnosed HIV positive patients who required hospital care for their symptoms such as fever, diarrhea, severe wasting disease, current tuberculosis or a combination of these symptoms were also included in the study.

The screening was carried out using standard national protocol for Nigeria. Participants were counseled and those who consented were requested to provide blood for HIV testing. Venous blood samples collected by the Physician or

Laboratory Scientist using needles and syringes were processed into sera under bio safety and universal precautions. Testing for HIV antibodies was done using the standard rapid test kits Determine (Abbot Laboratories, Japan) and Stat Pak. All Samples with discrepant ELISA test results were sent to Federal Medical Centre Makurdi for confirmation by Western blot (Genetic systems) provided by Aids Prevention Initiative in Nigeria (APIN). Tests were repeated on indeterminate Western blot samples after 4 weeks. Post-test counseling was carried out for all patients with particular attention given to positive clients who were to be referred for enrollment for care, treatment and support at Federal Medical Centre Makurdi, Benue State, Nigeria. These were mostly HIV infected clients who were neither staff nor relations of staff and could not afford the subsidized treatment cost at the BCC hospital.

Case records of the patients (study subjects) were retrieved after being identified from the outpatient/inpatient, theatre and laboratory registers. Case records with HIV results were analysed for Biodata, HIV status and results recorded. The data was analyzed using a Excel worksheet for percentages and means to get the socio-demographics and prevalence of HIV/AIDS.

RESULTS

During the five year study period under review, 5044 clients were screened for HIV, made up of 3356 (66.5%) males and 1688 (33.5%) females.. Out of the total number, 1468 patients tested positive giving a total HIV sero-prevalence rate of 29.1% with a yearly range of 18-35.6%. Of the sero-positives 15.6% and 13.5% were male and female respectively. Intra gender HIV/AIDS prevalence rates were 23.5% (787) for males and 40.3% (681) for females (Table1)..

Table 2 shows the age distribution of the clients, the number and percentage of those who tested positive in each age group, with the age ranges of 16-40 years being the most affected accounting for 1285 (62.2%). The number screened and HIV prevalence by location (area of residence) is shown in (Table 3). The highest number of those screened (90.7%) and of those who tested positive, (91.6%) during the study period came from Tse-Kucha and immediate surroundings. Indications for HIV screening were clinical signs and symptoms suggestive of HIV/AIDS (59.9%), client's desire to know his or her HIV sero-status (35.3%), blood donation (16.5%), while no reason was stated in 23.6% of those screened (Table 4).

Table 1: Annual HIV prevalence and sex distribution

Year	Number Screened	Number of HIV positive clients		Total (%)
		Male	Female	
1999	366	50	16	66 (18.0)
2000	1268	245	200	445 (35.1)
2001	1414	168	204	372 (26.3)
2002	1601	244	200	444 (27.7)
2003	396	80	61	141 (35.6)
Total	5044	787(15.6)	681(13.5)	1468(29.1)

Table 2: Age distribution

Age (Years)	Number Screened	Number of HIV positive clients	Percentage (%)
<16	32	4	12.5
16-20	78	18	23.1
21-25	502	97	19.3
26-30	1015	304	30.0
31-35	1808	603	33.4
36-40	901	263	29.2
>40	708	179	25.3
Total	5044	1468	29.1

Table 3: HIV clients by employment

Employment	Number Screened	HIV positive clients	Percentage (%)
BCC Staff	297	97	32.7
Benco Packaging Co. Staff	25	11	44.0
Staff Family Members	146	15	10.3
Tsekucha Community	4576	1345	29.4
Total	5044	1468	29.1

Table 4: Indication for Screening

Indication	Number Screened	HIV Positive Clients	Percentage (%)
Diagnosis	3020	1067	35.3
Blood donation	1632	302	16.5
Antenatal care	200	51	25.5
Voluntary (VCT)	27	9	33.3
Others	165	39	23.6
Total	5044	1468	29.1

DISCUSSION

The prevalence of HIV in patients screened at Benue Cement Company hospital who were mostly members of Tse-Kucha community in the study period was 29.1% which was higher than the Benue State and the national average of 10% and 5.8% respectively. In Nigeria, the result of the national HIV sero prevalence survey conducted in 2001 showed a national median prevalence of 5.8% with a range of 1.2% in Osun State to 12% in Cross River State, and an estimated 3.5 million infected persons, the third highest in the world^{2,8,10}. Recent estimates put the HIV prevalence in Nigeria at 3.4%, with the second largest HIV burden in the world after South Africa¹¹.

The prevalence rate found in this study was also higher than rates cited by similar studies^{12,13}. It is similarly higher than that found among Trading (17% range 11-21%) and Agrarian communities (14%, with a range of 9-26%) in one study in Rakai, Uganda¹⁴. Also a study in another rural community in the Umkhayakude district of KwaZulu-Natal, South Africa found high levels of crude HIV prevalence in adults (21.4%) in 2003/2004¹⁵, while a recent prevalence rate in an East African rural community was put at 19.1%¹⁶. It is however, lower than the median HIV prevalence of 42% (range 38-43%) found among fishing communities in Uganda¹⁷. HIV sero-positive prevalence rates in Nigeria among antenatal clinic clients rose from 1.4% in 1992 to 5.8% in 2001¹¹, before taking a steady decline to 5.0% in 2003, 4.4% in 2005 and 4.1% in 2010^{6,11}. Gender sero-positive prevalence in this study was slightly higher in males (15.6% male and 13.5% female) as against the generally accepted higher female prevalence worldwide. This finding is similar to that of a population based sero-survey of HIV prevalence in Rwenzori region of western Uganda where the prevalence was higher among men (18.7%) than women (14.5%) ($\chi^2=0.76, P=0.38$)¹⁶. Age groups 16- 40 years had a combined prevalence of 62.2%. This age bracket makes up the greatest percentage of the reproductive segment and work force of the population. This highlights of the social and economic magnitude of the problem faced by families, communities and countries especially the less endowed and calls for urgent action in this and similar communities in Nigeria. This is because these areas are hotspots for HIV transmission to adults through heterosexual route and children through mother-to-child transmission thus increasing the number of ill and unproductive members of the community. As at the end of 2004, some 2.2million children under 15 years were living with HIV due to a daily infection affecting children and young people of about 8,500^{17,18,19}, while in 2005, just over 14% of all new HIV infections occurred in children aged under 15 years of age^{20,21}. Increasingly, funders of HIV treatment and prevention programmes are calling for targeted approaches that focus on geographical areas and populations at highest risk so that scarce resources can have the greatest effect²².

The high sero- prevalence status seen in this study could be explained by the presence of factors fueling high risk sexual behavior and self selection bias.

The study population had an admixture of the local settlers, skilled and unskilled factory workforce and laborers, long distance drivers, a lot of local and immigrant free women who were available for transactional sex with those who came from far and wide to transact business at the factory. It is usually within this category of people that high-risk behaviour is most prevalent. High-risk sexual activity, including the multiple partners and sex for money or gifts, free use of alcohol and illicit drugs is a common feature of this group of people.

The high sero- prevalence status seen in this study could also be explained by self selection bias. It could have been as a result of the predominance of suspected patients who underwent diagnostic screening tests 3020 (35.3%), some already having been screened elsewhere who may have wanted to reconfirm their status, the recent scale up of HIV VCT, treatment and prevention services as well as large influx of migrants to the community for trading and other businesses, including women who offered sex for money and the easy availability of alcohol in the vicinity of the cement factory. It is likely that the prevalence of 16.5% seen among those screened for blood donation was a better reflection of the sero- prevalence of HIV infection in the general population. As reported in other studies, those who consider themselves at high risk for HIV infection are more likely to seek services than those who consider themselves at low risk, and also that VCT services are likely to attract high-risk individuals, especially when linked with provision of anti-retroviral drugs²³ as was the case here. The ratio of those screened to those who were positive was about 3 to 1, while the male to female sex ratio of those found to be positive was about equal. This equal gender ratio transmission risk is in agreement with reports from other populations in Africa^{22,24,25}. In other reports, HIV prevalence was found to be higher in women (3.5%) compared to men (3.3%) and slightly higher in semi-urban areas (3.6%) compared with the urban (3.2%) , and contrasts with earlier reports from Europe and the United States where those involved were mainly homosexual and bisexual men^{26,27}.

The HIV/AIDS pandemic is having a devastating impact on many communities in Nigeria and several countries around the world, with AIDS wiping out communities and threatening the social, economic and political gains in many areas although at present many programs aimed at alleviating the problem are located in the cities where HIV prevalence is higher and service delivery may be easier²⁸. Results from this study indicate that factors favoring high risk sexual behaviour which is responsible for increased HIV transmission were common in our study population, quite consistent with previous findings^{10,27,29} and the magnitude of the problem may be greater than earlier anticipated.

CONCLUSION AND RECOMMENDATION

There was a very high HIV sero-positive prevalence in Tse-Kucha compared to the Benue state and Nigerian national averages which makes it a hotspot for rapid HIV transmission. Concerted efforts should be made at identifying other similar high risk areas serving as hotspots and reservoirs for transmission of HIV infection.

Increased, effective public health enlightenment and other preventive measures to reduce the high risk sexual behavior should be instituted in these areas.

Limitations of the study

Limitations in this study were those seen in retrospective studies of this nature. The study may have also over-represented those who were positive because some of those who presented to the hospital were already suffering from

signs and symptoms of HIV/AIDS, pregnant women for PMTCT and those for VCT who may have participated in the hope of being linked to an anti-retroviral drug programme.

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