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HUMAN IMMUNODEFICIENCY VIRUS (HIV) 1 & 2 SCREENING IN UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL (UPTH): A TEN-YEAR REVIEW (1989 - 1998).

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ABSTRACT:

The screening for HIV 1 & 2 over a ten-year period (1989-1998) at the University of Port Harcourt Teaching Hospital Port Harcourt, Nigeria, was reviewed. Port Harcourt, in the Niger Delta, is the major center of the Petro-Chemical Oil Industry in Nigeria, and as an industrial, economic and cosmopolitan center has a large population of "Immigrant" and "migrant" oil workers.

The screening for HIV 1 & 2 in this center, using rapid ELISA Techniques, shows a total of 15,538 subjects consisting of 13,294 (85.6%) blood donors, and 2,244 (14.4%) patients (in- patients/ out-patients). Of all the subjects screened, 1,049 were seropositive, giving an overall prevalence rate of 6.8%, but with a steady yearly increase from 0.2% in 1989 to 14.5% in 1998. This rate is higher than the national rate of 4.5% in 1995/96, and 5.4% in 1998/99 surveys respectively.

Among the blood donors (13,294), 371 were positive giving an overall prevalence rate of 2.8%, with an increase from 0.2% in 1989 to 3.2% in 1998. The patients group (2,244) had 688 positive tests giving a prevalence rate of 30.7%, with an increase from 0% in 1989 to 37.0% in 1998. This group, however, comprised patients with a high clinical index of suspicion for HIV infections.

The data confirm a steady increase in HIV infection in Port Harcourt over the years, in spite of the Public Health Education and other social awareness programmes available. The data is also suggestive of seroprevalence rate of at least 3% in Port Harcourt and its environs, and that at least 3% of all biological fluid specimens sent for analysis in the pathology laboratories are HIV positive. The Public Health implication of this rapid increase in seropositivity rate is discussed.

KEYWORDS: ***Human Immunodeficiency Virus (HIV) 1 & 2, Blood Donors, Patients, Oil Industry, Acquired Immunodeficiency Syndrome (AIDS), Port Harcourt.***

INTRODUCTION

The occurrence of Human Immunodeficiency Virus (HIV) infection and Acquired Imunodeficiency Syndrome (AIDS) in Nigeria is no longer news. However, what is worrisome is the rapid increase in HIV infection/AIDS in the country, as evidenced by the fact that 2,762 new cases were reported in 1995 alone[1]. Although the first case of AIDS in Nigeria was reported in 1986, Nigeria is now a major locus of HIV infection in sub-Saharan Africa with a national sero-prevalence rate of 4.5% in 1997. This shows a dramatic increase over preceeding surveys of 1991/92 (1.2%), and 1993/94 (3.8%)[2,3]. This trend is compatible with the global picture given by the Joint United Nations Programme on HIV/AIDS, which estimated that by December 1996 over 30 million persons (26.8 million adults, and 2.6 million children) had been infected with HIV since the start of the global epidemic[4]. The epidemic has continued unabated. As at 1998, it was estimated that globally, 33.4 million people were living with HIV/AIDS, out of which 22.5 million were in sub-Saharan Africa[5].

This trend necessitates vigilance in screening for HIV/AIDS cases as the seroprevalence rate is yet to plateau in Nigeria. Rivers State, being a rich oil-producing area, and Port Harcourt, its capital, an industrial, economic and cosmopolitan center, is expected to have a fair share of this. Because of its strategic position, an HIV screening center was established at the University of Port Harcourt Teaching Hospital in 1989 with the collaboration of the Federal Ministry of Health. This paper reviews the activity of this laboratory in the last ten years (1989-1998) since it was set up.

PATIENTS AND METHODS

Records of all samples screened for HIV/AIDS at the HIV

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Table 1: **HIV Screening in UPTH (1989 - 1998)**

Year	Total Screened	No. Positive	% Positive	DONORS			PATIENTS (NON-DONORS)		
				No. Screened	No. Positive	%Positive	No. Screened	No. Positive	% Positive
1989	1456	3	0.2	1434	3	0.2	22	0	0
1990	857	0	0	815	0	0	42	0	0
1991	733	16	2.2	671	14	2.1	62	2	3.2
1992	3324	160	4.8	3146	152	4.8	178	8	4.5
1993	1238	44	3.6	1174	38	3.2	64	6	9.4
1994	1022	52	5.1	882	25	2.8	140	27	19.3
1995	1251	88	7.0	1107	44	4.0	144	54	37.5
1996	899	77	8.6	743	4	0.5	156	73	46.8
1997	1926	198	10.3	1435	30	2.1	491	168	34.2
1998	2832	411	14.5	1887	61	3.2	945	350	37.0
Total	15,538	1049	6.8	13,294	371	2.8	2244	688	30.7

laboratory of the Haematology and Blood Transfusion Department of University of Port Harcourt Teaching Hospital, Port Harcourt Rivers State, Nigeria, for the ten-year period 1989-1998, were analysed, to ascertain the trend and any peculiar problems associated with the infection in our environment.

Two main groups were analysed, the blood donors and the non-blood donors (or patients). The main screening methods used were rapid ELISA tests, e.g immunocomb (organics), the Capillus HIV – 1 & 2 (Cambridge Diagnostics) and the Red-Dot HIV - 1 & 2 (Cal-Test Medial Laboratory, Inc, USA). Positive samples were cross-checked with a second rapid ELISA test. The methods recommended by the manufacturers were applied in each case.

RESULTS

The results of this study are as tabulated in Tables I, II and III ,and illustrated in Figure l. A total of 15,538 samples were screened over the ten-year period. Out of these, 1049 tested positive, giving a mean seropositivity rate of 6.8%. The seropositivity rate increased steadily over the years from 0.2% in 1989 to 14.5% in 1998.

The samples were divided into those from blood donors, and patients. The blood donors formed the single largest group with 13,294 (85.6%) samples of which 371 tested positive, giving a mean seropositivity rate of 2.8%. However, there was a steady yearly rise in seropositivity rate from 0.2% in 1989 to 3.2% in 1998 (Fig. 1 and Table I).

Table 2: **Age and Sex Distribution of all Subjects**

Age	Blood Donors (n = 13,294)	Patients (n= 2244)
≤ 5 years	-	90(4%)
6 - 15 years	-	226(10%)
10 - 25 years	3,988(30%)	450(20%)
26 - 35 years	5,318(40%)	626(28%)
36 - 45 years	3,324(25%)	414(18%)
46 - 55 years	598(4.5%)	224(10%)
56 - 55 years	66(0.5%)	135(6%)
66 - 75 years	-	67(3%)
76 - 85 years	-	12(0.5%)
Sex:		
Male	13,294	1458(65%)
Female	-	786(35%)

Table 3: **Age and Sex Distribution of HIV Positive Subjects**

Age	Blood Donors (n = 371)	Patients (n= 688)
Sex		
Male	371	- 378(55%)
Female	-	- 310(45%)
Age:		
≤ 5 years	-	34(5%)
6 - 15 years	-	69(10%)
16 - 25 years	-	138(20%)
26 - 35 years	37(10%)	186(27%)
36 - 45 years	137(37%)	124(18%)
46 - 55 years	111(30%)	69(10%)
56 - 55 years	56(15%)	41(6%)
66 - 75 years	30(8%)	21(3%)
76 - 85 years	-	7(1%)

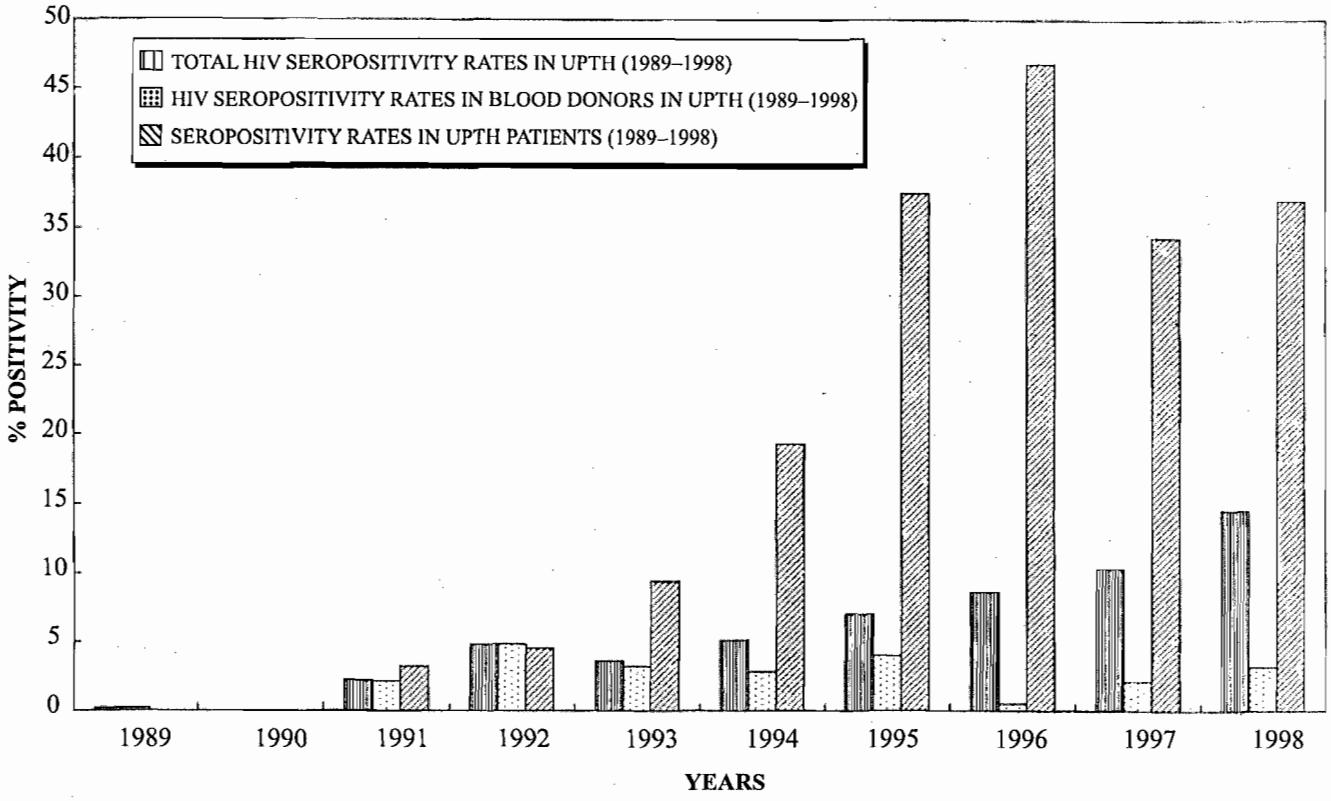

Fig. 1. **HIV Seropositive Rates in University of Port Harcourt Teaching Hospital (1989–98).**

The group of non-blood donors, comprising mainly patients (in-patients and outpatients), travellers, pre-employment screen, volunteers, etc comprised 2,244 samples (14.4%), out of which 688 were positive, with a mean seroprevalence rate of 30.7% (Table 1). Here again, there was a steady rise in seropositivity from 0% in 1989 to over 30% in 1998.

Table 2 shows that all blood donors were males, 95% of which were aged 16-45 years. The patient group had 1458 (65%) males and 786 (35%) females, with the 16-45 years age group constituting 66%.

Table 3 shows that among the blood donors who were seropositive, the sexually and economically active age group of 16-45 years constituted 77%, while among the patients this same age group constituted 65% of HIV positive subjects. There were more male patients, 378 (55%) than females, 310 (45%).

DISCUSSION

Port Harcourt is the capital city and administrative headquarters of Rivers State of Nigeria. It is located in the oil-rich Niger Delta region. It is one of the most industrialized cities and the nerve center of the oil industry in Nigeria. It has an international airport, two seaports and a railway terminus and is well-linked by road to other parts of the country. Because of its strategic importance to the Nigerian economy, there is a regular influx of job-seekers, businessmen, expatriates and young ladies, who want a share in the lucrative petroleum industry. This had led to a rapid population growth in the last few years.

Oil operations, by their very nature, require the worker to regularly go on and off oil drilling rigs for certain periods of time. These oil rigs are located mostly in remote rural, riverine areas, or off-shore. These exploration sites also move from one drilling location to another creating a circular labour migration. Hence many oil industry workers are dislocated from their families and spouses regularly for considerable periods of time. While separated from their spouses, these workers run the risk of high exposure rate to unprotected casual sex with prostitutes and unemployed single young ladies who flock around their areas of operation engendering higher rates of infection. All these factors, economic and socio-cultural, contribute to making Port Harcourt and its environs an area with high potential for rapid transmission of sexually transmitted diseases (STDs) including HIV infections/AIDS[6-13].

The subjects screened in this study are a highly selected population of individuals, comprising mostly of blood donors 13,294 (85.6%) and patients (non-blood donors), 2,244 (14.4%). The results of this review may therefore not be directly extrapolated to the general population, though some valid deductions and inferences could still be made.

The blood donors were all young males (18-55 years of age) who considered themselves healthy enough to donate blood. Majority were relations of patients who required blood transfusion, while a few might have been paid commercial blood

donors. Hence they represent an essentially "healthy" and economically and sexually active segment of the population. The seropositivity rate in these blood donors varied from 0.2% to 4.8% with a mean of 2.8% during the years under review. The highest seropositivity rate of 4.8% was obtained in 1992. As at 1998, the seropositivity rate for the blood donors was 3.2%. Our figures are similar to those of the Lagos University Teaching Hospital, Lagos, Nigeria, which reported a rate of 3.7% among the blood donors in 1996[14]. This rate is alarming since it relates to a seemingly "very healthy", young (16-55 years) and economically active segment of the population. Amongst them were students of higher institutions of learning, workers in the public and private sectors, and the unemployed. Simply put, it suggests that about 3% of "healthy" young men in Port Harcourt are already infected with the HIV. Considering the permissive, cosmopolitan nature of the Port Harcourt society, the multiplier effect will be enormous in the general population.

The patient group (non-blood donors) consisted mostly of hospital patients (inpatients and out-patients) who were sent for HIV screening on account of illnesses with a high clinical index of suspicion of HIV infection/AIDS like tuberculosis, respiratory infections and urinary tract infections etc. The seropositivity rate in this group varied from 0.0% to 46.8% during the year under review, with a mean rate of 30.7%. The highest seropositivity rate of 46.8% in this group was obtained in 1996. As at 1998, the seropositivity rate in this group was 37.0% As shown in Tables 2 and 3, the young people (10-45 years) constitute the majority of patients, as well as those positive for HIV. These figures are scaring and confirm that HIV infection/AIDS is highly prevalent among the young people in Port Harcourt and its environs.

The entire population group comprises of "healthy" blood donors 13,294 (85.6%) and patients (non-blood donors) 2,244 (14.4%). The HIV seropositivity rate in the "healthy" blood donor group will tend to under-estimate the rate in the general population, while that in the patients group will tend to over-estimate the seroprevalence rate in the general population. Considering the relative number of these two population groups (85.6% and 14.4%), these opposing biases may cancel out each other, so that the combined sero-positivity rate of the entire population of our subject may approximate the mean seroprevalence rate in the general population of Port Harcourt. This may sound speculative, but in the absence of a proper population survey, this may be the best estimate of HIV seroprevalence in Port Harcourt at the time of study.

Thus, combining both population sub-groups as suggested above, the combined seropositivity rate varied from 0% to 14.5% during the period under review, with a mean rate of 6.8%. There was a gradual increase in seropositivity from 1989 to 1998 (Table 1).

It may therefore, be reasonable to assume that the seroprevalence rate of HIV in Port Harcourt presently is about 14.5%. In 1997, the combined rate was 10.3%, which was considerably higher than the 1997 national prevalence rate of 4.5%[2]. The rapid increase in the combined seropositivity rate 0.2% to 14.5% suggests that HIV infection/AIDS has assumed the proportion of an epidemic of considerable public health importance in Port Harcourt. This is alarming and calls for more vigorous intervention efforts.

We may be gradually approaching the situation in Southern Africa where the seroprevalence rate in 1998 was estimated to be 20-26%[4].

The results of this review also suggest that, as at 1998, about 14.5% of all biological fluid specimens submitted for analyses in the different pathology laboratories at the University of Port Harcourt Teaching Hospital (UPTH), might have been HIV positive. The implication is that there is a high risk of HIV infection in the work place for laboratory staff, and other health workers in the hospital. Our observation at the UPTH is that safety measures are presently not being accorded the highest priority they deserve in the laboratories, clinics and wards. The situation may be the same in other health institutions across the country. This high, and rising, seroprevalence rate of HIV infection calls for adequate safety measures for all laboratory and other health workers who come in contact with biological fluid/secretions from patients, for example wearing of latex gloves while doing venepuncture, and routine laboratory bench work, banning of mouth pipetting; prompt reporting of needle-stick injuries and proper disposal of sharps objects and spillages, and the appointment of a safety officer.

Specimens from patients that are known to be HIV positive should be clearly identified and labelled. A case is therefore made for routine and mandatory screening for all hospital patients to detect all seropositive cases. These simple safety measures would help to minimize the risk of HIV infection for all health workers. Moreover, public health education and other social awareness programmes should be intensified to curb the rapid spread of HIV infection in Port Harcourt and its environs.

CONCLUSION

The seroprevalence of HIV infection is on the increase in Port Harcourt, Nigeria. Presently, about 3% of healthy young men may be infected, while the seroprevalence rate in the general population may be close to 14.5%. This calls for adequate safety measures for health workers, and intensification of public health education and other social awareness programmes, to curb the spread of the HIV epidemic. It is also necessary to set up a confirmatory center here in Port Harcourt to handle further ramifications of the disease.

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