HIV SEROPREVALENCE AMONG ADOLESCENTS AND YOUNG ADULT MALES IN INDIA: A LARGE COMMUNITY BASED EPIDEMIOLOGICAL STUDY

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ABSTRACT

A large number of HIV seroprevalence studies have been conducted on the high-risk groups. However there seems to be a paucity of such studies undertaken in the general population. This study was directed towards the adolescents and young Indian male adults. A representative samples of 19,436 were tested, out of which nine were positive for HIV, thereby giving a HIV seroprevalence rate of 0.46 per 1000 with a clustering of the positive subjects towards the North East of India followed by the Southern states. Those from the North East were younger than those from the South. This calls for a targeted information, education and communication (IEC) programme aimed at the younger group in the East with known greater risk potential for intravenous drug abuse, and older adults in the South. The study also provides an insight for HIV/AIDS mapping and possible future direction of the epidemic in India.

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KEY WORDS: HIV-age & geographic distribution; HIV Epidemiology; HIV India; HIV seroprevalence.

Introduction

The presence of HIV infection in 21 of the 24 Indian States and territories was acknowledged as far back as 1993 with a seropositivity of 0.71% in 1.6 million serum samples screened from all risk groups [1]. National studies covering the general population and more so the young male adults are not available. The closest surrogate, the voluntary blood donors had a prevalence of 1% in Bangalore, less than 1% in Hyderabad and 0.29% in Calcutta [2]. A sentinel survey amongst Antenatal clinic attendees done during 1994 in Bombay gave a prevalence of 2.5% suggesting there by that the epidemic of AIDS has not yet started to rise [3]. Most available studies on HIV seroprevalence in India are those carried out on high risk groups. This underscores the need for assessment of HIV infection status in the general Indian male population for understanding the dynamics of HIV infection in India. Accurate picture in India has been difficult because of variable factors, geographic, urban-rural or socioeconomic [3]. The present study was planned to estimate the seroprevalence of HIV infection and related important variables amongst the newly enrolled young male recruits of the Indian Armed Forces. This group represents a large demographically well characterised subset of the general Indian male population. The data would therefore reflect a National baseline of seroprevalence among teenagers and young adults in India. To the best of our knowledge, no such baselines study has been under-

taken among this age group on a large sample, in India.

Material & Methods

A multicentric cross-sectional survey was undertaken during the period 1 July 96 to 31 Aug 97. Since the recruits of the three services of the Indian Armed Forces are drawn from all over the country, the general population of the country in the age groups 18-25 years constituted the reference population while the new recruits who joined during the period of study were the study population. A Protocol was developed & pretested on a sample of target population & was validated for field use. After obtaining a willingness for inclusion in the study the standardised questionnaire was completed by a face to face interview by pre-trained interviewers.

HIV testing was carried out by Immuno-Comb screening under supervision of pathologists. Individuals testing positive were subjected to repeat test at the same centre. In case the individual again tested positive, he was referred to nearest Armed Forces HIV/AIDS referral centre for Western blot (WB) test. Samples that were initially confirmed by Western blot testing were routinely confirmed by WB test of a second specimen by National HIV reference laboratory under National AIDS Control Organisation. The quality of the testing was ensured by stringent performance requirements & the laboratory procedures & diagnostic criteria for positivity were consistently used throughout the survey period.

The unit of measurement of prevalence estimates was the number of HIV antibody positive applicants per 1000 screened. Categories in independent variables were age & geographic distribution.

Results

Overall HIV seroprevalence

There were nine HIV positive young male subjects amongst the

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19,436 surveyed. The prevalence of HIV seropositivity was 0.46 per 1000.

Station/Centre wise seroprevalence

A further station wise seroprevalence of the nine HIV seropositive individuals showed a clustering of cases at Shillong (Assam Regt Centre) with five cases at a seroprevalence rate of 4.68 cases per 1000. Secunderabad (EME Centre) had two cases, giving a rate of 1.66 per 1000, while Bangalore (MEG Centre) and Jabalpur (Signals Centre) had one case each with a seropositivity of 0.83 per 1000. The respective 95% Confidence Intervals are also presented in Table 1. It is apparent that seropositivity was much higher for Assam Regimental Centre, Shillong, followed by EME Centre, Secunderabad. On the other hand, in most of the other Centres (n=23) it was nil (Table 1).

TABLE 1
HIV seroprevalence rate in centres reporting positive subjects

Training centre	No. Tested for HIV	No. Positive for HIV	Prevalence per 1000	95% CI
Assam Regt centre	1069	5	4.68	0.58 - 8.78
EME centre	1200	2	1.66	0.01 - 3.99
MEG centre	1200	1	0.83	0.01 - 2.46
Signals centre	1200	1	0.83	0.01 - 2.46
Other centres [23]	14767	Nil	—	—
Total	19436	9	0.46	0.16 - 0.76

Geographic distribution of the HIV positive subjects

Five of the nine subjects were from the North Eastern states of India viz. Manipur with three cases, Nagaland and Assam with one each. Three were from the Southern Indian states of Andhra Pradesh and Tamil Nadu. The remaining one case was from the Eastern state of Orissa. All were from the rural areas with farming as the main family occupation (Table 2).

TABLE 2
Age and place of origin of the HIV positive subjects

Age group	Number HIV positive	State
18 - 20 years	6	Manipur [3] Nagaland [1] Assam [1] Orissa [1]
21 - 25 years	3	Andhra [2] Tamil Nadu [1]
Total	9	

Figures in parenthesis indicate number of HIV positive subjects

An age-wise breakdown shows that six of the nine HIV seropositive subjects were between 18-20 years of age and three between 21-25 years (Table 2). Age in relation to geographic background revealed that five of the six aged 18-20 years were from the North East states of Manipur, Nagaland & Assam. The sixth was from Orissa. All the three aged between 21-25 years were from the Southern states with one from Tamil Nadu & two from Andhra Pradesh.

Discussion

In the present study conducted between 1 July 96 to 31 Aug 97, the mean prevalence of HIV antibodies in the fresh male recruits of the Indian Armed Forces was 0.46 per 1000. As the population studied is relatively young, it is possible that the true prevalence of HIV in the general population in India greatly exceeds 0.46 per 1000. This is also appreciably lower than the overall WHO estimated infection rate of 2.62 per 1000 for India [4] possibly due the younger age of the subjects in this study. The prevalence can be expected to be higher in the older age groups. A further Centre wise breakdown showed Assam Regt Centre, Shillong having a seroprevalence rate of 4.68 cases per 1000, followed by EME Centre, Secunderabad with 1.66 per 1000, while MEG Centre, Bangalore and Signals Centre, Jabalpur had a seropositivity of 0.83 per 1000 each.

A study amongst the Army applicants for the US Military services for the period 1985-89 had shown a prevalence rate of 0.34 per 1000 in teenaged males, thereby indicating that infection in these age groups is not rare as is also seen in the present study. In a similar study among Thai Army conscripts the HIV seroprevalence had risen from 5 per 1000 during 1989 to a high of 40 per 1000 during mid 1993 [5] which was reflective of the higher prevalence rates in the general population. Therefore, the present prevalence rates in the young male adults is an expression of the disease burden in the population sub-group. In India, earlier studies conducted on the general population have shown a seroprevalence of 10 per 1000 in Bangalore and Hyderabad to 2-9 per 1000 in Calcutta [2] thus showing a rising trend with a rise in age. This is probably due to the high risk behaviour that may develop with a rise in age.

A geographic distribution of the nine HIV positive individuals shows a clustering of cases with five of the nine belonging to the North East Indian states of Manipur, Nagaland & Assam while three were from the Southern states of Andhra Pradesh & Tamil Nadu (Table 2). A further breakdown of the HIV positive subjects by place of origin & age shows that five of the six HIV positive subjects who were under 21 years of age were from the North Eastern states of Manipur Nagaland and Assam (Table 2). Of the three over 20 years of age, two were from the states of Andhra Pradesh & one was from Tamil Nadu. The age-wise variation of the prevalence as per the geographic area is reflective of the magnitude and pattern of high risk behaviour in a particular community which is indica-

tive of the socioeconomic conditions of that area [2]. All the HIV positive cases from the NE states were from rural farming communities of lower socioeconomic strata. This is contrary to previous studies reporting an urban-rural ratio of 3:1 [6]. In addition, the population in these areas is known to have greater risk potential to the exposure to intravenous drug abuse.

Measures for control should therefore be addressed to the specific group viz. those under 21 years of age in the North East states and 21-25 years in the other states with appropriate health education activity as a preventive vaccine in a targeted tailor-made information, education and communication (IEC) programme. Such targeted interventions are cost-effective if introduced at the correct time frame of the development of the epidemic by a change or alteration in the sexual behaviour as in the young, by reducing transmission through condom usage [7]. Those underserved by the existing HIV preventive & testing programmes because of limited access, including intravenous drug users, need urgent attention [8]. The state-wise finding also provides information on population at greatest risk of infection and may provide clues about the further direction of the epidemic [9].

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