Seroprevalence of HIV infection among the foreign students at Agra during a fifteen year period (1988-2002)

U. Sengupta & V.M. Katoch

HIV/AIDS Unit, National JALMA Institute for Leprosy & Other Mycobacterial Diseases
(Indian Council of Medical Research), Agra, India

Received September 22, 2004

The present study reports a retrospective analysis of data of HIV testing of foreign students from Sub-Saharan Africa, South-East Asia and Europe, studying as well as staying at Agra, over a period of 15 yr (1988 to 2002). Of the 2653 [2092 (78.85%) were from the Sub-Saharan African countries, 377 (14.21%) from the South-East Asian countries, and 184 (6.93%) from the European countries], foreign students tested for HIV, only 26 were found to be positive for HIV-1/2 antibodies by the ELISA, rapid and Western Blot assays. Out of 26 HIV-positive, 17 males and 7 females were from Sub-Saharan Africa and 2 males were from the European countries. The range of HIV-positivity over a period of 15 yr varied greatly. When the five-year (1988-1992, 1993-1997 and 1998-2002) results were compared, the HIV-seropositivity showed a decline from 1.85, 0.50 to 0.36 per cent in the first, second and third 5 yr slots, respectively. While the data were not representative of all foreign students in India, this reflected the population tested in this centre was not a growing focus of HIV infection in this part of the country.

Key words
Agra - foreign students - HIV/AIDS - India - seroprevalence

In a few developed countries, a significant proportion of sexually transmitted infections are acquired during international travel. Some countries including India had earlier, adopted entry and visa restrictions for foreigners tested positive for HIV infection and/or infected with HIV/AIDS. Agra, a city in north India besides being one of the tourist attractions among the foreigners for the Taj Mahal and other world heritage monuments, also attracts a large number of students. HIV testing of foreign students in this Unit at Agra started in 1988. This surveillance centre now renamed as the Voluntary Confidential, Counselling & Testing Centre (VCCTC), is a State body of the National AIDS Control Organisation (NACO) of India. A retrospective analysis of the data of HIV testing was carried out on foreign students at Agra from 1988 to 2002 to study the prevalence of HIV infection among them.
Blood samples (5ml) were collected aseptically by ante-cubital venipuncture from foreign students. Socio-demographic data like name, date of birth (age), sex, present residential address, course for which admission was sought, marital status, passport number, country of origin, purpose for HIV testing, etc., was recorded at the time of testing. Serum samples were stored at -20°C until the assays were performed. Screening for HIV-1/2 antibodies was done using the kits of Genedia HIV-1/2 ELISA 3.0 (Greencross Life Science Corp., Korea). Western blot (WB) was performed with New LAV Blot-1 (Nippon Bio-Rad Laboratories, Japan) using the ELISA positive serum samples for confirmation. The results of HIV test were given back only to the person concerned after post - test counselling. Those found HIV-positive were informed, counselled and the report was sent to the Dean of the University and Local Intelligence Unit at Agra in a sealed cover to maintain absolute confidentiality. The Foreign Regional Registration Office at Agra was also informed in a similar manner. The HIV-positive foreign students were then deported to their countries.

Of the 2653 foreign students [1770 (66.7%) males, 883 (33.3%) female] tested for HIV during the study period, only 26 (0.98%) were found to be positive for HIV-1/2 antibodies as revealed by three tests viz., the ELISA, rapid and Western Blot assay.

Of the 26 HIV-seropositives, 19 were males and 7 were females. Though positivity among males was more than females, statistical analysis (Chi square) of the variables revealed that sex did not influence the HIV positivity. With respect to the age of foreign students, 1038 (39.12%) were in the age group of 15-20 yr, 1103 (41.57%) were in the age group 21-25 yr, 337 (12.70%) in the 26-30 yr age group, and 175 (6.59%) belonged to the 31 and above age group. Of the 19 HIV-positive males, four were in the age group 16-20 yr, 9 in the 21-25 yr and three each in 26-30 yr and ≥31 yr of age. Of the 7 HIV-positive females, 3 were in 15-20 yr of age, another 3 in 21-25 yr and only 1 was in ≥31 yr of age. No association was found between age of students and HIV-positivity. Further, none of them had any symptoms at the time of testing.

A total of 2092 (78.85%) foreign students were from the Sub-Saharan African countries viz., Ethiopia, Guyana, Kenya, Somalia, Sudan, Surinam, Tanzania, and Uganda, 377 (14.21%) were from the South-East Asian countries like Indonesia, Japan, Mauritius, Mongolia and Thailand, and only 184 (6.93%) from the European countries like Argentina, Budapest, Bulgaria, Finland, Hungary, and Poland. Of these 24 HIV-positive were from Sub-Saharan Africa and two from the European countries. None tested positive among the students of South-East Asian countries. This variation could be due to the less number of students of the other countries when compared with those from the African continent. When the five-year block (1988-1992, 1993-1997 and 1998-2002) results were compared, total HIV-positivity was 19/1023 (1.85%), 4/798 (0.50%) to 3/832 (0.36%) in the three blocks, respectively (Table A, B and Fig.). The decline in the first, second and third 5 yr blocks (Chi-square, \( P=0.001 \)) was statistically significant. These results were virtually a reflection of students from Sub-Saharan Africa coming to Agra who constituted the major group. Overall, the impact of age, sex and nationality, on the HIV-positivity was not found to be significant.
Higher positivity among students from African countries might be due to the AIDS pandemic which has been prevalent and profound in Sub-Saharan Africa11. The estimated number of adults and children living with HIV/AIDS by the end of 2003, in Sub-Saharan Africa was 25.0-28.2 million, in South and South-East Asia was 4.6-8.2 million, in Western Europe was 5,20,000 - 6,80,000 and in Eastern Europe and Central Asia was 1.2-1.8 million12. The data were not representative of all foreigners in India, but reflected the population of students tested in this centre who came to this city from different regions of the world, for study and stayed for variable periods of time. The results suggested that such groups did not appear to be a growing focus of transmission of HIV infection at least in this region of the country.

**Acknowledgment**

This study was supported by funds from the National AIDS Control Organisation (later taken up by the UP State AIDS Control Society, Lucknow), New Delhi. The authors thank Shriyuts P.N. Sharma, M.M. Alam, M.S. Tomar, K.L. Verma and Sushil Prasad of the HIV/AIDS Unit for their technical help in the study.

**References**


Reprint requests: Dr Tahziba Hussain, HIV/AIDS Unit, National JALMA Institute for Leprosy & Other Mycobacterial Diseases (Indian Council of Medical Research), Tajganj, Agra 282001, India e-mail: tahziba_hussain@hotmail.com