Sociodemographic profile of patients attending the integrated counseling and testing center at a government super-speciality hospital in Central India

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Abstract

Context: The HIV epidemic continues to be a matter of concern worldwide. Integrated counseling and testing center (ICTC) is an opening wedge for HIV diagnosis and support services, especially to the high-risk groups. Counseling and testing is a cost-effective and simple way of reducing HIV transmission. Aims: The aim of the study was to analyze the sociodemographic profiles of the ICTC attendees to evaluate the changing trends of HIV seropositivities over a period of 7 years. Settings and Design: This was a retrospective study done in the ICTC housed in a tertiary care hospital at Bhopal. Materials and Methods: All attendees in the period of 7 years were included. Statistical analysis used: percentages and proportions were calculated. Results: There were 24,853 ICTC attendees from January 2009 to January 2016, of which 183 (6.41%) attendees were tested seropositive. There were 15,555 (62.5%) males and 9298 (37.5%) female attendees. Among 15,555 males, 151 (0.97%) were seropositive, and of 9298 females, 32 (0.34%) were seropositive. Of 151 seropositive males, 62 (41%) were in the age group of 19–30 years and 48 (31.7%) were in the age group of 31–40 years. Among the seropositive females, 9 (28.1%) were in the age group of 19–30 years and 10 (31.2%) were in the age group of 31–40 years. We observed a rise in total number of ICTC attendees from January 2009 to January 2016. The number of attendees increased to 4655 in 2013, of which 27 (0.58%) were seropositive, and by 2015, there were 4982 attendees with only 6 (0.12%) seropositives. Conclusion: Such rising trends of attendees and a steady decline in the seropositivity rates are encouraging signs, reflecting the contribution of the ICTC in creating awareness, and reducing the transmission of HIV among the population served.

Key words: HIV seropositivity trends, integrated counseling and testing center, sociodemographic variables

INTRODUCTION

India has successfully achieved the 6th Millennium Development Goal of halting the HIV epidemic. Between 2000 and 2015, new HIV infections dropped from 2.51 lakhs to 86 thousand/year, a reduction of 66% against a global average of 35%.11 Collection of data and assessment of sociodemographic factors, level of awareness pertaining to disease transmission, as well as risk behavior of the population to plan and implement interventional strategies were critical in reducing the disease burden. The establishment of counseling centers was of great importance in this regard.11

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India has the third largest HIV epidemic in the world. In 2015, HIV prevalence in India was estimated to be 0.26%. The figure may appear insignificant when compared to most other developing countries, but since India has a massive population (1.2 billion), the figure equates to 2.1 million people living with HIV. In 2015–2016, an estimated 68,000 people succumbed to AIDS-related illnesses.

Counseling and testing is one of the most cost-effective and simple ways of reducing the transmission of HIV. HIV counseling and testing services were started in India in 1997. The main function of an integrated counseling and testing center (ICTC) is to conduct HIV diagnostic test, to provide basic information on the modes of HIV transmission, and to promote behavioral change.

Analysis of the data generated by ICTC would help in understanding the evolving epidemiology of the disease in Central India, which may serve as a guide for strengthening the existing and formulating the new disease control policies.

MATERIALS AND METHODS
This cross-sectional study was carried out at the ICTC, Department of Microbiology, Bhopal Memorial Hospital and Research Centre, Bhopal. The study included all the ICTC attendees over a period of 84 months/7 years (January 2009–January 2016). A total of 24,853 attendees were included. Prior approval was taken from the Institutional Scientific and Ethics Committee of the institute. Anonymous and unlinked information was collected, as per the National AIDS Control Organization (NACO) guidelines from records by the counselor who interviewed the attendees under strict confidentiality. The details included age, sex, marital status, education status, occupation, area of residence (rural or urban), and self-reported route of transmission/risk. The HIV serological positivity status was confirmed using enzyme-linked immunosorbent assay for HIV-1 and HIV-2 recombinant antigens using different kits based on different principles (dot immunoassay and immunochromatographic rapid tests) as per the NACO guidelines. Data collected were analyzed and proportions were calculated using Microsoft Excel.

RESULTS
The total number of ICTC attendees from January 2009 to January 2016 was 24,853, and among these, 183 (6.41%) attendees were tested seropositive. The year-wise trends of ICTC attendees and their seropositivity are shown in Figures 1 and 2. The participants of our study were referred to the ICTC either by the health-care providers of the hospital or through nongovernmental organizations (NGOs) supporting the cause or they turned up voluntarily (self-referral). Of 24,853 attendees, 15,555 (62.5%) were male and 9298 (37.5%) were female. Among the 15,555 males, 151 (0.97%) were seropositive, and of the 9298 females, 32 (0.34%) were seropositive. The sociodemographics of the attendees based on their age [Table 1], residence [Table 2], marital status [Table 3], education [Table 4], and occupation [Table 5] have been tabulated. The risk behavior of seropositive attendees is shown in Table 6.

DISCUSSION
The ICTC acts as a nodal point for disease prevention and limits the spread of HIV. In ICTC, the attendees are serologically tested for HIV. Those tested negative for HIV are counseled to use the bouquet of existing services and interventions, so as to adopt risk reduction behaviors and healthy practices, whereas those tested positive for HIV are counseled to make the use of the prevention and treatment services provided by the government by adopting protective behaviors to avoid the virus transmission to their spouse and to help them lead a healthy and dignified life.

ICTC provides its services to attendees either from referral (health-care providers and NGOs) or to the direct walk-in clients. Therefore, the sociodemographics of the attendees are influenced by the topography of the surrounding area, the population residing therein, and the NGO's functioning in the district. The vulnerable populations with high-risk behavior are the target group for these NGOs. The HIV seropositivity in ICTC clients in the present study was noted to be 0.73%, which is greater than the overall prevalence (0.26%) in India. The prevalence reported from the ICTC may be higher due to the fact that this center mainly caters to the urban population and is housed in a tertiary care hospital. Different health-seeking behavior in different parts of the country which, in turn, depends on sociocultural milieu of the community, may play a role. It may also be noted that the sample size in our study was much higher than most of the studies conducted at other centers.

As per the NACO annual report for the year 2015–2016, the HIV epidemic in India is driven by heterosexual sex, which accounted for 87% of new infections in 2015. However, the epidemic is concentrated among key affected populations
such as sex workers. The vulnerabilities that drive the epidemic are different in different parts of the country.\textsuperscript{[1]}

We observed that the maximum number of attendees and seropositive patients were young and middle aged adults, as reported elsewhere in the country.\textsuperscript{[11]} Of the 151 seropositive males, 62 (41%) were in the age group of 19–30 years and 48 (31.7%) in the age group of 31–40 years. Among the 32 seropositive females, 9 (28.1%) were in the age group of 19–30 years and 10 (31.2%) were in the age group of 31–40 years. Similar findings were reported from studies conducted in India and abroad.\textsuperscript{[5,8,10,12–14]}

### Table 1: Age-wise distribution of male and female attendees and their HIV serostatus

| Age group | Male attendees | | | Female attendees | | |
|-----------|----------------|---------|-------|-------------------|---------|
|           | Seronegative (n=15,404) | Seropositive (n=151) | Percentage | Seronegative (n=9266) | Seropositive (n=32) | Percentage |
| Up to 18  | 708             | 2       | 1.3   | 228              | 2       | 6.25   |
| 19-30     | 1973            | 62      | 41    | 873              | 9       | 28.1   |
| 31-40     | 3609            | 48      | 31.7  | 2523             | 10      | 31.2   |
| 41-50     | 4654            | 18      | 11.9  | 3293             | 6       | 18.7   |
| Above 50  | 4460            | 21      | 13.9  | 2349             | 5       | 15.6   |

### Table 2: Area-wise distribution of male and female attendees and their HIV serostatus

| Age group | Male attendees | | | Female attendees | | |
|-----------|----------------|---------|-------|-------------------|---------|
|           | Seronegative (n=15,404) | Seropositive (n=151) | Percentage | Seronegative (n=9266) | Seropositive (n=32) | Percentage |
| Rural     | 2399            | 5       | 3.31  | 2183             | 2       | 6.2    |
| Urban     | 13,005          | 146     | 96.6  | 7083             | 30      | 93.7   |

### Table 3: Marital status of male and female attendees and their HIV serostatus

| Marital status | Male attendees | | | Female attendees | | |
|----------------|----------------|---------|-------|-------------------|---------|
|                | Seronegative (n=15,404) | Seropositive (n=151) | Percentage | Seronegative (n=9266) | Seropositive (n=32) | Percentage |
| Married        | 13,869          | 127     | 84.1  | 8757             | 30      | 93.7   |
| Unmarried      | 1535            | 24      | 15.9  | 509              | 2       | 6.2    |

### Table 4: Educational status of male and female attendees and their HIV serostatus

| Educational Status | Male attendees | | | Female attendees | | |
|--------------------|----------------|---------|-------|-------------------|---------|
|                    | Seronegative (n=15,404) | Seropositive (n=151) | Percentage | Seronegative (n=9266) | Seropositive (n=32) | Percentage |
| Illiterate         | 2142            | 13      | 8.6   | 1986             | 3       | 9.3    |
| Primary            | 3743            | 27      | 17.8  | 3447             | 22      | 68.7   |
| High school        | 6943            | 108     | 71.5  | 3026             | 5       | 15.6   |
| Higher             | 2576            | 3       | 1.9   | 807              | 2       | 6.2    |

### Table 5: Occupational status of male and female attendees and their HIV serostatus

| Occupation         | Male attendees | | | Female attendees | | |
|--------------------|----------------|---------|-------|-------------------|---------|
|                    | Seronegative (n=15,404) | Seropositive (n=151) | Percentage | Seronegative (n=9266) | Seropositive (n=32) | Percentage |
| Daily wages        | 2708            | 135     | 89.4  | 426              | 4       | 12.5   |
| Self-employment    | 7887            | 7       | 4.6   | 61               | 0       | 0      |
| Service            | 3674            | 9       | 5.9   | 276              | 3       | 9.3    |
| Others/homemaker  | 1135            | 0       | 0     | 8503             | 25      | 78.1   |

### Table 6: Risk behavior of seropositive attendees

| Risk behavior | | |
|---------------|---------|---------|
|               | Male (n=151), n (%) | Female (n=32), n (%) |
| Heterosexual  | 66 (43.7) | 31 (96.8) |
| a. Partner; commercial sex worker | 59 (39) | 0 |
| b. Casual sex/multiple partners | 7 (4.6) | 1 (3.1) |
| c. Regular partner/spouse | 0 | 29 (90.6) |
| d. Commercial sex worker by occupation | 0 | 1 (3.1) |
| Homosexual/bisexual | 1 (0.6) | 0 |
| Through blood and blood products | 0 | 0 |
| Through infected syringe and needles | 82 (54.3) | 0 |
| Parent to child (for children) | 2 (1.3) | 1 (3.1) |
| Not specified/unknown | 0 | 0 |
Most seropositive cases were from the urban areas (96.6% of males and 93.7% of females). The distribution of attendees by their marital status showed that 127 (84.1%) seropositive males and 30 (93.7%) seropositive females were married. Similar findings were reported from other studies carried out in the country. A higher percentage of seropositive females being married indicate the possible transmission from their infected spouses. HIV in married women enhances the risk of vertical transmission to newborns.

Of the total seropositives, 13 (8.6%) males and 3 (9.3%) females were illiterate, 108 (71.5%) males and 5 (15.6%) females were educated up to high school (10th standard), and 3 (1.98%) males and 2 (6.2%) females were educated above high school. These findings are unlike those reported from other parts of the country. This may indicate the fact that education up to high school does not guarantee awareness about HIV. This, in turn, may point toward the need to include HIV awareness in school curricula in our region. The HIV serostatus of the attendees by their occupations shows that among the males, majority of the HIV-positive males (89.4%) were daily wage workers (laborers and truckers). Most of the seropositive females (78.1%) were homemakers. In a patriarchal society, like India, married women remain vulnerable and get infected mostly from their spouses. Such trends reflect the importance of education, which is closely, if not directly associated with occupation, and social stability plays a major role in the prevention and control of HIV.

Unprotected heterosexual intercourse is the predominant mode of transmission of HIV (about 84%) in India. Kiran et al. state that sex with a nonregular partner is the bridge population that connects high-risk to low-risk population. Larger the size of the bridge population, greater will be the risk of transmission into the general population. The pattern of risk behavior and serostatus of the attendees showed that 56 (39%) HIV-positive males gave a history of visiting commercial sex workers, whereas most of the seropositive females (90.2%) had a regular partner/spouse. Similar findings were reported from other parts of the country. The common mode of transmission is heterosexual contact; however, in our study, more than half of the seropositive males (54.3%) had a history of intravenous drug abuse. The reason may be that this group was the specific target population for some NGOs in this region. These NGOs motivate drug peddlers and prison inmates, unemployed individuals or daily wage earners, and persons living in slum areas/red-light areas of the city for counseling and testing at the ICTC.

We observed a rise in total number of ICTC attendees from January 2009 to January 2016. The total number of attendees in 2009 was 1821, and among these, 59 (3.2%) attendees were tested seropositive. The number of attendees increased to 4655 in 2013, of which 27 were seropositive (0.58%), and by 2015, we have 4982 attendees with only 6 seropositives (0.12%). Such rising trends in the number of attendees with a steady decline in the seropositivity rates are encouraging signs.

**CONCLUSION**

While the sociodemographic characteristics of the population studied are similar in a few aspects to those reported from other parts of the country, the influence of literacy was not found to be similar. The rise in the number of attendees at the ICTC, along with a steady decline in the seropositivity rates, is an encouraging sign, which may reflect the contribution of the ICTC in creating awareness among the study population and reducing the transmission of HIV among the population served. However, relentless efforts must continue to change the epidemic trajectory further.

**Limitations**

Since the study was conducted in a hospital-based ICTC, the results observed may be influenced by the general health-care-seeking behavior in the population. A community-based study would reflect the demographics more accurately.

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**Conflicts of interest**

There are no conflicts of interest.

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