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# A Recent Profile of HIV-Positive Patients Attending an Integrated Testing and Counseling Centre (ICTC) at a Tertiary Care Center in Bangalore, India

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ABSTRACT

**Introduction:** HIV continues to be a significant public health concern worldwide, having claimed over 35 million lives. The Integrated Counseling and Testing Center (ICTC) serves as the entry point to care. HIV-positive individuals referred to ICTC are more likely to practice safer sex and reduce risky behaviors, decreasing the likelihood of transmitting the virus to others. Within this study, we delved into the socio-demographic profile and risk behavior patterns of HIV-positive individuals who sought care at ICTC. **Methods**: The Oxford Medical College Hospital and Research Center conducted a cross-sectional observational study in a hospital setting. Between July 2018 and January 2020, 7389 individuals were registered at the ICTC. **Results:** Out of all the clients, 1.04% were HIV reactive. Males had the highest seropositivity rate, accounting for 70.1% of the cases. Seropositivity was most common among individuals aged 35-49 years. Among the seropositive males, 11 (20.3%) were identified as local transport truck drivers. Out of the females included in the study, 16 (69.5%) were identified as housewives. Heterosexual transmission (97.4%) was found to be the most prevalent mode of transmission. **Conclusion:** As a crucial entry point for HIV prevention, ICTC plays a critical role in promoting awareness through aggressive health education programs and addressing the various needs of people seeking its services.

## INTRODUCTION

The human immunodeficiency virus (HIV) is a global pandemic that has become a public health concern of unprecedented magnitude [1]. In India, an estimated 2.1 million people live with HIV, with an adult prevalence of 0.22%, 87000 new HIV infections, and 69000 AIDS-related deaths. Since 2000, the number of annual new HIV infections has decreased by over 60%. The 2017 HIV estimates from India have confirmed this trend, indicating a decline in new HIV infections and AIDS-related deaths, highlighting India's success in controlling the epidemic. While the Northeastern states have continued to report high HIV incidence rates, several other states and union territories, including Bihar, West Bengal, Telangana, Delhi, Jharkhand, and Haryana, have shown a decline in new infections [2].

The Integrated Counseling and Testing Centre (ICTC) is a gateway to care and support services for individuals seeking HIV-related care. It provides a safe and discreet environment for people to learn and accept HIV serostatus confidentially [3]. The data collected in this study from the patients who visited the ICTC at a tertiary care teaching hospital in Bangalore, Karnataka, can offer valuable insights into the epidemiological profile of HIV-positive individuals.

## MATERIAL AND METHODS

Our team conducted a retrospective cross-sectional study in the Department of Microbiology at The Oxford Medical College, Hospital, and Research Centre in Bangalore, Karnataka, India. We received approval from the institutional ethics committee (Ref. No: IEC/TOMCH/134/202-21) and conducted the study between July 2018 and January 2020.

Our study included direct walk-in clients and referrals from various departments of the Institute. Following guidelines established by the National AIDS Control Organization (NACO), attendees were interviewed by the ICTC counselor. Before testing, we provided pre-test counseling to all clients. Once they provided informed, written consent, we recorded their demographic profile — including age, gender, education, occupation, and marital status — using a pre-designed schedule. All clients who provided consent for HIV testing had 5 milliliters of venous blood collected in a plain, sterile container. After



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allowing the blood to clot for 30 minutes at room temperature (25-30 ℃), we separated the serum by centrifugation at a low speed. Following NACO guidelines and WHO testing strategy III, we conducted HIV testing by requiring three consecutive reactive tests to provide an HIV-positive diagnosis. We first screened all specimens using a TriDot test, defining specimens with negative results as 'non-reactive' [4]. For specimens with reactive TriDot results, we conducted two additional rapid supplemental tests — MeriScreen and CombAids. We reported samples as 'reactive' only if they tested positive using all three tests [4].

## RESULTS

Over the course of the study period, a total of 7,389 clients visited the ICTC center at our hospital. Of these clients, 4,124 (55.9%) were male, and 3,265 (44.1%) were female. Out of all clients, 77 (1.04%) were HIV reactive. The seropositivity rate was 70.1% among males (n=54) and 29.8% in females (n=23) (Table.1). We observed the highest rate (40.2%) of seropositivity in the 35-49 years age group (Table 2). Analysis of occupation and seropositivity revealed that among the HIV seropositive males (n=11, 20.3%), most worked as local transport truck drivers (Table 3). For women, most cases (n=16, 69.5%) were housewives (Table 3). Regarding the transmission route, heterosexual contact accounted for the majority (96.2% in males and 100% in females).

## DISCUSSION

Our study found the HIV seropositivity rate among ICTC clients to be 1.04%. This result is consistent with the findings of Barua *et al*. [5], who reported a seroprevalence of 1.07%. The relatively lower prevalence in our study can be attributed to our intensive health education and awareness campaigns regarding HIV transmission and improved pre-test counseling practices. These efforts have encouraged more clients to undergo HIV testing and have facilitated earlier diagnosis and management of HIV [6]. Previous studies by Bansal *et al*. in Haryana (28%) [7], Mathur *et al*. in Jaipur (12.35%) [8], and Kiran in Ranchi (6.9%) [9] have reported a higher seroprevalence rate than the present study. However, other studies have reported a lower prevalence rate (0.36%) [10]. Variations in HIV prevalence across different studies may be attributed to differences in health-seeking behavior, which often depend on the socio-cultural milieu of the community [4]. Regarding gender, 55.9% of those tested for HIV were males, while the remaining 44.1% were females. Consistent with previous studies, Dinesh *et al*. (2015) found 55.8% of males and 44.94% of females affected [10], while Chellaiyan *et al*. (2014) found a gender distribution of 68% of males and 32% of females [11]. Our study also found a higher percentage (1.30%) of HIV cases among males compared to females (0.30%), which is in line with other studies conducted in India [9, 10, 12]. According to the India HIV Estimations 2017 technical report, the estimated prevalence of HIV in India is 0.22% (0.16%-0.30%), with a higher prevalence in males at 0.25% (0.18-0.34) and lower in females at 0.19% (0.14-0.25). Since 2000, there has been a decrease of over 60% in the annual number of new HIV infections. In line with India's success in curbing the epidemic, the NACO 2017 technical estimation report confirms a declining trend in new HIV infections and AIDS-related deaths [2]. Our study found the highest HIV prevalence in the 35-49 age group (40.2%), followed by the 25-34 age group (25.9%). Similarly, Dash et al. found the highest seroprevalence in the age group of 15–49 years, 88.3%-88.7% [1, 13]. This age group tends to be more sexually active and is more susceptible to developing HIV and other sexually transmitted infections [4]. Regarding occupation, our study found that the highest seropositivity among males was among drivers (n=11, 20.3%) and labor workers (n=11, 20.3%). For females, the highest seropositivity was seen among housewives (16) (69.5%). Similar studies showed maximum seropositivity among truck drivers who often remain out of their homes and indulge in sexual activities with partners other than their spouses [3, 4]. This could be due to their frequent absence from home, which increases their likelihood of engaging in extramarital sexual activities, leading to a higher risk of contracting and spreading HIV. This prone their spouses at home at risk of infection and can contribute to the virus's rapid spread [3]. The most common mode of HIV transmission observed in our study was through unprotected heterosexual contact (97.4%). This finding is consistent with other studies that identified heterosexual sex practice as the predominant mode of HIV transmission (96.1%-97.76%) [15, 16].

Our study found that HIV seropositivity was higher among truck drivers, daily wage laborers, and housewives, with a high proportion of them being in the younger working-age population. Additionally, the most common mode of transmission was through heterosexual contact. A successful communication program could encourage behavioral change and improve knowledge of the disease [9]. ICTC also plays a vital role in diagnosing, managing, and preventing disease transmission.

**Table 1.** Distribution of clients who tested positive for HIV by gender

| Male Tested No. (%) | Male Positive No. (%) | Female Tested No. (%) | Female Positive No. (%) | Total Tested No. | Total Positive No. (%) |
|---|---|---|---|---|---|
| 4124 (55.8%) | 54 (1.3%) | 3265 (44.1%) | 23 (0.7%) | 7389 | 77 (1.04%) |



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**Table 2.** Distribution of HIV seropositivity among patients by age group.

| Age | Male Tested No. (%) | Male Positive No. (%) | Female Tested No. (%) | Female Positive No. (%) | Total Tested No. (%) | Total Positive No. (%) |
|---|---|---|---|---|---|---|
| < 14 | 469 (11.3) | 0 (0) | 325 (9.9) | 0 (0) | 795 (10.7) | 0 (0) |
| 15-24 | 794 (19.2) | 4 (7.4) | 585 (17.9) | 1 (3.7) | 1379 (18.6) | 5 (6.17) |
| 25-34 | 958 (23.2) | 17 (31.4) | 790 (24.1) | 3 (11.1) | 1748 (23.6) | 20 (25.9) |
| 35-49 | 913 (22.1) | 19 (35.1) | 788 (24.1) | 12 (52.1) | 1701 (23.0) | 31 (40.2) |
| >50 | 965 (23.3) | 14 (26) | 753 (23.0) | 7 (30.4) | 1718 (23.2) | 21 (27.2) |
| Unknown | 25 (0.6) | 0 | 24 (0.7) | 0 | 49 (0.6) | 0 |

**Table 3.** Distribution of HIV-positive cases by occupation

| Occupation | Male (%) | Female (%) | Total (%) |
|---|---|---|---|
| | 54 (1.3%) | 23 (0.7%) | 77 (1.04%) |
| **Agriculture labour** | 1 (1.85) | 1(4.3) | 2 (2.5) |
| **Non agriculture labour** | 7 (12.9) | 2 (8.6) | 9 (11.6) |
| **Domestic servant** | 3 (5.5) | 2 (8.6) | 5 (6.4) |
| **Housewife** | 0 (0) | 16 (69.5) | 16 (20.7) |
| **Skilled worker** | 4 (7.4) | 0 (0) | 4 (5.1) |
| Semi-skilled worker | 4 (7.4) | 0 (0) | 4 (5.1) |
| Petty business | 5 (9.2) | 2 (8.6) | 7 (9.0) |
| Govt. service/PVT | 0 (0) | 0 (0) | 0 (0) |
| Student | 2 (3.7) | 0 (0) | 2 (2.5) |
| Local transport and truck driver | 11 (20.3) | 0 (0) | 11 (20.3) |
| Hotel staff | 1(1.8) | 0 (0) | 1 (1.2) |
| Agriculture labor | 8 (14.8) | 0 (0) | 8 (10.3) |
| Unemployed | 3 (5.5) | 0 (0) | 3 (3.8) |
| Others | 5 (9.2) | 0 (0) | 5 (6.4) |

**Table 4.** Risk behavior patterns among individuals with HIV

| Transmission route | Male N=54 (%) | Female N=23 (%) | Total N=77 (%) |
|---|---|---|---|
| Heterosexual | 52 (96.2%) | 23 (100%) | 75 (97.4%) |
| Homosexual | 0 | 0 | 0 |
| Blood transfusion | 0 | 0 | 0 |
| Syringes/ Needles | 0 | 0 | 0 |
| Parent to child | 0 | 0 | 0 |
| Unknown | 2 | 0 | 2 |

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## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest associated with this manuscript.

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