

# Assessment of clinical and behavioral profile of clients attending integrated counseling and testing centers of a tertiary care institute in Eastern India: A secondary data analysis

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## Abstract

**Introduction:** Integrated counseling and testing center (ICTC) forms the major forum under the National AIDS Control Organization (NACO) for counseling and testing of HIV-suspected patients. ICTC setup in a tertiary care institute also provides a chance for opportunistic screening of large number of individuals. **Aims:** The study was done to assess and to profile the ICTC clients with respect to their seropositivity rate, their biological and behavioral risk factors, and seroconcordance rate. **Methodology:** We did a secondary analysis of routine health data collected in the ICTC in the formats prescribed by the NACO. **Statistical Data Analysis:** The data were entered into MS Excel and analyzed using SPSS version 22. **Results:** Majority of the clients of ICTC were in the age group of 35–49 years. Seropositivity among client-initiated group (11.9%) was much higher compared to provider-initiated group (0.3%). None of the pregnant women were found to be positive. Heterosexual route was most common form of transmission in both provider-initiated and client-initiated groups. Seroconcordance rate was 43.4% in our study. **Conclusion:** The ICTC of a tertiary care center attracted a huge number of patients. The seropositivity in our study was greater than those generated by sentinel surveillance system. A well-functioning ICTC can help in detecting a large number of cases and also provide a forum for counseling and education about risk factors of HIV.

**Key words:** Integrated counseling and testing center, seroconcordance, seropositivity

## INTRODUCTION

The United Nations Program on HIV/AIDS has called for 90-90-90 target by 2020. The 90-90-90 target proposes that by 2020, at least 90% of people living with HIV (PLHIV) infection should be appropriately diagnosed, at least 90% of HIV-infected individuals should be on antiretroviral therapy, and at least 90% of those on antiretroviral therapy should achieve virological suppression. Globally, 36.7 million people were living with HIV/AIDS at the end of 2016 and one million people lost their lives in

that year.<sup>[1]</sup> In India, the HIV prevalence has shown a steady decline with a prevalence coming down from 0.38% (2001–2003) to 0.28% (2012) and further declining to 0.26% in 2015.<sup>[2]</sup> There was a 66% decline in the rate of new infection since 2000.<sup>[3]</sup> However, in terms of absolute

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number, this still amounts about 21 lacs of existing PLHIV cases. A total of 86,000 new cases were added in 2015.<sup>[2]</sup> Odisha has also shown a steady decline in new cases and the prevalence in 2016 was only 0.13% which is well below the country prevalence.<sup>[2]</sup> HIV counseling and testing were started in India in 1997.<sup>[3]</sup> The testing is voluntary and confidential in nature.<sup>[3]</sup> Currently, the counseling and testing services for HIV and AIDS are performed through a forum of integrated counseling and testing center (ICTC). The role of ICTC is not only restricted to early diagnosis of HIV but also to provide information about modes of transmission of disease, promote behavior change, and also act as link for other HIV prevention, care, and treatment services. ICTC services are available at medical colleges, district headquarter hospitals, subdivisional hospitals, community health centers, and also in some primary health centers. Standalone ICTC has their own dedicated counselor and laboratory technicians, while facility-integrated ICTC utilizes existing workforce of the institution. Early diagnosis of HIV may assist in early initiation of treatment which will improve the quality of life.<sup>[4]</sup>

ICTC setup in a tertiary care institution has an added advantage. Tertiary care institute provides all kinds of specialty and super-specialty services and thus attracts a huge load of patient. HIV/AIDS has multi-organ involvement and the patient may present with a wide range of health complaints related to any of the organ system and may be reviewed in any of the outpatient department (OPD)/inpatient department (IPD) of a medical hospital.<sup>[5]</sup> Moreover, screening of HIV is done before any surgery and invasive procedures.

Scaling up of HIV counseling and testing services is a crucial step towards achieving the first 90, wherein it is desired that 90% of the estimated PLHIV in the country are aware of their HIV status. Achieving this is vital for the success of the subsequent 90:90 related to antiretroviral treatment and viral suppression.

We did a secondary data analysis of clients attending ICTC of a tertiary care teaching hospital to assess and to profile the clients with respect to their seropositivity rate, their biological and behavioral risk factors, and seroconcordance rate.

## METHODOLOGY

We did this retrospective, record-based study by analyzing the data of routinely collected data at the ICTC clinic of AIIMS, Bhubaneswar. Counseling and screening test for HIV/AIDS in AIIMS, Bhubaneswar, was started in June 2015, but confirmatory testing services became operational from November 2016. This is a fixed facility standalone ICTC with a medical officer who is the in-charge of ICTC,

a dedicated counselor, and a laboratory technician. The ICTC is situated in the ground floor of the OPD block. Clients can come directly to the clinic after registration at OPD or are referred from other OPD or IPD. The clients are offered pretest counseling by the dedicated counselor. After clients are offered pretest counseling, willing clients are sent for sample collection. Sample collection is done at central laboratory which is also located at ground floor of the OPD block which is at not adjacent to the ICTC room. Sample collection for all other patients of OPD is also collected at central laboratory. The samples are transported and tested at microbiology laboratory situated in a separate building. The samples are subjected to screening test. Those tested negative are marked as HIV negative and those tested positive are subjected to further test, and the results provided based on the ICTC testing protocol of the Government of India.<sup>[6]</sup> The ICTC caters to the direct walk in clients and also outpatients and in-patients attending the Hospital. Ante-natal cases and Tuberculosis patients are also referred to ICTC as part of their regular workup.

We did an analysis of routine health data collected from monthly reporting register and HIV-positive register at the ICTC in AIIMS, Bhubaneswar, in the formats prescribed by the National AIDS Control Organization (NACO). We analyzed the data of 20 months from November 2016 to June 2018. The ICTC monthly reports have information about the age-wise and sex-wise distribution of clients, their occupation, and the perceived mode of transmission from the clients' detected positive and also information about HIV-TB linkages. The data about serodiscordance were derived from the HIV-positive register which was compiled by the counselor of the ICTC and provided to the investigator after removing all personal identifiers.

## Data management and analysis

The data were abstracted from the monthly reporting formats of ICTC and HIV-positive register. To maintain confidentiality, all personal identifiers, including name, and phone numbers were delinked from the analysis dataset, by not entering them into the database. The data were entered into MS Excel and analyzed using SPSS Statistics for Windows, Version 22.0. (IBM, Armonk, NY: IBM Corp.).

## RESULTS

### Demographic characteristics of integrated counseling and testing center attendees (excluding ANC cases)

Table 1 shows the distribution of clients getting tested at ICTC based on their occupation and age distribution. Majority of males were nonagricultural laborers (18.5%) followed by skilled and semiskilled business people. Among the females, a large majority were homemakers (83.6%). Age-wise distribution of the clients

shows that majority of the clients were in the age group of 35–49 years (36.5%) followed 25–34 years (28.3%). This age group is sexually active and formed 64.8% of the total attendees. Similar distribution was seen across both the sexes.

Figure 1 shows the flow of clients and operational efficiency of the ICTC at AIIMS, Bhubaneswar. A total of 23,738 persons were counseled which gives an average of 1140 counseling per month. 98.1% of client-initiated attendees who were offered pretest counseling were also tested. Among the provider-initiated attendees, 95.5% were tested. All the client-initiated attendees were provided results of the test within 7 days, while 95.9% of the provider-initiated attendees also got to know their test results within 7 days. The seropositivity among the client-initiated group was 11.9%, but it was comparatively quiet lower (0.3%) than in provider-initiated group.

Tables 2 and 3 show the perceived mode of HIV transmission and seroprevalence across groups. Heterosexual relationship with a commercial sex worker/nonregular partner followed by heterosexual route with a regular partner formed the major route of transmission. Client-initiated female attendees had the highest seropositivity (17.9). Both males and females had the highest seropositivity across the age group of 35–49. Retired or unemployed males had a high seropositivity compared to other groups, while among females, it was highest among agricultural laborer.

Seropositivity across marital status and education status could not be calculated as the monthly reports do not capture these details.

### Seroconcordance

We could elicit information from 53 individuals regarding their partner status. Six of the partners were tested and detected positive at AIIMS, Bhubaneswar. From remaining HIV positive, we could elicit information from only 47 cases. In case of 17, the partners were also positive. The seroconcordance rate was 43.4%.

### DISCUSSION

The ICTC setup in AIIMS, Bhubaneswar, is a standalone ICTC that started confirmatory testing facilities in November 2016. Having been set up in tertiary level health institute, the majority of clients were referred by the health providers of the institute. The advantage of setting up an ICTC in any tertiary care institute is that it provides a forum for opportunistic testing of patients who are in need of some operative or invasive procedures or have seek consultation for various manifestations. HIV positive patients were detected from almost all the district of Odisha [Figure 2]. This highlights the importance of establishing a well functioning ICTC centers in all tertiary care health institutes. Client-initiated attendees of ICTC formed only a small fraction of the total attendees (0.8%). In a study conducted by Malhotra *et al.*, about 22% of the attendees in ICTC were client initiated while the others were provider initiated.<sup>[7]</sup> Roma

**Table 1: Age and occupation distribution of clients tested at integrated counseling and testing center**

Classifying variable	Male	Female	Total
Age group			
<14	216 (1.7)	182 (1.9)	398 (1.8)
15-24	1607 (13.1)	1328 (14.0)	2935 (13.5)
25-34	3428 (27.9)	2738 (28.8)	6166 (28.3)
35-49	4565 (37.1)	3398 (35.8)	7963 (36.5)
>50	2484 (20.2)	1852 (19.5)	4336 (19.9)
Total	12,300 (100)	9498 (100)	21,798 (100)
Occupation			
Agricultural laborer	1262 (11.0)	11 (0.1)	1273 (6.2)
Nonagricultural laborer	2116 (18.5)	84 (0.9)	2200 (10.7)
Domestic servant	104 (1)	21 (0.2)	125 (0.6)
Skilled/semi-skilled/business	1767 (15.5)	0	1767 (8.6)
Petty business	1497 (13.1)	20 (0.2)	1517 (7.4)
Service	1031 (9.0)	967 (10.6)	1998 (9.7)
Student	462 (4.0)	177 (2)	639 (3.1)
Homemaker	0	7646 (83.6)	7646 (37.2)
Truckers	141 (1.2)	0	141 (0.7)
Local transport	516 (4.5)	0	516 (2.5)
Hotel staff	115 (1.0)	0	115 (0.6)
Agricultural/landholder	1435 (12.6)	0	1435 (7.0)
Unemployed/retired	833 (7.3)	212 (2.3)	1045 (5.1)
Others	153 (1.3)	5 (0.1)	158 (0.8)
Total	11,432 (100)	9143 (100)	20,570 (100)

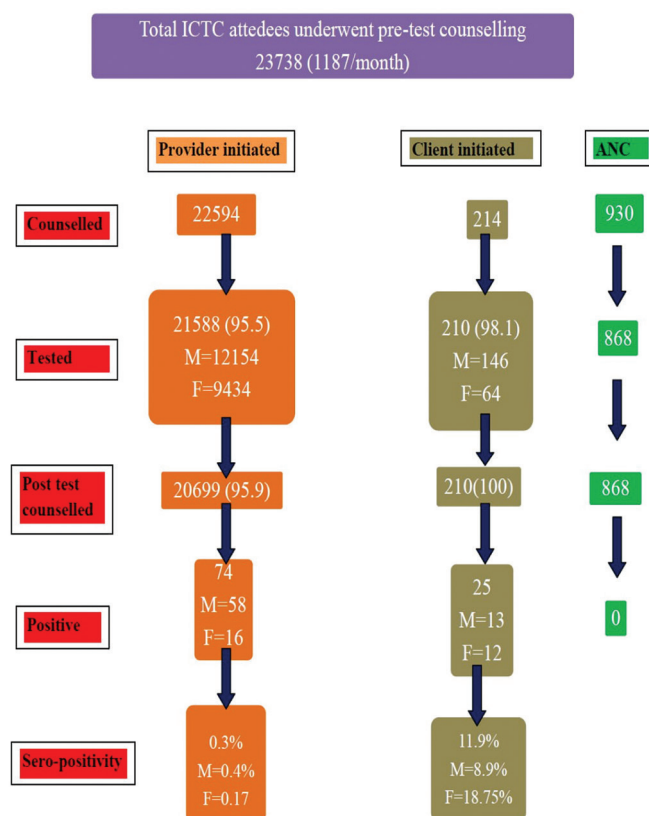


Figure 1: Flow of clients in integrated counseling and testing center

Table 2: Perceived mode of transmission among integrated counseling and testing center attendees

Perceived mode of transmission	Provider initiated (%)	Client initiated (%)
Heterosexual commercial or nonregular partner	46	77
Heterosexual regular	15	46
Parent to child	4	4
Intravenous drug user	Nil	Nil
Use of blood or blood product	Nil	Nil
Did not specify	4	4

and Pramod conducted a study in a teaching hospital and found that about a quarter of ICTC attendees were client initiated.<sup>[8]</sup> In both the above studies, provider initiated formed the major proportion of attendees which is also the case in our study. However, unlike our study where only a very minute proportion were client initiated, the above two studies showed comparatively much higher proportion of client-initiated attendees. This might be due to the fact the ICTC has started functioning only recently. Moreover, ICTC services are now expanded in Odisha up to block and district level. The above two studies were conducted from 2010 to 2013 when the ICTC services might not have expanded to the far reach areas. Odisha also happens to be a low prevalent state. A total of 24,098 patients were received at the ICTC and had undergone pretest counseling. About 95% of those who

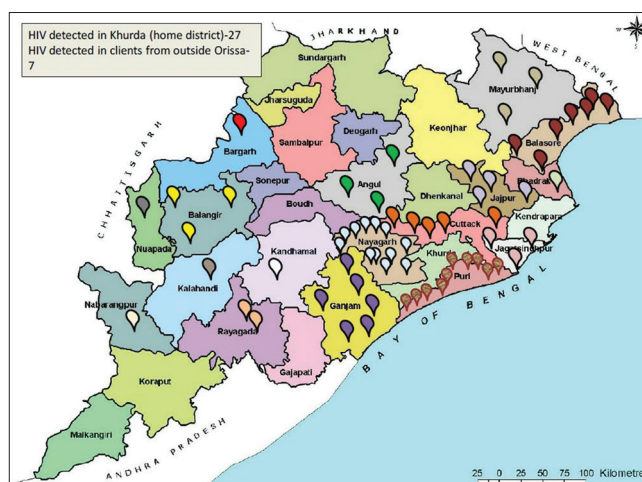


Figure 2: Spot map showing home district of patients' detected HIV positive

received pretest counseling had got tested for HIV. Average patient counseled per month was about 1200 and exceeded the NACO directive of 750 counseling per counselor in a month. AIIMS, Bhubaneswar, is a tertiary care hospital and attracts a huge load of patients from across the state of Odisha and also from neighboring state of West Bengal and Jharkhand. Most of the ICTC attendees in our study were provider initiated, and the huge amount of ICTC attendees might be a direct ramification of the increased patient load of patient. In a study carried out by Dash *et al.*<sup>[9]</sup> in an ICTC of a tertiary care teaching hospital of the same state, about 86% of ICTC attendees who were given pretest counseling underwent HIV testing. The above study was a secondary data analysis of almost 3 years. Our study comprised data of only 20 months after the start of ICTC services in AIIMS, Bhubaneswar. The counseling efficiency of the ICTC counselor may have an influence on the number of person willing to be tested after pretest counseling. However, there are other dimensions such as marginalized group stigma, social stigma, and fear of adverse social consequences attached with the disease, which may influence this parameter.<sup>[10]</sup> Many of the ICTCs have a laboratory attached with a counseling room where the screening and confirmatory test are carried out. In our case, the sample collection and testing was at a place that was at some distance from spot of pretest counseling. Location of testing facilities in adjacent to counseling sites might have improved the testing rates further in the pretest counseled patient. Among the clients who get tested in ICTC, a male: female ratio was about 3:2. Similar gender distribution has been found in ICTC in a medical college of Ahmedabad<sup>[11]</sup> and ICTC attendees in a tertiary care teaching hospital of Ranchi.<sup>[12]</sup> This is in striking contrast to the findings in some other studies which have founded a much higher proportion of males (3:1) among the clients.<sup>[13]</sup> For both among males and females, it was seen that people between the ages of 35 and 49 years

**Table 3: Seropositivity and bio-behavioral risk factors**

	Male (n=71)	Female (n=28)	Seropositivity across groups (n=99)
Initiation			
Client initiated	9.5	17.19	11.9
Provider initiated	0.48	0.17	0.3
Age distribution			
<14	0.9	1.6	1.2
15-24	0.06	0	0.03
25-34	0.38	0.22	0.3
35-49	1	0.47	0.7
>50	0.4	0.11	0.3
Occupation			
Agricultural laborer	0.32	9.1	0.39
Nonagricultural laborer	0.61	0	0.59
Domestic servant	0	4.7	0.8
Skilled/semiskilled	0	0	0
Petty business	0.8	0	0.79
Service	1.1	0.1	0.6
Student	0.43	0	0.31
Truck driver	4.3	0	4.3
Local transport	0.5	0.0	0.5
Hotel staff	0	0	0
Agricultural land	0.42	0	0.42
Unemployed/retired	1.3	0	1.05
Homemaker	0	0.27	0.27
Others	2.6	60	4.4

followed by age group of 25–34 years formed the major proportion of ICTC clients. The findings are quiet similar to the studies conducted by Malhotra *et al.* and Roma and Pramod in tertiary care teaching hospitals.<sup>17,81</sup>

Overall, 99 persons were tested HIV positive in our study giving an overall prevalence 0.45%. In the age group of 15–49 years, the prevalence was 0.47%. This is more than the estimates derived from national data of HIV sentinel surveillance (HSS), which shows a prevalence of 0.22% among adults (15–49) in India and 0.13% among adults in Odisha.<sup>144</sup> Among the provider-initiated group in the age group of 15–49 years, the prevalence of 0.21% which similar to HSS reports of 2017. There was significant difference in proportion of HIV positive detected in client-initiated group to those detected in provider-initiated group. The client initiated showed a very high prevalence of 11.9% compared to provider initiated which showed a prevalence of 0.3%. The client-initiated group may to certain extent resemble high-risk group covered under sentinel surveillance, while the provider-initiated group may resemble ANC population. In our study, the seroprevalence in provider-initiated group is almost equal to seroprevalence detected in ANC population in HSS (0.28%). However, the seroprevalence in client-initiated group in our study is much higher than that detected in any of the high-risk group of Odisha in the sentinel surveillance. Significant difference between the groups had also been found in the study conducted in one of the tertiary care government hospitals in the same state. Dash *et al.* found that about

12% of client initiated were HIV positive compared to only about 3% in provider initiated.<sup>91</sup> The overall prevalence was much higher compared to our study, but this could be attributed to the fact that this study was conducted in high prevalence district of Odisha which is also known for migrant workers. Data compiled over 4 years by Sabharwal in one of the ICTCs in a tertiary care hospital in Jaipur showed a prevalence of 1.64%.<sup>151</sup> A study conducted in a tertiary care teaching hospital of Maharashtra showed a much higher prevalence of HIV compared to our study.<sup>161</sup> This is plausible considering the fact that Maharashtra is a high prevalent state. The same study also showed a higher HIV detection rate among provider-initiated group. In our study, female client-initiated attendees had almost double the risk compared to males (9.5% vs. 17%). Among the provider-initiated group, the males had a higher risk of being detected as HIV positive (0.48% vs. 0.17%). Female client-initiated group and their bio-behavior surveillance may need special attention from programmatic point of view. It is also necessary to have proper implementation of Prevention of parent to child transmission (PPTCT) to prevent mother-to-child transmission of HIV.

Males showed a higher seropositivity (0.5%) compared to females (0.2%). Maximum seropositivity among adults was seen in the age group of 35–49 years followed by the age group of 25–34 years. Both these age groups constituted about 80% of the total positive patients. In one of the studies conducted by Malhotra *et al.* in ICTC established at tertiary care hospital,

almost — of the positive patients belonged to the age group of 24–49 years.<sup>[7]</sup> The same study did not find much significant difference in prevalence between males and females (6.8 vs. 5.3). Similar age and sex distribution of positive patient has also been found in the study conducted by Dash *et al.* in Ganjam, Odisha.<sup>[9]</sup> Seroprevalence of male ICTC attendees was more than female in a study conducted in an ICTC setup in a private medical college of Ahmedabad.<sup>[11]</sup> Similar findings were seen in the study conducted among newly diagnosed HIV patients enrolled in an ART center of Telangana.<sup>[17]</sup> The fact that the almost three fourth of clients detected as HIV positive were provider initiated and had not actually presented to for HIV-related ailments shows the utility of establishing ICTC in a tertiary care multispecialty hospital. Seroconcordance rate in our study was about 44%. The seroconcordance rate in our study was about 44%. Findings similar to our study were found by Mehra *et al.* in the ICTC of tertiary care hospital of Delhi where a seroconcordance rate of 45% was seen.<sup>[18]</sup> Similar finding were seen in a ICTC established at a rural training center of a medical college of Kolkota, India, where a seroconcordance rate of 43.5% was found.<sup>[19]</sup> A higher seroconcordance rate of 65% was found in one of the tertiary care institutes of South India, but the study was conducted in the department of dermatology.<sup>[20]</sup> The spot map of positive patient shows that apart from Khurda, which happens to be the home district, positive patients were detected from 17 other districts of Odisha. While majority of client detected as HIV positive were from Khurda or other adjacent districts of Khurda, positive cases were also detected from other far-off districts of Odisha and some also from outside Odisha. A large group of patients flock to tertiary care government hospitals in hope of getting affordable and quality care.

The major perceived mode of transmission in our study was heterosexual relation with casual/noncommercial/nonregular partners among the provider-initiated group. Among the client-initiated group, it was found that heterosexual route was the most common perceived mode of transmission though it was seen that heterosexual route with nonregular partner and heterosexual route with regular partner had almost similar contribution. This was followed by heterosexual relationship with a commercial partner. Among females, majority had acquired HIV by heterosexual relationship with a regular partner. Among children, mother-to-child transmission was the only form of transmission and accounted for 4% of cases in both client-initiated and provider-initiated groups. Blood transfusion or use of infected needle was not perceived as the cause in any group of clients. Heterosexual route has been the most common route of transmission in many studies conducted among the ICTC clients. The study done by Malhotra *et al.* and Dash *et al.* had found that

mother-to-child transmission accounting was nearly 5% of cases and is very similar to our study. Some individuals did not specify their perceived mode of transmission. This may be attributed to the social stigma attached with disease.

## CONCLUSION

Our study shows that an ICTC setup in a tertiary care institutes attracts a large number of clients. The overall prevalence of HIV infection in our study was more than the data from national sentinel surveillance. The forum of ICTC in these centers can be utilized to propagate the message on preventive strategies of HIV and also capture early diagnosis of HIV in unsuspecting individual, thus aiding in early initiation of treatment in HIV-positive cases.

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## Conflicts of interest

There are no conflicts of interest.

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