

Profile of HIV Seropositive Attendees of Integrated Counseling and Testing Center of a Tertiary Care Teaching Hospital in Kolhapur, India

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ABSTRACT

Introduction: HIV is a multidimensional epidemic and is affected by demographic, socio-cultural, behavioral, economic and biological factors. HIV positive individuals who undergo Voluntary Counseling and Testing are reported to have safer sex and reduced risk behaviors, thereby decreasing their likelihood of infecting others.

Material and Methods: The study was conducted among clients who visited Integrated Counseling and Testing Center from April 2013 to March 2017. It was a cross-sectional, observational study conducted at D. Y. Patil Hospital and Research Center, Kolhapur. 13102 consecutive attendees in the age group 15 to 50 years were tested for HIV antibodies. Age, gender, education, occupation, marital status, source of referral and HIV status of spouses were evaluated as independent variables. The data was analyzed using software version.

Results: 1.24% samples tested positive. Yearly analysis showed a declining trend of HIV prevalence. Of the total seropositives, males were 1.17% and females were 1.31%. The age group 35-49 years depicted highest seropositivity. 74.02% of the clients were referred as compared to 25.98% who were voluntary clients. 44.9% couples were concordantly and 55.10% were discordantly infected with HIV.

Conclusion: Clients in the age group of 35 to 49 years, married, not much educated, agricultural works and those engaged in heterosexual risk behavior had a significantly higher risk of being positive. They should be counseled for behavioral change and linked to care and support program immediately.

Keywords: Concordant, Discordant, Seropositive, Risk Behavior.

INTRODUCTION

Over the past decade, India has made significant progress in tackling its HIV epidemic. A major reason for the country's success has been the sustained commitment of the Indian Government through its National AIDS Control Program. In India, there are 2.1 million people living with HIV, 0.3% adult prevalence, 86000 new HIV infections, 68000 AIDS related deaths and 43% adults on ARV treatment. India has the third largest HIV epidemic in the world. In 2015, HIV prevalence in India was an estimated 0.26%. Overall, India's HIV epidemic is slowing down, with a 32% decline in new HIV infections and a 54% decline in AIDS-related deaths between 2007 and 2015.¹ An individual who is infected with the Human Immunodeficiency Virus will not develop the Acquired Immunodeficiency Syndrome (AIDS) immediately. The time lag between infection and manifestations of signs and symptoms of AIDS is approximately 5-7 years. It is important that an individual who is HIV-infected is aware of his/her status as otherwise he/she could unknowingly transmit the virus to others. The only way to diagnose the presence of HIV and get

timely treatment is through a simple blood test.² It is estimated that currently only 51% of people with HIV know their status. In India, HIV prevalence has declined in some states, but a rising trend is also seen in some states.³ The vulnerabilities that drive the epidemic are different in different parts of the country. The five states with the highest HIV prevalence (Manipur, Mizoram, Nagaland, Andhra Pradesh and Karnataka) are in the south or east of the country. Some states in the north and northeast of the country have also reported rising HIV prevalence.¹ This change in trend is because of migration of labour, low literacy levels, gender disparities, prevalent RTI/STI as well as practicing high risk behavior and spreading of HIV infection to the general population have contributed to this spread.^{2,3} HIV/AIDS infection is a global pandemic and has a profound impact on the health and economic conditions of individuals and people living with HIV/AIDS are faced with the task of maintaining optimal health status despite increasing insult to their immune status.⁴ ICTC (Integrated Counseling and Testing Centre) is an important part of most comprehensive HIV prevention strategies targeting behavior change of an individual. It has been a major component of HIV prevention and control program, in both developed and developing countries.⁵ It is a cost-effective entry point to care and support services, which provide people with an opportunity to learn and accept their HIV status in a confidential environment. The aim is to reduce psychosocial stress and provide the client with information and support necessary to make decisions. It is an integral part of NACO (National Aids Control Organization) program.² Increasing awareness among the general population and key affected groups about HIV prevention is a central focus of India's current National AIDS Control Program (NACP IV), which is being implemented between 2012 and 2017. Behavior change and generating demand for condoms and other prevention commodities are key focuses.¹

The data generated by ICTC may provide important clues to understand the epidemiology of the disease in a particular region.^{2,4} ICTC developed 1st in India in 1997 and is the first interface between the person willing to get tested and the

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public health system. In integrated management of HIV/AIDS, counseling for HIV/ AIDS has become a core element of a holistic approach, both pre and post test counseling have become standard components of prevention- oriented HIV antibody testing programs.² Kolhapur is a district in Maharashtra state in south India, with a population of 3,874,015, out of which 31.73% is urban population. The district has a sex ratio of 953 females for every 1000 males, as per 2011 census. Maharashtra is bordered on south by Karnataka and Andhra Pradesh, which are considered high HIV prevalence states.⁶ This study throws light on the socio-demographic profile of HIV positive individuals. This will help to identify the various risk groups and disseminate the priority targeted interventions to reduce HIV transmission in the community. With this background, we undertook the present study in a private medical college and hospital in Kolhapur, India. Study aimed to find out the seropositivity of attendees, to determine the socio- demographic profile of seropositive clients attending ICTC for the 4 year period between 2013-14 to 2016-17, to identify the referral pattern of the HIV seropositive clients in and out of the ICTC for the above mentioned period and to identify the HIV status of the spouses, partners of the study population.

MATERIAL AND METHODS

This retrospective study of clients who attended the ICTC, D.Y Patil Medical college and hospital, Kolhapur, Maharashtra, India from April 2013 to march 2017 was carried out after approval from the institutional Ethics Committee. Direct walk-in clients as well as referrals were included in the study. The ICTC counselor collected their anonymous and unlinked data in registers and log books as per National Aids Control Organization (NACO) guidelines under strict confidentiality. Pre- test counseling was done for all the clients. After obtaining informed written consent, demographic profile including age, gender, education, occupation, marital status was recorded. The counselor also noted the probable route of exposure. Five milliliters of venous blood sample was collected in a plain, sterile container from all clients who consented for HIV testing. Blood was allowed to clot for 30 minutes at room temperature (25-30°C) and serum was separated after centrifugation at low speed. The serum samples were then stored at 4°C and were tested within two hours. HIV testing was performed as per NACO guidelines as per WHO testing strategy III.⁷ All the specimen were first screened by a rapid dot immunoassay test. Negative specimen were reported as 'Non reactive'. Reactive specimen were further subjected to two different supplemental rapid tests. Specimen positive by all the three tests were reported as 'Reactive'. Reports were given to the patient after post- test

counseling on the same day. Antibodies to HIV were tested initially with a rapid, sensitive COMBAIDS test (HIV1+2 immunodot test kit, ARKAY Health care Pvt Ltd, Surat, India). The samples tested positive in the first method were subjected to tests with two other rapid tests which are specific tests for HIV 1 and 2 separation, namely MERISCREEN 1-2 WB, (one step Rapid Test for detection of anti HIV in human Serum/ Plasma/ Whole blood, Meril Diagnostics Pvt Ltd, Gujarat, India) and AIDSCAN (Trispot Rapid test kit to detect antibodies to HIV 1 and 2 in Human Serum or Plasma, BHAT BIO- Tech India Pvt Ltd, Bangaluru, Karnataka, India) The samples were considered as reactive when found positive by all three above different methods. All tests were done according to the manufacturer's instructions. Strict External (Quarterly) and internal (Half yearly) Quality Assurance program was followed with state reference laboratory (SRL). HIV infected persons were referred to Government antiretroviral therapy (ART) centre for further management.

STATISTICAL ANALYSIS

The data analysis was carried out by using GraphPad Quickcalcs software. Qualitative variables are compared by using Chi Square test and by Z test for proportion. p less than 0.05 is considered statistically significant at 5% level of significance and p<0.0001 is considered highly significant, * shows statistical significance.

RESULTS

A total of 13102 clients were provided counseling and testing services in ICTC of our hospital during 2013-14 to 2014-15. Among them, significantly (p< 0.0001) more in number 7883 (60.17%) were males and 5219 (39.83% were females). 1.24% of the clients were HIV reactive and the positivity was 1.17% among males and 1.31% among females. It was observed that the seropositivity decreased from 1.38% in 2013 - 14 to 0.94% in 2016- 17 [Table 1]. Maximum seroreactivity (p< 0.0001) was found in 31- 49years age group (42.59%), followed by 15- 30 years age (40.12%) [Table 2]. 25.98% clients attended voluntarily i.e. client- initiated, while 74.02% clients were referred by other doctors i.e. provider initiated [Table 3]. 58% clients were referred to ICTC by various clinical departments of our hospital [Table 4]. The commonest route of transmission was heterosexual (87.04%) followed by parent to child transmission (8.02%) as shown in [Table 5]. 22 couples 44.90(%) were HIV positive (concordant) and 27 couples (55.10%) were discordant. Among discordant couples, the prevalence of HIV in males was 70.37% (i.e. male partner positive and female partner negative); while 29.63% in females (i.e. female partner positive and male

Year	Male tested (%)	Male positive (%)	Female tested (%)	Female positive (%)	Total tested	Total positive (%)
2013-14	2737 (69.73)	28 (1.02)	1188 (30.27)	26 (2.19)	3925	54 (1.38)
2014-15	1630 (58.05)	20 (1.23)	1178 (41.95)	17 (1.44)	2808	37 (1.35)
2015-16	1843 (59.78)	24 (1.30)	1240 (40.22)	16 (1.29)	3083	40 (1.30)
2016-17	1673 (50.91)	20 (1.20)	1613 (49.09)	11 (0.68)	3286	31 (0.94)
Total	7883 (60.17)	92 (1.17)	5219 (39.83)	70 (1.31)	13102	162 (1.24)

The number of males tested are significantly higher (P< 0.0001) than the number of females tested. Percentage of male positive and female positive is compared by Z test for proportion which is statistically not significant.

Table-1: Year and sexwise distribution of clients tested and diagnosed HIV positive

variables		Male positive N=92 (%)	Female positive N=70 (%)	Total positive N=162 (%)	P value
Age in years	0-14	6(6.52)	7 (10)	13(8.03)	<0.0001**
	15-30	32(34.78)	33(47.14)	65(40.12)	
	31-49	44(47.83)	25(35.72)	69(42.59)	
	50 and above	10(10.87)	5(7.14)	15(9.26)	
Marital status	Single	9(9.78)	6(8.57)	15(9.26)	<0.0001**
	Married	74(80.44)	54(77.14)	128(79.01)	
	Divorced	5(5.43)	6(8.57)	11(6.79)	
	Widow/ widower	4(4.35)	4(5.72)	8(4.94)	
Education	Illiterate	42(45.65)	44(62.86)	86(53.09)	<0.0001**
	Primary school	23(25.0)	18(25.71)	41(25.31)	
	Secondary school	18(19.57)	6(8.57)	24(14.81)	
	College and above	9(9.78)	2(2.86)	11(6.79)	
Occupation	Unskilled worker	18(19.56)	15(21.43)	33(20.37)	<0.0001**
	Semiskilled/ Petty business	8(8.70)	4(5.71)	12(7.41)	
	Salaried	4(4.35)	3(4.29)	7(4.32)	
	Driver	25(27.17)	0	25(15.43)	
	Agricultural worker	33(35.87)	19(27.14)	52(32.10)	
	Student	4(4.35)	2(2.86)	6(3.70)	
	Housewife	0	27(38.57)	27(16.67)	

*Age group 31-49 years is showing maximum HIV seropositivity (42.59%) as compared to other age groups and is statistically significant. (P< 0.0001) Married people had higher positivity (79.01%) than widows and divorcees and this is statistically significant (P< 0.0001). With regard to Education, maximum seropositivity was noted among illiterate people (53.09%) than the educated people and it is statistically significant (P< 0.0001). Agricultural workers showed maximum seropositivity of 32.10% which is statistically significant (P< 0.0001).

Table-2: Sociodemographic profile of HIV positive clients

Year	Total tested	Client- initiated	Provider-initiated	P value
2013- 14	3925	755(19.24)	3170(80.76)	P= 0.0001**
2014- 15	2808	786(27.99)	2022(72.01)	
2015- 16	3083	878(28.48)	2205(71.52)	
2016- 17	3286	985(29.98)	2301(70.02)	
Total	13102	3404(25.98)	9698(74.02)	

** No of provider- initiated clients are more and are statistically significant (P< 0.0001)

Table-3: Distribution of clients attending ICTC for HIV testing

Source of referral of ICTC clients	Total tested N=13102	P value
Migrants	1873 (14.30%)	P< 0.0001**
OBG/ Maternity	655 (5%)	
RNTCP	786 (6%)	
Blood bank	92 (0.70%)	
Various clinical departments of our hospital	7599 (58%)	
ART centers	196 (1.5%)	
STI clinics	91 (0.69%)	
Government Health facility	1810 (13.81%)	
Total	13102 (100%)	

**Percentage of clients referred from various clinical departments of our hospital is more than other sources and is statistically significant (P<0.0001).

Table-4: Source of referral of ICTC Clients

partner negative) in our center. [Table 6]

DISCUSSION: Since there is no vaccine or cure available for HIV, counseling and testing becomes an important tool of intervention and control of HIV which is managed by ICTC centers in hospitals. Pre- test counseling plays an important

role in improving the acceptability for HIV testing.⁸ The overall prevalence of HIV in our ICTC [Table 1] was found to be 1.24% in four years and it varies from 1.38% in 2013-14 to 0.94% in 2016-17. Barua et al⁹ reported seroprevalence of 1.07%, which is similar to our study. Ours is a private hospital with no ART centre. Hence, flow of clients may be lesser than the three other ICTCs located in Government hospitals in Kolhapur region. The lower prevalence observed in our study is because of intense health education and awareness campaigns regarding HIV and its modes of transmission and improved pre- test counseling, thereby promoting more clients to undergo HIV testing and thus improving early diagnosis and management of HIV.⁸ Our ICTC has one full-time counselor and she conducts 10- 12 pre and post-test counseling sessions per working day. Hence the quality of counseling is satisfactory. The NACO annual report of 2015-16 states that overall, India's epidemic is slowing down, with a 32% decline in new infections and a 54% decline in AIDS-related deaths between 2007 and 2015.¹ A wide range of seropositivity has been reported by various authors during the past few years. A higher seroprevalence than ours was reported by Bansal *et al* in Haryana (28%),¹⁰ Mathur et al in Jaipur (12.35%),² Kiran in Ranchi (6.9%),⁴ Ganju et al in Himachal Pradesh (5.57%),¹¹ Sherwal et al in Delhi (3.78%),¹² and Rout et al in Bihar (2.68%).¹³ A very high prevalence of 50.2% and 38% was noted by Solomon et al in Nigeria and Wanyenze et al in Uganda.¹⁴ However lower rates were reported by Dinesh et al (0.36%).¹⁵ The difference of HIV prevalence in different studies may be attributed to the difference in health seeking behavior in different parts of the country which depends on socio- cultural milieu of the community. With regard to gender, a significantly (p< 0.0001) higher percentage (60.17%) of those tested for HIV were males and the rest 39.83% were females, while the national average showed 38.4% of female attendees. This is consistent

Route of Transmission	Male (%) N=92	Female (%) N=70	Total (%) N=162	P value
Heterosexual	78 (84.78)	63(90)	141(87.04)	P< 0.0001**
Homosexual	0	0	0	
Blood Transfusion	0	0	0	
Infected syringes/ Needles	0	0	0	
Parent to child	6(6.52)	7(10)	13(8.02)	
Not specified	8(8.7)	0	8(4.94)	

**By Chi-square test it was observed that the percentage of heterosexual transmission is significantly higher (P< 0.0001) than other routes of transmission.

Table-5: Pattern of risk behavior among HIV positive clients

Status of HIV in spouse in couples. Year	Concordant couples	Discordant couples	Discordant couples	
			Male positive	Female positive
2013-14	8	9	6	3
2014-15	6	7	6	1
2015-16	5	7	5	2
2016-17	3	4	2	2
Total	22 (44.90%)	27(55.10%)	19 (70.37%)	8 (29.63%)

**Among discordant couples, male positive are significantly more (P< 0.05) than female positive.

Table-6: Status of HIV in spouse in couples

with some previous studies; Dinesh et al found 55.5% males and 44.94% females,¹⁵ Chelliyan et al found 68% males and 32% females,¹⁶ Rout et al found 65.3% males, 34.97% females¹³ and Ghosh et al reported 62.7% males and 37.3% females in their studies.¹⁷ The number of female attendees is less and indicates that some barriers such as stigma and discrimination prevent access of females to health services.¹³ One of the key concern and challenge for NACP IV (2012-17) is reduction of stigma and discrimination at health care settings, work places and educational institutions.¹⁰ The national data based on information collected from sentinel surveillance sites states that women are less likely to visit testing centers if they are older, have high parity, are illiterate or poor.¹⁸ In our study, the seropositivity was higher in females (1.31%) than males (1.17%). The percentage of male positive and female positive is compared by Z- test for proportion which is not statistically significant. Mathur et al reported significantly higher seropositivity in females (17.56%) vs males (10.10%).² In contrast, Rashmi et al¹⁹ reported HIV positivity significantly higher in males than females but HIV/Aids in India is undergoing a feminization because females are increasingly getting infected, which is indicated by the increasing HIV prevalence in females.^{2,19} A person's biological sex classification, as well as the social roles associated with each gender, influences risk factors for HIV/AIDS. Cultural norms encourage men to demonstrate their masculinity by having multiple sex partners, coercing women into having sex, which increases HIV risk.²⁰ However, Bansal et al reported that seropositivity rate was equal between male and female clients in Haryana.¹⁰

On observing the age groups in our study, [Table2] HIV prevalence was significantly highest (p<0.0001) in 31-49 years age group (42.59%) followed by 15-30 years age (40.12%) which is similar to results obtained in some other studies in India.⁸ Dash et al (88.3%),¹⁴ Langare et al (86.6%)⁵ and Kumari et al (78.6%) also reported maximum seroprevalence in the age group 15-49 years and the national average is 90%.¹⁹ This age group is sexually most active and hence more prone for developing

HIV and other sexually transmitted infections. Young adults on account of their occupation, stay away from their families and are at a high risk of acquiring infection.¹¹ Also, it is a serious cause of concern as this is the child bearing age group and hence involves increased risk of parent to child transmission of HIV. Most of the females disclosed that they were unable to negotiate for safe sex with infected partner due to fear of harassment and extramarital affairs of husbands in the male- dominated culture of India. HIV/AIDS threatens the most productive segment of the society in the prime of their working life. Despite high levels of sexual activity, young people often do not know the basic HIV/AIDS statistics and facts, which puts them at risk.²⁰ This emphasizes the need for youth specific interventions or high-school and college based sex education, whereby these young adults can be made aware beforehand. 8.03% children below 14 years were HIV seropositive. Ganju et al reported 7.5% children <15 years to be infected with HIV.¹¹ This could be because of mother to child transmission (MCT), but if there is any sexual transmission involved, this would be detrimental.¹⁹ A specific chapter on HIV/AIDS should be included in school curriculum which can go a long way to remove a number of misconceptions about the disease and encourage the children to adopt a healthy lifestyle. The age group >50 years shows a low seropositivity of 9.26% which is similar to other studies.¹⁹ This may be due to greater community awareness, maturity and decrease in sex desire. A large percentage of HIV positive males and females (79.01%) were married. There is a significant relationship (p<0.0001) between marital status and HIV prevalence. As the prevalence is quite high in the married population, there is a potential risk among this group of transmitting the infection to their partners. In a study by Langare in Maharashtra, 60.30% of HIV seropositives were married.⁵ Ghosh et al reported 70% of seropositive clients to be married.¹⁷ Vyas et al reported higher rate of married clients (93% men and 82.5% women) probably due to the local custom of early marriage.¹⁸ On the contrary, more divorcees and widows were observed among HIV positives in a study conducted in Mumbai.²⁰ This difference

can be explained by differences in socio-cultural setting. With regard to education, it was revealed that the seroprevalence decreased with increase in literacy and this was found to be statistically significant. ($p < 0.0001$) Our finding coincided with other studies.^{3,9} Well-educated people are more receptive to information, education, communication and are amenable to interventions. Among those who had received higher education above college, only 9.78% males and 2.86% females were HIV seropositive. With this context, it can be interpreted that education offers awareness about the alarming situation of HIV in the society. Occupation-wise, maximum seropositivity (32.10%) was found in agricultural workers, followed by 20.37% prevalence in unskilled workers. Kommula et al reported that 38.62% of males were agricultural workers.²¹ This may be attributed to the illiteracy, lack of awareness which is generally prevalent among these groups. Sensitization of these groups regarding HIV may facilitate early detection of cases. Among the females an alarming number of seropositives (38.57%) were detected in housewives. They need to be sensitized since housewives can increase the risk of transmission to the next generation. Significant relationship between occupational status and HIV was noted ($P < 0.0001$) Rout et al reported 33.33% seropositivity in unskilled workers. This may be attributed to the illiteracy which is generally prevalent in these groups. Sensitization of these groups regarding HIV may facilitate early detection of cases.

In our study, [Table 3] it was seen that provider initiated clients (74.02%) attending ICTC are significantly more ($p < 0.0001$) as compared to voluntary or client-initiated (25.98%). Most of the referred clients in our study had medical problems. Dinesh et al reported 15% client-initiated and 85% provider initiated; Chelliyan et al found 10% client-initiated and 90% provider initiated;¹⁶ Langare et al reported 14.2% client-initiated and 85.8% referred patients.⁵ However, Ingole et al reported 12 times more Direct walk-in clients than referred clients in Mumbai.²⁰ Qazi et al reported 75% of ICTC clients were self-referred where as only 25% were referred by health care providers.²² Lack of awareness, fear of shame and stigma may be putting hindrance against self-initiation of attendees in our study.

On analyzing the sources of referral of clients enrolled in our ICTC as seen in [Table 4], we noted that a statistically significant ($p < 0.0001$) majority of the clients (58%) were referred from various clinical departments of our hospital, 5% were from Obstetrics and Gynaecology department, 6% from RNTCP. Cross referrals from DOTS and NGO/CBO were found to be quite poor in the present study suggesting that HIV-TB collaboration was in a nascent stage until now. Migrants constituted 14.30% of HIV seropositives. Ingole *et al* reported significantly higher seropositivity among migrant workers in Mumbai.²⁰ These people stay away from their family and often indulge in high risk behavior. NACO categorizes migrants as a 'bridge population' as they form a link between urban and rural areas, and between groups that are at high and low-risk of HIV transmission. HIV testing among this group remains low, standing at 14.2% in 2015.¹ In our study, referrals from ART centers (1.5%) and STI clinics (0.69%) were low, suggesting that referrals from these centers need to be strengthened.

As seen in [Table 5], Route of transmission and prevalence of HIV are highly associated. Unprotected heterosexual contact

has been highlighted as the commonest (84.78% males and 90% females) mode of transmission of HIV in the present study, as compared to the other groups; which is statistically significant ($p < 0.0001$). The HIV epidemic in India is driven by heterosexual sex, which accounted for 87% of new infections in 2015.¹ (avert NACO cr 4) Our finding was supported by the findings of various other studies. Barua et al 78.48% clients,⁹ whereas Kommula et al reported 86.1% males and 79.6% females to have heterosexual route as the commonest mode of transmission.²¹ Transmission by homosexual route, blood transfusion and intravenous drug abuse was not detected in our study. Well-monitored HIV prevention strategies like use of disposable needles, outreach to IDUs, peer education programs and social network interventions have reduced the transmission in developing countries. Transmission by blood transfusion, once a concern in many countries has been reduced in the Indian scenario, by routine screening of blood donors.²³ None of the seropositive clients in our study gave a history of blood transfusion. This may be because, in our region, screening for HIV before transfusion has been made mandatory for many years. It is not easy to judge the route of infection retrospectively by history only. However it can be interpreted that people with high risk behavior need to be educated consistently, regarding all levels of prevention of the disease.

Couple counseling and partner notification is an important tool in prevention and transmission of HIV. In our study, [Table 6] 44.90% were concordant couples, whereas 55.10% were discordant couples. Among discordant couples, 70.37% were male partner/ husband positive, female partner/ wife negative; while 29.63% were male partner/ husband negative but female partner/ wife positive. Langare et al reported that from total 21 discordant couples, 16 (76.2%) were male partner/ husband positive, female partner/ wife negative, and 5 (23.8%) were male partner/ husband negative and female partner/ wife positive.⁵ Mehra et al stated that males were the HIV infected partners in 72% of the serodiscordant partnership analyzed.²⁴ In our study, the contribution of male positives from the discordant partnerships to the burden of HIV/AIDS is significant ($p < 0.05$), warranting early and novel couple counseling strategies and preventive measures, including safe sexual behavior and possibly pre-exposure prophylaxis of the uninfected partner.²⁴ Simple interventions like couple-based counseling, serotesting and provision of condoms could be beneficial in reducing the rates of HIV transmission in this group. Malhotra et al reported 56.9% concordant and 43.1% discordant couples.⁸ Dash et al found 51% concordant and 49% discordant couples with majority (95.5%) being male partner/ husband positive, female partner/ wife negative.¹⁴ HIV transmission and acquisition in a partnership involves interplay of several determinants like genetic make-up of individuals, their immune profiles, presence of other sexually transmitted diseases, viral load, disease stage and antiretroviral therapy. Moreover, reduced frequency of sexual activity and adoption of safe sexual behavior after the seropositivity of the reactive partner was known, can partially explain why some discordant relationships are spared while others progress to concordance. It is recommended that the partners should disclose their HIV status to each other at the earliest and this gives us a direction to immediately target the HIV negative spouse to interrupt the transmission of HIV.^{15,24}

Females should be counseled meticulously and made aware of the risk of parent to child transmission. It was satisfying that almost 100% of seropositives underwent condom counseling and were provided with condoms to reduce secondary transmission and prevent other sexually transmitted diseases. It is also reassuring to know that the number of female attendees in our ICTC has increased from 30.27% in 2013-14 to 49.09% in 2016-17 and spouse testing has improved. ICTCs have proved to be a critical interface between the client and the public health system where clients can know their HIV status in resource limited nations. The results can be utilized to assess the impact of NACP- III and to evolve evidence based strategy to meet millennium development goals. Limitations: The results are based on reporting and data collection by personnel employed in the ICTC, hence may be biased. The data used is from a tertiary care facility, excludes antenatal care participants and would not be a true representation of the community. Moreover, since only antibody detection rapid test kits are available as per NACO guidelines, many cases in the window period might have been missed. However the study can help local planning and contribute data for policy makers to improve the existing national HIV/AIDS intervention strategies.

CONCLUSION

The seroprevalence of HIV in the ICTC attendees ranges from 1.33% in 2013-14 to 0.94% in 2016-17. An alarming number of females are HIV positive. Sexually active age group of 31-49 years of age showed maximum seropositivity. Major factors of concern include inadequate voluntary attendance, HIV- TB collaboration and cross referral between ICTC and STI clinics and these areas need to be strengthened. In our study, clients from the reproductive age group, agricultural and unskilled workers as well as housewives depicted higher seropositivity. Our study revealed that majority of seropositives were married, less educated and indulging in heterosexual risk behavior. The seropositive clients can be referred to appropriate care, support and should be taught regarding the importance of antiretroviral treatment; that it not only prolongs the life but is also effective in cutting down the transmission of the disease and decreasing the viral load. Those who are seronegative should undergo proper counseling, made aware of spread and protection from the disease. Social mobilization campaigns should be intensified through mass media and interpersonal communication, involving people living with HIV at all stages of intervention to increase awareness on HIV/ AIDS and voluntary attendance at ICTC.

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REFERENCES

1. www.avert.org > professionals > Around the world > Asia and the Pacific, Jan 9, 2017 Global information and education on HIV and AIDS INDIA 2015: Source UNAIDS Gap Report 2016.
2. Mathur A, Sharma B, Bithu R. Socio-demographic Characteristics of Clients Visiting Integrated Counseling

- and Testing Centre (ICTC) at SMS Medical College, Jaipur (Rajasthan) India. *International Multispecialty Journal of Health*. 2016;1:27.
3. Haider S, Tudu L. Sociodemographic profile of people attending Integrated Counseling and Testing Centre (ICTC) of a tertiary care hospital of Jharhhand. *International J of Community Med and Public Health*. 2016;3:319-322.
4. Kiran A, Kujur M, Kumar M, Haider. Profile of the Patients Attending in ICTC, RIMS, Ranchi. *Journal of Community Medicine and Health Education*. 2015;5:2-8.
5. Langare SD, Rajderkar SS, Naik JD. Profile of clients attending an Integrated Counseling and Testing Centre of Tertiary Care Hospital at Sangli District of Maharashtra. *International Journal of Recent Trends in Science And Technology*. 2011;1:124-126.
6. Chougale RA, Sawant VD, Socio-demographic profile of clients enrolled at the ICTC of a teaching Institute in Kolhapur, India. *Online International Interdisciplinary Research Journal*. 2013;3:343-361.
7. Guidelines on HIV Testing (2007) National AIDS control Organization, Ministry of Health and Family Welfare, Government of India.
8. Malhotra S, Sharma S, Hans C, Recent trend of HIV infection in a tertiary care hospital in North India. 2015. www.archivesofmedicine.com/./recent-trend-of-hiv-infection-at-ictc-in-a-tertiary-care-hospital-in-north-india.
9. Barua JK, Basu M, Bhattacharya. Epidemiological Profile of HIV patients in a tertiary care hospital of Kollata. *J. Pharm Biomed Sci*. 2015;5:890-895.
10. Bansal K, Aggarwal R, Chaudhary U. Knowledge, attitude and practices (KAP) among the voluntary attendees of Integrated Counseling and Testing Centre of a teaching tertiary care hospital on North India. *J of Dental and medical sciences*. 2016;15:20-25.
11. Ganju SA, Bhagra S, Kanga AK, Eleven year performance of an intergrated Counseling and Testing Center in a tertiary care hospital in Himachal Pradesh India. *CHRISMED J Health Res*. 2014;1:134-139.
12. Sherwal BL, Gupta P, Nayak R. Prevalence of HIV in a tertiary care center in Delhi: A five year ICTC based study. *World J of AIDS*. 2015;5:1-9.
13. Rout A J, Dubey M, Ram R. Socio-demographic profile of attendees of an integrated counseling and testing centre: a cross sectional study at a tertiary care hospital of Bihar. *J of Evolution of Medical and Dental Sciences*. 2015;4:3238-3246.
14. Dash M, Padhi S, Sahu S. HIV counseling and testing in a tertiary care hospital in Ganjam district, Odisha, India. *J. Postgraduate Medicine*. 2013;59:110-114.
15. Dinesh PV, Namratha KG, Kulkarni AG; Socio-demographic Profile of HIV Seropositive Clients Attending Integrated Counselling and Testing Center's of Sullia Taluk, Karnataka. ISSN 2320-6691 (Online) *Sch. J. App. Med. Sci.*, 2015;3:1173-1177.
16. Chellaiyan VG, Raut DK, Khokhar A. Profile and client satisfaction among clients of Integrated Counseling and Testing Centre for human immunodeficiency virus in Delhi. *Int J Med Public Health*. 2014;4:380-4.
17. Ghosh S, Mukherjee S, SamantaA. Profile of HIV seropositive patients attending Integrated Counseling and Testing Centre (ICTC): an experience from a medical college in West Bengal. *India global journal of medicine and public health*. 2013;2:34-38.

18. Vyas N, Hooja S, Sinha P. Prevalence of HIV/AIDS and prediction of future trends in north-west region of India: A six-year ICTC-based study. *Indian J Community Med.* 2009;34:212-7.
19. Kumari R, Kumar M, Gulati AK. A Study on the Socio demographic Profile of the Attendees at the ICTC of Institute of Medical Sciences BHU, Varanasi, Uttar Pradesh. *Indian journal of community health.* 2016;28: 42-47.
20. Ingole N, Paranjpe S, Sarkate P. Demographic profile of HIV seropositive clients attending Integrated Counseling and Testing Centre, Mumbai, India. *J. AIDS Clin Res.* 2014;5:369.
21. Kommula VM, Mishra AK, Kusneniwar GN. Profile of HIV positive clients in an ICTC of a private medical college of Andhra Pradesh: A situational analysis. *NJRM.* 2012;3;36-40.
22. Quazi S, Nimbarte S, Selokar D. profile of clients attending an Integrated Counseling and Testing Centre at a private rural tertiary care hospital in India. *Australasian Medical J.* 2010;3:349-352.
23. Chougale RA, Shinde PJ. Seroprevalence of transfusion transmitted infections among voluntary blood donors at a tertiary care teaching hospital in Kolhapur. India, *International Journal of Recent Trends in Science and Technology.* 2017;22:01-06.
24. Mehra B, Bhalla P, Rawat D. A study of concordant and discordant couples attending voluntary counseling and testing services at a tertiary care center in North India. *Indian J Public Health.* 2015;59:306-309.

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