

Sociodemographic and Clinical Profile of Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome Patients Visiting a Tertiary Care Hospital in Kerala - A Cross-sectional Study

Jacob K Jacob¹, Shiji K Jacob², T S Praveen³, Savio Bonnie George⁴, J Saranraj⁵

¹Professor, Department of Medicine, Government Medical College, Ernakulam, Kerala, India, ²Professor, Department of Paediatrics, Government Medical College, Ernakulam, Kerala, India, ³Lecturer, Department of Community Medicine, Government Medical College, Ernakulam, Kerala, India, ⁴Lecturer, Department of Medicine, Government Medical College, Ernakulam, Kerala, India, ⁵Resident, Department of Medicine, Government Medical College, Ernakulam, Kerala, India

Abstract

Introduction: Human immunodeficiency virus (HIV) infection prevalence in India varies geographically. Understanding the epidemic at the specific regional level (i.e., at the inter-state and intra-state levels) will provide useful insights on suspecting atypical presentation of the disease at the earliest and accelerate the progress toward the elimination of new infections and acquired immune deficiency syndrome-related deaths.

Materials and Methods: This cross-sectional study included subjects who had come to the tertiary health care hospital from February 2015 to July 2016. It is a record based cross-sectional study.

Results: Out of the 3506 patients screened over 1 year, 30 patients were found to be HIV positive. Males outnumbered females with 19 (63%) and 11 (37%), respectively. Mean CD4 count for all HIV-infected individuals was 206.84 cells/ μ l and for asymptomatic HIV-infected individuals was 278.57 cells/ μ l. There were 22 (73.4%) symptomatic and 26.6% asymptomatic participants. The most common clinical presentation was a loss of weight (23.3%), cough (13.3%), and weakness/fatigue (13.3%). 26.67% of patients were asymptomatic at the time of screening. The most common route of transmission was through heterosexual contacts 22 (73.3%) and 6 (20%) got the infection which was unknown. Maximum incidence of infection seen in age group more than 49 years, 12 (40%) and the next common age group was 30-39 years 10 (33.3%). 60% of patients were from rural background and 40% from urban area. Laborer occupation found to have maximum incidence 6 (31.5%) in males and housewives were found to be maximum among females 6 (54.5%). 70% of the population belong to below poverty line. Mean CD4 count for all HIV-infected individuals was 206.84 cells/ μ l and for asymptomatic HIV-infected individuals were 278.57 cells/ μ l. There were 22 (73.4%) symptomatic and 26.6% asymptomatic participants.

Conclusion: Our study found a regional lesser prevalence (<0.2%) of infection and a change in the clinical presentation of HIV patients. Moreover, this study gives the distribution of disease in different social patterns and provides information regarding necessary changes to be taken in the screening tools in a regional set up and promote awareness.

Key words: Acquired immune deficiency syndrome, Clinical profile, Human immunodeficiency virus, Socio-demographic

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INTRODUCTION

The human immunodeficiency virus (HIV) infection is a global pandemic. India has the third largest HIV epidemic in the world. National adult (15-49 years) HIV prevalence is estimated to be 0.26% (0.22-0.32%) in 2015. In 2015, adult HIV prevalence is estimated to be 0.30% among

Corresponding Author: Dr. Jacob K Jacob, Bethel, Moolepadam, Kalamassery - 683 104, Ernakulam, Kerala, India. Phone: +91-9446035690. E-mail: jacobkjacob@yahoo.com

males and 0.22% among females.¹ India has the third-highest number of people living with HIV in the world with 2.1 million Indians accounting for about 4 out of 10 people infected with the deadly virus in the Asia-Pacific region, according to a United Nation (UN) report. The report by UN programme on HIV/acquired immune deficiency syndrome (AIDS) (UNAIDS), the UNAIDS, said that 19 million of the 35 million people living with the virus globally do not know their HIV-positive status and so ending the AIDS epidemic by 2030 will require smart scale-up to close the gap. The first-ever UNAIDS “Gap Report” said after sub-Saharan Africa, the region with the largest number of people living with HIV is Asia and the Pacific. Six countries - China, India, Indonesia, Myanmar, Thailand, and Vietnam - account for more than 90% of the people living with HIV in the region. The proportions of people who do not have access to antiretroviral therapy treatment are 64% in India.²

HIV prevalence in India also varies geographically. Understanding the epidemic at the specific regional level (i.e., at the inter-state and intra-state levels) will provide useful insights on suspecting atypical presentation of the disease at the earliest and accelerate the progress toward the elimination of new infections and AIDS-related deaths. Among the states/UTs, in 2015, Manipur has shown the highest estimated adult HIV prevalence of 1.15%, followed by Mizoram (0.80%), Nagaland (0.78%), Andhra Pradesh and Telangana (0.66%), Karnataka (0.45%), Gujarat (0.42%), and Goa (0.40%). Besides these States, Maharashtra, Chandigarh, Tripura, and Tamil Nadu have shown estimated adult HIV prevalence greater than the national prevalence (0.26%), while Odisha, Bihar, Sikkim, Delhi, Rajasthan, and West Bengal have shown an estimated adult HIV prevalence in the range of 0.21-0.25%. All other States including Kerala/UTs have levels of adult HIV prevalence below 0.20%. The adult HIV prevalence at national level has continued its steady decline from an estimated peak of 0.38% in 2001-2003 to 0.34% in 2007 and 0.28% in 2012 to 0.26% in 2015. India is estimated to have around 86,000 (56-129) new HIV infections in 2015, showing 66% decline in new infections from 2000 and 32% decline from 2007, the year set as a baseline in the National AIDS Control Programme-IV children.¹

In India, HIV testing is done as a voluntary test or as a diagnostic procedure in symptomatic individuals. In antenatal clinics, HIV screening test is done as a mode of prevention of parent to child transmission. It is also done in all tuberculosis (TB) patients due to the strong association between HIV and TB.¹ Various strategies have been developed by the WHO and National AIDS Control Organisation (NACO) to promote awareness of HIV and AIDS which aims in early diagnosis of HIV infection

which facilitates better care, ameliorates clinical outcomes and improves strategies by health-care delivery systems.³ Studies show that a person diagnosed and counselled for HIV infection avoids high-risk behavior which is beneficial to the society by limiting the transmission of the virus.⁴ Triangulation and analysis of data from different sources and different regions, especially at state and district level, will allow drawing useful lessons on what works in programmes and what instead needs improvement.¹

This study was conducted in an urban tertiary health care hospital in South India with the objective to assess the sociodemographic and clinical profile of HIV/AIDS patients. This study brings out the sociodemographic and clinical profile of patients attending a tertiary health care hospital in South India.

MATERIALS AND METHODS

This record based cross-sectional study was a tertiary care teaching hospital in Kochi, Kerala, South India, from February 2015 to July 2016. The permission from concerned authorities was obtained. Medical records of patients who attended the tertiary care center and who were referred to Integrated Counseling and Testing Center (ICTC) to check HIV status were included in the study. Children were excluded from the study. Over the retrospective study period of 1-year and 5-month, it was found that total of 3506 patients were screened at ICTC, out of which 32 were found to be seropositive. Of the total 32 patients, 6-year-old child and a 30-year-old pregnant woman was also excluded, since she has been previously diagnosed at other ICTC and was on antiretroviral drugs. The NACO guidelines for the diagnosis of HIV were followed. First HIV test was carried out with HIV - Coombs test (COMBAIDS-RS). As per the NACO guidelines, if the sample is reactive in the first test, it is confirmed by second (HIV-Trio-LF) and third AIDSCAN (SD-Bioline) test.

For these patients, a pro forma was made about sociodemographic characteristics such as age, sex, literacy status, marital status, occupation, socioeconomic status, and clinical presentation ensuring confidentiality. Data required were extracted from the records maintained by the counselors and clinicians who attended the patients and entered into this pro forma. Standard protocols were followed to ensure confidentiality of the information collected.

The data were entered in Excel sheets, and statistical analysis was performed using Statistical Package for Social Sciences (SPSS, Inc. Chicago, IL) 22.0 version.

In this analysis, ELISA for HIV test result (positive/negative) was considered as a dependent variable. The signs, symptoms and risk factors reported were considered as possible covariates. The data were analyzed using mean, standard deviation, and Chi-square test. Association between CD4 count and clinical symptom was analyzed using Chi-square test; $P < 0.05$ was considered to be significant.

RESULT

A total of 3506 individuals were tested for HIV in 2015-2016 at the ICTC clinic in the tertiary care hospital, situated in Kochi region of Kerala, state of India, from Feb 2015 to July 2016. Children (<18 year) as well as individuals with indeterminate ELISA test result were excluded from the study and data were analyzed for the remaining 30 individuals tested (Table 1).

Males outnumbered females with 19 (63%) and 11 (37%) respectively (Figure 1). Maximum incidence of infection seen in age group more than 49 years, 12 (40%) and the next common age group was 30-39 years 10 (33.3%). 60% of patients were from rural background and 40% from urban area. Table 1 includes the description socio-demographic factors of seropositive patients including age, sex, education, occupation, marital and socioeconomic status. Labour were found to have maximum incidence 6 (31.5%) in males, which included migrant labourers as well. Housewives were found to be maximum among females 6 (54.5%). 60% of the population belong to below poverty line and more than half of the patients had education status was only up to primary school level (Figure 2). Maximum incidence of infection seen in married people (76.7%) than unmarried or divorced.

The most common route of transmission was through heterosexual contacts 22 (73.3%) and 6 (20%) got the infection which was unknown. There was no incidence of blood transfusion associated seropositivity. 21% males and 18.8% females were not aware of the route of the infection (Tables 2 and 3, Figures 3 and 4). Number of patients acquiring disease due to blood transfusion was nil. 20% patients did not know about their routes of transmission (Figure 4). Children were not included in the study. In the present study injectable drug abuser was only one patient.

The most common clinical presentation was loss of weight (23.3%), cough (13.3%), weakness/fatigue (13.3%). 26.67% of patients were asymptomatic at the time of screening (Table 4). They were screened routinely for surgery as well as for their clinical symptom they presented with and was found to be seropositive.

Table 1: Sociodemographic profile of HIV positive patients

Sociodemographic factors	Male	Female	Total
	n=19 (%)	n=11 (%)	n=30 (%)
Age group (years)			
20-29	3 (15.78)	0 (0)	3 (10)
30-39	6 (31.57)	4 (36.36)	10 (33.33)
40-49	3 (15.78)	2 (18.18)	5 (16.67)
>49	7 (36.84)	5 (45.46)	12 (40)
Setting			
Rural	12 (63.15)	6 (54.55)	18 (60)
Urban	7 (36.84)	5 (45.45)	12 (40)
Education			
Illiterate	-	-	-
Primary school	10 (52.63)	6 (54.55)	16 (53.33)
Secondary school	6 (31.57)	5 (45.45)	11 (36.67)
College and above	3 (15.79)	-	3 (10)
Occupation			
Laborer	6 (31.57)	2 (18.18)	8 (26.67)
Farmer	1 (5.26)	0 (0)	1 (3.33)
Business	3 (15.78)	1 (9.9)	4 (13.33)
Driver	3 (15.78)	0 (0)	3 (10)
Services	1 (5.26)	2 (18.18)	3 (10)
Housewives	0 (0)	6 (54.54)	6 (20)
Unemployed	1 (5.26)	0 (0)	1 (3.33)
Professional	4 (21.05)	0 (0)	4 (13.33)
Marital status			
Married	15 (78.95)	8 (72.73)	23 (76.67)
Widower/widow	1 (5.26)	3 (27.27)	4 (13.33)
Divorced	-	-	-
Separated	-	-	-
Unmarried	3 (15.78)	-	-
Socioeconomic status			
APL	6 (31.58)	3 (27.27)	9 (30)
BPL	13 (68.42)	8 (72.73)	21 (70)

APL: Above poverty line, BPL: Below poverty line, HIV: Human immunodeficiency virus

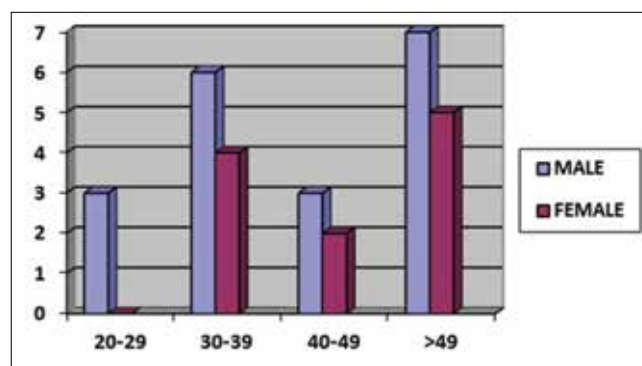


Figure 1: Age profile of patients in the human immunodeficiency virus study group

The CD4 cell count was available for HIV infected individuals. Mean CD4 count for all HIV infected individuals was 206.84cells/ μ l and for HIV infected asymptomatic individuals ($n = 7$) was 278.57cells/ μ l (Table 5). The CD4 count was categorized as <50, 51-200, 201-350 and >350 cells/ μ l and associated with their clinical presentation status (Figure 5). It was observed that a high proportion of individuals who had CD4

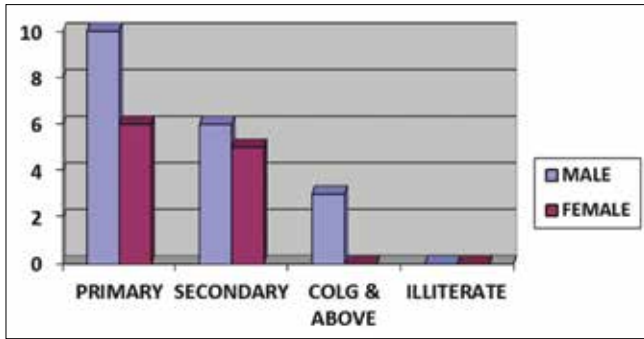


Figure 2: The educational status of patients in the human immunodeficiency virus study group

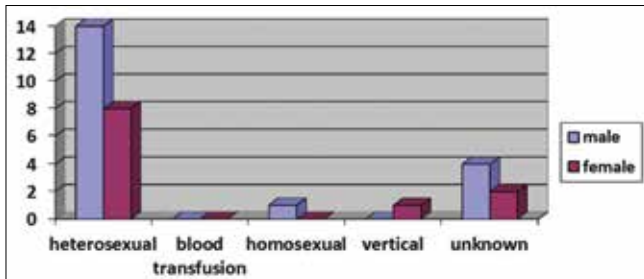


Figure 3: The exposure profile of patients in the study group

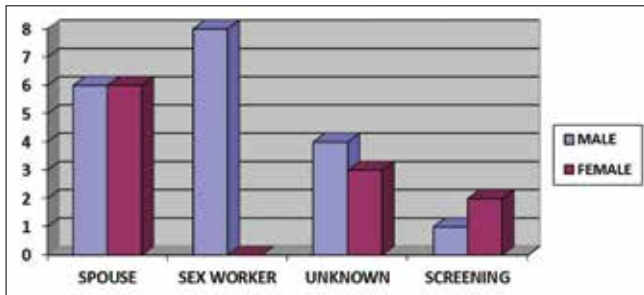


Figure 4: The type of exposure among the patients in the study group

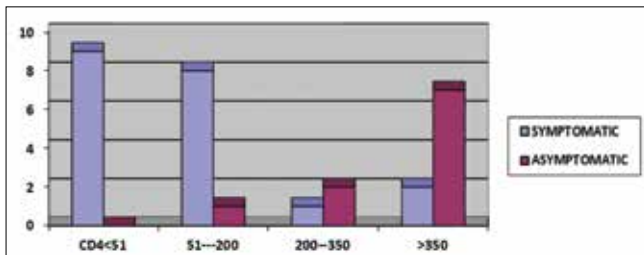


Figure 5: The CD4 count of the patients in the study group at the time of screening

count >350 cells/ μ l were asymptomatic or with subtle clinical complaints. Association between CD4 count and clinical symptom was analyzed using chi-square test; $P < 0.05$ was considered to be significant (Tables 6 and 7). The proportion, severity of symptoms associated with disease and CD4 counts were inversely proportional. As compared to individuals with higher CD4 counts, those

Table 2: Routes of transmission

Routes of transmission	Male	Female	Total
Heterosexual	14 (73.68)	8 (72.73)	22 (73.33)
Blood transfusion	0 (0)	0 (0)	0 (0)
Homosexual	1 (5.26)	0 (0)	1 (3.33)
Vertical	0 (0)	1 (9.09)	1 (3.33)
Unknown	4 (21.06)	2 (18.18)	6 (20)
Total	19	11	30

Table 3: HIV exposure profile

Sex	Spouse-n (%)	Sex worker n (%)	Unknown n (%)	Screening n (%)
Male	6 (31.57)	8 (26.67)	4 (21.05)	1
Female	6 (31.57)	0	3 (27.27)	2
Total	12 (63.15)	8 (26.67)	7 (23.33)	3 (10)

HIV: Human immunodeficiency virus

Table 4: Presenting complaints among patients

Complaints	Male n=19 (%)	Female n=11 (%)	Total n=30 (%)
Fever	1 (5.26)	1 (9.09)	2 (6.67)
Loss of weight	4 (21.05)	3 (27.27)	7 (23.33)
Cough	3 (15.78)	1 (9.09)	4 (13.33)
Diarrhea	1 (5.26)	0 (0)	1 (3.33)
Weakness	2 (10.52)	2 (18.18)	4 (13.33)
Itching	2 (10.52)	0 (0)	2 (6.67)
Pain abdomen	3 (15.78)	0 (0)	3 (10)
No complaints	3 (15.78)	5 (45.45)	8 (26.67)

Table 5: CD4 category wise distribution of HIV infected individuals tested in the study group

CD4 category	Symptomatic (n=21)	Asymptomatic (n=7)
<50	9 (42.85)	-
51-200	8 (38.09)	1 (14.28)
201-350	3 (14.29)	2 (28.57)
>350	2 (9.52)	4 (57.14)

HIV: Human immunodeficiency virus

with CD4 count within the range of <50 cells/ μ l had more symptoms; almost 42.8% of all symptomatic patients ($n = 21$) had CD4 count <0 cells/ μ l (Tables 8 and 9).

DISCUSSION

This study demonstrates the importance of sociodemographic and clinical features and initial CD4 count of HIV/AIDS patients who were attending a tertiary care hospital. The overall male patients outnumbered the female patients and male to female ratio was 1.73:1. Male predominance was also observed in study done by Zaheer *et al.*⁵ and Singh *et al.*⁶ The majority (81.40%) of patients were within the age group of 20-39 years which is sexually active and productive

Table 6: Statistical analysis-sex versus occupation

Sex×Occupation cross-tabulation								
Sex×Occupation	Occupation						Total	
	Labourer	Businessman	Driver	Services	Housewives	Unemployed		Professional
Sex								
Male								
Count	7	3	4	1	0	1	3	19
Expected count	5.7	2.5	3.2	0.6	3.8	0.6	2.5	19.0
Female								
Count	2	1	1	0	6	0	1	11
Expected count	3.3	1.5	1.8	0.4	2.2	0.4	1.5	11.0
Total								
Count	9	4	5	1	6	1	4	30
Expected count	9.0	4.0	5.0	1.0	6.0	1.0	4.0	30.0

Table 7: Statistical analysis-sex versus occupation

Chi-square tests			
Sex×Occupation	Value	df	Asymptomatic significant (2-sided)
Pearson Chi-square	13.397 ^a	6	0.037
Likelihood ratio	15.893	6	0.014
Linear-by-linear association	1.696	1	0.193
Number of valid cases	30		

^a13 cells (92.9%) have expected count<5. The minimum expected count is 0.37

Table 8: Statistical analysis-presentation×CD4 count

Clinical presentation×CD4 count cross-tabulation						
Presentation×CD4 count	CD4 count					Total
	0	<50	51-200	201-350	>350	
Clinical presentation						
Fever						
Count	0	0	0	1	1	2
Expected count	0.1	0.5	0.6	0.5	0.3	2.0
Loss of weight						
Count	0	3	2	1	1	7
Expected count	0.5	1.6	2.1	1.9	0.9	7.0
Cough						
Count	0	2	2	0	0	4
Expected count	0.3	0.9	1.2	1.1	0.5	4.0
Diarrhea						
Count	0	1	0	0	0	1
Expected count	0.1	0.2	0.3	0.3	0.1	1.0
Weakness						
Count	2	0	2	0	0	4
Expected count	0.3	0.9	1.2	1.1	0.5	4.0
Itching						
Count	0	1	1	0	0	2
Expected count	0.1	0.5	0.6	0.5	0.3	2.0
Pain abdomen						
Count	0	0	2	1	0	3
Expected count	0.2	0.7	0.9	0.8	0.4	3.0
No complaints						
Count	0	0	0	5	2	7
Expected count	0.5	1.6	2.1	1.9	0.9	7.0
Total						
Count	2	7	9	8	4	30
Expected count	2.0	7.0	9.0	8.0	4.0	30.0

age group. These findings are very much similar to the national level statistics in which NACO has reported that 89% of the cases were in the age group of 15-44 years. This age group of the population is more affected because they are economically productive, sexually more active and the social structure is patriarchal.⁷

Nearly 60% patients were from rural areas. The rural predominance of HIV seropositive patients in a study done at suburban area is believed to be an indication of spread of HIV from the urban to the vast rural areas. Similar findings were reported by Joardar *et al.*³ It may be because of the fact of location of tertiary care hospital in suburban area. With regard to the level of education, 56%, 36% and 10% patients were up to primary, secondary and college and above level of education, respectively. These findings were similar to study conducted by Joshi *et al.*⁴ and the national data from NACO.²

From this study, it shows the level of education and incidence of HIV seropositivity is inversely proportional. Lack of school education and knowledge predisposes individuals to lack of awareness from protecting himself or herself from STDs including HIV/AIDS (Figure 2).

In this study, maximum number of patients (26.67%) were laborers among males (31.57%) and housewives among females (54.54%). The study area is a suburban area. Most of the laborers were involved in carpentry, masonry, and agriculture related activities and/or industries which also have migrant laborers from neighboring states and North Indians as well. As these migrant laborers should have to stay away from family for a longer time, it increases the risk of sexual promiscuity. This shows that the laborers are working as a link population and spreading the disease to general population. In females, the most affected group was housewives (54.54%) who are at mercy of their counterpart and are ignorant of their spouse illness. They do not have the right to ask for contraception and suffer

Table 9: Statistical analysis-presentation×CD4 count

Chi-square tests			
Presentation×CD4 count	Value	df	Asymptomatic significant (2-sided)
Pearson Chi-square	42.068 ^a	28	0.043
Likelihood ratio	43.436	28	0.032
Linear-by-linear association	2.065	1	0.151
Number of valid cases	30		

^a40 cells (100.0%) have expected count<5. The minimum expected count is 0.07. There was a statistical significance between the clinical presentation at onset and the initial CD4 values ($P=0.043$). Patients with lesser CD4 counts were more prone to develop clinical presentations as expected

from deadly disease just because of their partners. The financially well-off patients involved in the occupations like business, services constitute a totally different group they have more money and get involved in high-risk behavior when away from family. Therefore, they act as a bridging population and spread the disease from urban to rural area. The variation in occupations between this study and Joardar *et al.*³ could be due different occupations in different geographical areas. With regard to marital status, the majority of patients were married (76.67%), in both males and females. The high number of married persons having HIV/AIDS was also reported by Jayarama *et al.* (70.3%).⁸

The predominant mode of transmission was through unprotected heterosexual intercourse (73.33%). More or less similar findings were reported by Gupta *et al.* (97%).⁹

As far as the most common presenting complaint is concerned, loss of weight was only second preceded by no specific complaints. This may be due to the fact that screening is done for patients posted for surgery and this being a tertiary care hospital, doctors suspect and screen for the disease even before the clinical presentation of AIDS.

The ICTC aims at increasing awareness about HIV/AIDS through group meetings as well as a couple or one-to-one counseling, resulting in early detection of HIV infection even during asymptomatic phase. The maximum numbers of individuals were between 26 and 49 years. In the Indian setting, this is important since this age group is economically productive and about 80% of newly HIV-infected individuals are believed to have acquired the infection during unprotected sex.¹⁰

The mean CD4 count observed in this study was 206.84.57 cells/ μ l, which was lower when compared to a similar study conducted in Pune in 1996-1997 (mean CD4 count 238 cells/ μ l).^{11,12} The asymptomatic individuals presented with a mean CD4 count of 278.57 cells/ μ l.

This indicates that the trend toward earlier diagnosis of HIV infection is increasing due to effective screening. The most common symptoms reported by the individuals who came for HIV testing were different as compared to data reported in studies conducted at Pune and Varanasi but differed in proportion, since they had more patients with TB and those presenting with opportunistic infections.^{9,11,13}

CONCLUSION

It can be concluded from the results of this study that the proportion of individuals getting detected at an early stage of their infection has increased as compared to previous studies. The signs and symptoms strongly associated with HIV infection can be used for vigilance and early detection of HIV. The majority of the seropositive population in this study was from lower socioeconomic class and between age group, i.e., 20 and 49 years. As this is the major part of reproductive age group, it significantly affects the development of the community. It increases the financial burden of the family and affects the overall progress of the country. Laborer which was the most common occupation found to be affected, as observed in other studies is the major link population between high-risk groups to general population and between urban to rural areas. Since the majority of females affected are housewives, it implies that marital life is a risk factor for those women who get infected by their HIV positive spouse.

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