

## Research Article

# Socio-demographic and clinical profile of HIV/AIDS patients in HAART era at a tertiary care hospital in North-West Rajasthan, India

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## ABSTRACT

**Background:** To study the socio-demographic and clinical profile of HIV/AIDS patients in HAART Era at a Government tertiary care centre.

**Methods:** The present study was carried out on 300 HIV/ AIDS patients in Department of Ophthalmology in collaboration with ART centre at a govt. tertiary care centre, from the period of February 2015 to November 2015. Patients were studied for their different demographic parameters, clinical spectrum and ocular manifestations of the HIV/ AIDS disease.

**Results:** Age range of study population was 4 years to 73 years, with 57.66% males and 42% females and 0.33% intersex. Majority of the patient's (82.67%) were in adult (15 to 49 years) age group. Heterosexual contact was the commonest (86.67%) mode of HIV transmission. Most common occupation group, among males was laborers while most of females were house wives accounting for 26.33% and 34% of the study group respectively. Majority of patients belonged to class IV (34.66%) and class III (34.33%) of socioeconomic status. Commonest associated systemic disease was tuberculosis, seen in 14% of patients. Out of total only 9.33% patients had CD4+Tcell count  $\leq 100/\text{mm}^3$ , 46.33% of patients were in WHO stage I of HIV/AIDS disease and 78.33% patients were on ART.

**Conclusions:** Majority of patients belonged to low socioeconomic status and in young and productive age group with heterosexual contact being commonest mode of transmission. Majority of our patients were at relatively good immune status, and in early stage of the disease. This shows an impact of early case detection and timely institution of highly active antiretroviral therapy (HAART).

**Keywords:** HIV, ART centre, Socio-demographic profile, HAART

## INTRODUCTION

The human immunodeficiency virus (HIV) infection is a global pandemic. It continues to be a burden globally and presents serious public health problems in the developing countries, like India. Globally over 36.9 million persons are living with the disease.<sup>1</sup>

HIV causes a fatal illness which breaks down the body's immune system, leaving the victim vulnerable to a host of life threatening opportunistic infections, neurological disorders, or unusual malignancies. Among the special feature of HIV infections are that once infected, a person will be infected for life. It is a multi-systemic disease affecting various systems and organs of the body including the eye.

It is the leading cause of adult deaths in the world due to infectious diseases. HIV has become the first truly international epidemic easily crossing the oceans and borders. Despite the improved access to antiretroviral therapy (ART) and care in many regions of the world AIDS has killed millions of people.

According to the National AIDS Control Organization (NACO, New Delhi) the total number of people infected with HIV in India is estimated at 2.1 million in 2015 (compared with 2.2 million in 2007) with a seropositivity rate of 1.86%.<sup>2</sup> However it is noteworthy that lower estimates than before does not mean a decline in the epidemic. It only points out that the epidemic is under control because of enormous effort and mobilization over the past decade.

This guard cannot be lowered. While the percentage of adult population affected by HIV and AIDS may have dropped, in absolute numbers, India's AIDS figure is still substantial. It is the third largest in the world behind South Africa (6.3 million) and Nigeria (3.4million)<sup>3</sup> and remains the largest in Asia.

HIV/AIDS is no longer just a public health issue in India but also one of the most serious socioeconomic and developmental concerns, because nearly 86% of reported cases are occurring in sexually active and economically productive age group (15-44yrs).<sup>2</sup>

Deaths of young adults have an especially damaging impact on their families and communities, skills are lost, workforce shrinks and children's are orphaned. The epidemiology and clinical presentation of the disease varies greatly from country to country and from region to region in same country and even from patient to patient. Thus for planning targeted interventions, it is essential to know the clinico-demographical pattern of the disease in a particular area. Though numerous clinical/demographic studies have been carried out from across India, to the best of our knowledge no such study has been undertaken in Rajasthan till date.

Keeping this in mind, it was planned to study the clinical and demographic profile of HIV/AIDS patients at a tertiary care centre in north-west Rajasthan, India.

## METHODS

The present study was a hospital based observational cross-sectional study. The study carried out in Department of Ophthalmology in collaboration with ART centre of a govt. tertiary care centre, in Bikaner, North West Rajasthan, India. The ART center is affiliated to National AIDS Control Organisation (NACO). A total of 300 HIV/AIDS patients were enrolled in the study, by using simple random sampling technique from February 2015 to November 2015.

Data was collected by detailed history and interview of patients and attending relatives. Patient's relevant data about the infection, CD4 counts, staging of disease, duration of disease, associated systemic disease, laboratory investigation and treatment were collected from patient's treatment record card. All patients underwent complete ophthalmic examination. The purpose of the study was to evaluate the clinical and sociodemographic profile of HIV/AIDS patients in north west Rajasthan with respect to demographic, geographic difference, mode of transmission, severity of the disease, patients ART status and CD4+Tcell counts.

## Inclusion criteria

A total of 300 HIV/AIDS patients were recruited in the study by using simple random sampling technique from The HIV positive patients coming to ART centre for treatment / counselling. The ART centre follows the NACO guidelines for diagnosis of HIV. The study population included males, females and intersex of every age group (paediatric and adults).

## Exclusion criteria

- Patients who were not willing to give informed consent.
- Patients who did not co-operate for proper interview and examination.

## Ethical issues

Institutional review Board and ethics committee approval, patient's and parent's consent was obtained. Confidentiality and privacy was maintained throughout the study, data were stored safely and made accessible to the researchers only.

## RESULTS

In the present study out of 300 patients, the male patients 173 (57.66%) outnumbered the female patients 126 (42%) and intersex 1(0.33%) patients. Male to female ratio was 1.37:1. The distribution of patients according to the age showed that, the maximum number of patients 248 (82.67%) were in the age group of 15-49 years. 32 (10.66%) patients were  $\geq 50$  years of age while 20 (6.66%) of patients belonged to the pediatric (<15 years) age group. Age of the patients ranged between 4years to 73 years (mean $\pm$ SD = 36.64 $\pm$ 12.25 years).

The distribution of patients by occupation depicts that most common occupation group, which harboured the HIV infection, was laborers group accounting for 79(26.33%) of total study population, Laborers include the agricultural as well as nonagricultural laborers. Of total study population 102 (34%) were house wives, all of them were having HIV positive husbands engaged in different occupations as grouped (Table 1).

36 (12%) patients were Skilled worker/ self-employed, 30 (10%) were transport workers/ drivers, 24 (8%) patients were students, while govt. employee (in different sectors)

and army/BSF persons accounted for 16 (5.33%) and 13 (4.33%) of patients respectively.

**Table 1: Sociodemographic profile of HIV positive patients (n=300).**

Socio-demographic variants	No. of case	Percentage
<b>Age</b>		
<15 years	20	6.66
15-49 years	248	82.66
≥50 years	32	10.66
<b>Sex</b>		
Male	173	57.66
Female	126	42
Intersex	1	0.33
<b>Occupation</b>		
House wife	102	34.00
Labor	79	26.33
Skilled worker/ self employed	36	12.00
Transport workers/ drivers	30	10.00
Students	24	8.00
Govt. Employee	16	5.37
Army/BSF employee	13	4.33
<b>Socio Economic Status</b>		
I (5113 & Above )	14	4.66
II ( 2557 -5112 )	48	16
III (1533 – 2556 )	103	34.33
IV & V (1532 & Below)	135	45
<b>Education</b>		
Illiterate/ Non formal education	134	44.66%
Primary	106	35.33%
Secondary	48	16%
College & Above	12	4%
<b>Marital Status</b>		
Married	234	78
Widowed	34	11.33
Unmarried	30	10
Divorced	2	0.66

Among the total patients studied, 234 (78%) were married and living with their spouse followed by 34 (11.33%) widows, 30 (10%) unmarried, 2 (0.66%) divorced.

On the basis of per capita monthly income in Indian currency (BG Prasad socioeconomic classification scale 2014) socioeconomic status of the patients reveals that majority i.e. 104 (34.66%) were from class iv socioeconomic status followed by 103 (34.33%) patients belonging to class iii socioeconomic status. Very few 14 (4.66%) patients were from upper socioeconomic status, while 31 (10.33%) patients belonged to class v socioeconomic status (table 1).

Out of 300 patients, 166 (55.33%) were literate while 134 (44.66%) were illiterate.

Among literates, maximum number of patients i.e. 106 (35.33%) were educated primary school level. Only 12 (4%) patients educated college and above.

The most common route of transmission was found to be heterosexual in 263 (87.66%) patients. Next common route was vertical transmission in 22 (7.33%) patients who receive HIV from their mothers, in our study all these patients were in paediatric age group. 8 (2.66%) and 6 (2%) patients were infection through blood transfusion and unsafe injection respectively. In our study only 1 (0.33%) patient was homosexual (Table 2).

**Table 2: Distribution of patients according to their probable mode of HIV transmission (n=300).**

Mode of HIV transmission	No. of patients	%
Heterosexual	263	87.67
Mother to Child	22	7.33
Unsafe Injection	8	2.67
Blood Transfusion	6	2.00
Homosexual	1	0.33
Needle stick Injury	1	0.33

On the analysis of systemic illness 32(10.66%) of patients had pulmonary tuberculosis, 7 (2.33%) patients had extra pulmonary tuberculosis, another 7 (2.33%) patients had anemia. Other systemic illnesses like pyrexia of unknown origin (PUO), diarrhoea, cerebral tuberculoma and tubercular meningitis, pneumonitis, mouth sores, esophageal stricture, and oral candidiasis were also found in our patients as noted (Table 3).

**Table 3: Systemic disease among patients: (n=300).**

Systemic disease	No. of patients	% out of 300
PUO	5	1.66
Pulmonary TB	32	10.66
Extra pulmonary TB	7	2.33
Anemia	7	2.33
Oral candidiasis	1	0.33
Mouth sores	2	0.66
Cerebral tuberculoma and tubercular meningitis	3	1.00
Cerebral infarcts	1	0.33
Generalized molluscum	2	0.66
Severe diarrhoea	3	1.00
Pneumonitis	1	0.33
Esophageal stricture	1	0.33
Total	65	21.66

**Table 4: Distribution of patients according to their CD4+cell counts and WHO Staging of HIV/AIDS Disease (n=300).**

CD4+cell count	≤100	100-250	250-500	>500	Total
No. of patients	28 (9.33%)	75 (25%)	126 (42%)	71 (23.66%)	300
WHO stages	I	II	III	IV	
No. of patients	139 (46.33%)	103 (34.33%)	41 (13.66%)	17 (5.66%)	300

Out of total study population, 28 (9.33%) patients were having CD4+Tcell count ≤100/mm, while 75 (25%) patients had CD4+Tcell count between 100-250/mm, rest of the patients had CD4+Tcell counts >250/mm as noted (Table 4).<sup>3</sup>

As per the WHO staging of the disease, majority 139 (46.33%) patients were in stage I followed by 103 (34.33%) patients in stage II. Few patients were in stage III and stage IV (Table 4).

As shown in Table 5; Out of total 300 patients, 235 (78.33%) were on ART, 35 (11.66%) patients were eligible/required ART but due some reasons they were not on ART, while 30 (10%) patients were such patients who did not require ART (pre ART).

**Table 5: Distribution of patients according to their ART status (n=300).**

ART status	No. of patients
Pre ART	30 (10%)
ART	235 (78.33%)
Eligible but not initiated on ART	35 (11.66%)

We also examined the patients for ocular lesions related to HIV/AIDS, among the total study population 151 (50.33%) patients had ocular findings related HIV/AIDS, which includes both symptomatic and asymptomatic patients.

## DISCUSSION

Our study was conducted in Bikaner district, situated in North West Rajasthan. HIV positive population of Rajasthan contributes to the 5% of India's total HIV load with more than 5 thousand new infection in the year 2015, as reported by NACO.<sup>2</sup>

Age range of our study population was 4 years to 73 years (mean±SD= 36.64±12.25 yrs). Only 6.66% patients were in paediatric age group. Majority (82.66%) of patients were in the adult (15-49 years) age group, which is sexually active and productive age group. This is nearly similar to the national level statistics in which NACO has reported that, 86% of the cases were in the adult age group and 6.54% in paediatric age group.<sup>2</sup> Similarly higher prevalence in this age group was observed in previous studies conducted in India.<sup>4-6</sup>

In the study population male to female ratio was 1.37:1 with males comprising 57.66% of cases which is also nearly similar to 59.5% reflected from the national statistics of HIV population.<sup>2</sup> Male predominance was also observed in studies done by Joge US et al and Nayak, et al.<sup>4,7</sup>

In our study commonest occupation group was labour followed by skilled/self-employed workers, among males. While most of females were housewives, married to males, who were engaged in above mentioned occupations (Table 1). Most of the patients (79.33%) in the study group belong to middle to low socio economic status, as it also reflected from the occupational distribution of the patients. Almost similar findings were noted by Joge US et al.<sup>4</sup>

With regard to the level of education, 55.33% patients were literate and 44.66% were illiterate. Among literates maximum number of patient's i.e.106 (35.33%) were educated up to primary school. These findings were different from the study conducted by Joshi H. S. et al and Joge US et al, as majority of patients in these studies were illiterate.<sup>4,8</sup> As majority of patients in our study group were either illiterate or educated up to primary school level only. Thus, it may be inferred that higher educational levels offered some protection against HIV. Anybody who is illiterate and educated below the secondary education level may not have adequate knowledge for protecting himself or herself from STDs including HIV/AIDS.

With regard to marital status majority of patients were married (78%), in the study group widows (11.33%) outnumbered unmarried (10%) patients. High number of married persons having HIV/AIDS was also reported in other Indian studies.<sup>4,6</sup> Almost all widows gave history of death of their spouses due to HIV/AIDS.

Heterosexual route was found as most common mode of HIV transmission, accounted for 88.66% in this study, since other sexual practices being very uncommon in this part of the world.<sup>9</sup> Most of females in our study seemed to have acquired infection from their infected husbands. Accidental needle stick injury were observed as least common mode of transmission in our study, because of high acceptance of workplace safety measures and post exposure prophylaxis among health care workers in the region.

Tuberculosis (including pulmonary T.B., extra pulmonary. T.B., tubercular meningitis) was the commonest opportunistic infection found in 14% patients in our study which is different from the other studies done by Chakravarty et al and Deshpande et al where tuberculosis was the commonest opportunistic infection but was reported in higher no. of patients as they reported tuberculosis in 62% and 38.8% patients of their study populations.<sup>10,11</sup> These studies were conducted a decade before, when wide spread use of ART was not there, now

the continuous immense effort of NACO, good availability and wide spread use of ART could be the reason behind this decrease in opportunistic T.B. infection in HIV patients, despite the high prevalence of tuberculosis in the area. Other observed systemic opportunistic infections were candidiasis (0.33%) and molluscum contagiosum (0.66%) which is also lower than the incidences reported in other studies.<sup>10,11</sup>

On examination of the patients for ocular lesions related to HIV/AIDS, we observed that among the total study population 151 (50.33%) patients had ocular findings, related HIV/AIDS disease, it includes both symptomatic and asymptomatic patients. This frequency and severity of ocular involvement was lower than the studies done before the wide spread use of ART, where ocular involvement was reported from 60 to 73% in different studies.<sup>12-14</sup>

The reason for decline in systemic opportunistic infections and ocular lesions in our study is the cumulative effect of enormous efforts by NACO and NGO's to increase public awareness about the HIV infection, aggressive approach in early case detection, and timely institution of highly active antiretroviral therapy (HAART). Thus despite the increased longevity and survival of the HIV patients prevalence of ocular morbidity and systemic opportunistic infections has markedly decreased in HAART Era.

When we further analyzed the systemic diseases and ocular lesions in relation with CD4+Tcell counts and WHO stage of the disease, we found that frequency and severity of lesions increases with decreased CD4+Tcell counts and increased stage of the disease. This correlation was statistically significant ( $p < 0.05$ ). With regard to ART status, majority (78.33%) of patients were on ART in the study group, a very few (11.66%) patients were such patients who were eligible/required ART were not on ART at the time of the inclusion in the study, most of them were newly diagnosed patients. While 30 (10%) patients were such patients who not required ART (pre ART).

In study population CD4+Tcell counts ranged from 9 to 1838 cells/mm<sup>3</sup> (mean $\pm$ SD = 375.6 $\pm$ 249) at the time of inclusion into the study. Out of total patients, 9.33% patients had severe immunosuppression (CD4+Tcell count  $\leq 100$ /mm<sup>3</sup>), while majority (65.66%) of the patients were at relatively good immune status, having CD4+Tcell counts  $> 250$ /mm<sup>3</sup> (Table 4). This could be the another reason for lower incidence of opportunistic infections in our study population. This good level of immune status in most of our patients was again a reflection of early case detection and timely institution of ART, as most of our patients were on ART.

As per the WHO staging of the disease, in our study majority of patients 46.33% were in stage I followed by 103 34.33% in stage II. Few patients (13.66% and 5.66%)



were in stage III and stage IV respectively (Table 4). This finding is different from the study by Nayak, et al they reported 48.03% patient in stage III. We observed that systemic diseases are more common in higher stage of the disease.<sup>7</sup>

## CONCLUSION

In our study most of the affected population was from low to middle socioeconomic class and reproductive age group i.e. 15-44 years which increases the economic burden and affects the overall development of the family, community and country. Labourer which was the most common occupation found to be affected acts as a link population between high risk groups to general population. Heterosexual route was the commonest mode of transmission. Marital life itself becomes a risk factor for those women who get infected by their HIV positive spouse. HIV negative spouse should be the target group for priority targeted interventions to reduce the chance of HIV transmission. This will also reduce the chances of female seropositivity as well as mother to child transmission of HIV. Higher education was found to be a protective factor for HIV, health education regarding HIV/AIDS should be included in the school level education. The early case detection and timely institution of ART has declined the systemic opportunistic infection and ocular morbidity in HIV/AIDS patients. This is a promising positive step to combat with the HIV/AIDS disease in community.

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