

## A comparative study on Socio-demographic profile of patients Associated with HIV-TB Co-infection registered in ART Centre at central India.

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### Abstract

**Background:** The worrisome aspect of HIV/AIDS is not limited to the disease itself, but co-infection with Tuberculosis is also one of the challenging problems in developing countries.

**Materials and Methods:** After obtaining approval from ethics committee, A cross-sectional descriptive type of study was conducted ART centre, Gwalior J. A. Group of Hospitals, G. R. Medical College, Gwalior (MP). Total 500 patients was included in this study underwent a detailed interview and physical examination which was recorded according to the pre-designed, pre-tested and semi-structured questionnaire used for data collection then analyzed. Duration of the study was From 1<sup>st</sup> August, 2014 to 31<sup>st</sup> July, 2015.

**Result:** Maximum HIV-positive patients (35.6%) belonged to 30-39 years age group. Overall, 83.6% patients were from reproductively active age group (15-49 years). The number of males was approximately one-and-half times greater than number of females in the study group (59.8% males compared to 39.4% females). More patients (63.6%) were residents of rural area as compared to urban area (36.4%). In the study sample, most (64.0%) patients were living a married life. 32% patients were illiterate in the study sample while 18% were educated up to intermediate or possessed college degrees. In the study sample, 42.2% patients were unemployed while in the employed subgroup of patients, maximum (31.0%) were clerks/farmers/shop-owners. Socio-economic status (63.2%) belonged to the upper lower class.

**Conclusion:** Addressing the issue of high prevalence of HIV/AIDS in the middle class and tier II cities and lack of rehabilitation and social stigma towards HIV which prevents them from finding suitable employment. And HIV prevention and services towards the lagging group of the population (backwards castes and illiterate population) that are still to be avail the benefit of these services.

**Keywords:** HIV-TB Co-infection, Socio-demographic profile

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### I. Introduction

The quantum of burden put by HIV/AIDS on the global health strategies is proven by the fact that "Combat HIV/AIDS, Malaria and other diseases" has been included as one of the Millennium Development Goals (MDG) of WHO declared in September 2000.<sup>[1]</sup>

The worrisome aspect of HIV/AIDS is not limited to the disease itself, but co-infection with Tuberculosis is also one of the challenging problems in developing countries. Tuberculosis remains the leading cause of death among people living with HIV, accounting for around one in five AIDS-related deaths. In 2013, the percentage of identified HIV-positive tuberculosis patients who started or continued antiretroviral treatment reached 70% (up from 60% in 2012).<sup>[2]</sup>

The state of Madhya Pradesh is one of the low-prevalence states for HIV in India with an estimated adult prevalence of 0.09% in year 2011 according to State Fact Sheet of NACO. The number of new HIV infections has been estimated as 2387 in 2011 with 3325 AIDS-related deaths.<sup>[3]</sup> District Gwalior in Madhya Pradesh is Category 'C' district with low level of HIV positivity (0.07-0.09%) according to Prevention of Parent to Child Transmission (PPTCT) and Blood Bank data in 2011 with a declining to stable trend among PPTCT attendees.<sup>[4]</sup>

The ART Centre at Gwalior was established in Madhav Dispensary, Gajra Raja Medical College and started working on 29th March, 2010. Since then, 2294 HIV patients have been registered at this centre till 30th April, 2014. Currently 1054 patients, who have been benefitted by this centre are living and fighting a long and difficult war with HIV. 255 deaths have been recorded among the patients registered at this centre. Approx 1-2 new patients are being registered daily at this centre along with 10-20 patients coming for follow up each day.<sup>[3]</sup>

The pattern of HIV prevalence in India is highly variable in different regions and states. Due to prevailing social stigmata, economic problems, poor awareness & lack of facilities for diagnosis, the incidence

of HIV infection is highly underreported from many areas. Factors contributing to HIV spread in India are poor literacy, gender inequality, endemic poverty, civil instability, internal migration due to unemployment, lack of health services and awareness, untreated STIs and intravenous drug abuse among others. In order to implement the desired interventions, the epidemiology of HIV/AIDS is to be understood, especially with regard to various socio-demographic factors, level of awareness and pattern of high-risk behavior of the population. Till date, the most effective approach available to stem the spread of HIV is awareness generation and lifestyle change.

The present study was done with the aim of understanding the social demographic profile of patients registered at ART centre in Gwalior district and to compare the socio-demographic profile of patients associated with HIV-TB Co-infection.

## II. Material And Methods

After obtaining approval from ethics committee, the present study was conducted at Anti-retroviral therapy (ART) centre associated with J. A. Group of Hospitals, G. R. Medical College, Gwalior (MP). The study was designed as an institution-based cross-sectional descriptive type of study. Approximately 1-2 new clients are registered and 8-10 patients visit this ART centre for follow up daily. This centre provides free ART for HIV-positive persons, CD4 counting and counselling for drug adherence and other aspects of HIV/AIDS. All patients included in this study underwent a detailed interview and physical examination which was recorded according to the pre-designed, pre-tested and semi-structured questionnaire used for data collection. Duration of the study was from 1<sup>st</sup> August 2014 to 31<sup>st</sup> July 2015. Total 500 patients who attended ART centre, Gwalior for undergoing registration or for follow up during the specified study duration and were willing to participate in the study was include. Patients who were not willing to participate in the study was excluded. Written consent was obtained from the subjects after explaining the purpose, nature and procedure of the study. They were assured that confidentiality would be strictly maintained. The option to withdraw from the study was always available. After taking interviews from the study population, all proforma were collected and compiled. They were analyzed in the pursuance of defined objectives by using appropriate statistical methods like percentage and proportions and tables using manual methods or suitable statistical software accordingly.

## III. Results

**TABLE 1: DISTRIBUTION OF PATIENTS ACCORDING TO SOCIO-DEMOGRAPHIC PROFILE**

<b>Age Group</b>	<b>% of Patients (Figures in brackets show numbers)</b>
<15 years	6.4% (n=32)
15-29 years	25.6% (n=128)
30-39 years	35.6% (n=178)
40-49 years	22.4% (n=112)
>50 years	10.0% (n=50)
Total	100% (n=500)
<b>Gender</b>	<b>% of Patients (Figures in brackets show numbers)</b>
Male	59.8% (n=299)
Female	39.4% (n=197)
Transgender	0.8% (n=4)
Total	100% (n=500)
<b>Religion</b>	<b>% of Patients (Figures in brackets show numbers)</b>
Hindu	94.0% (n=470)
Muslim	3.6% (n=18)
Sikh	2.4% (n=12)
Christian	0% (n=0)
Other	0% (n=0)
Total	100% (n=500)
<b>Migratory Status</b>	<b>% of Patients (Figures in brackets show numbers)</b>
Native	97.2% (n=486)
Migrant	2.8% (n=14)
Total	100% (n=500)
<b>Caste Category</b>	<b>% of Patients (Figures in brackets show numbers)</b>
General Category	43.8% (n=219)
Other Backward Classes (OBC)	37.2% (n=186)
Scheduled Caste (SC)	18.0% (n=90)
Scheduled Tribes (ST)	1.0% (n=5)
Total	100% (n=500)
<b>Area</b>	<b>% of Patients (Figures in brackets show numbers)</b>
Urban	36.4% (n=182)
Rural	63.6% (n=318)
Total	100% (n=500)
<b>Education</b>	<b>% of Patients (Figures in brackets show numbers)</b>
Illiterate	32.0% (n=160)
Up to primary school	22.8% (n=114)

Up to middle school	16.2% (n=81)		
Up to high school	11.0% (n=55)		
Up to intermediate	10.8% (n=54)		
Up to graduate/postgraduate	7.0% (n=35)		
Up to professional	0.2% (n=1)		
Total	100% (n=500)		
<b>Occupation</b>	<b>% of Patients (Figures in brackets show numbers)</b>		
Professional	1.2% (n=6)		
Semi-professional	2.4% (n=12)		
Clerical/Shop-owner/Farmer	31.0% (n=155)		
Skilled worker	11.4% (n=57)		
Semi-skilled worker	8.2% (n=41)		
Unskilled worker	3.6% (n=18)		
Unemployed	42.2% (n=211)		
Total	100% (n=500)		
<b>Marital Status</b>	<b>% of Patients (Figures in brackets show numbers)</b>		
Unmarried	19.2% (n=96)		
Married	64.0% (n=320)		
Divorced	1.0% (n=5)		
Widowed	15.8% (n=79)		
Separated	0% (n=0)		
Total	100% (n=500)		
<b>Socio-economic Status (According to modified Kuppuswamy scale)</b>	<b>% of Patients (Figures in brackets show numbers)</b>		
Upper	1.0% (n=5)		
Upper middle	5.8% (n=29)		
Lower middle	19.0% (n=95)		
Upper lower	63.2% (n=316)		
Lower	11.0% (n=55)		
Total	100% (n=500)		
<b>HIV-status of Spouse (For married patients)</b>	<b>% of Patients for Particular Gender (Figures in brackets show numbers)</b>		
	Males	Females	Transgenders
Positive	36.94% (n=82)	62.78% (n=113)	0% (n=0)
Negative	38.29% (n=85)	17.22% (n=31)	0% (n=0)
Unknown	24.77% (n=55)	20.00% (n=36)	100% (n=2)

Out of the total 500 patients, maximum 178 (35.6%) belonged to 30-39 years of age group. This was followed by 15-29 years age group (25.6%), 40-49 years age group (22.4%), >50 years age group (10.0%) and <15 years age group (6.4%). Therefore observations suggest that most patients belonged to reproductively active age. On the other hand more than half [n=299 (59.8%)] were males while 197 (39.4%) were females and 4 patients registered as being transgender.

Out of 500 patients, most (94.0%) was Hindus (n=470) followed by Muslims (n=18) and Sikhs (n=12). According to caste maximum belonged to general category (n=219) followed by OBC category (n=186), SC (n=90) and ST category (n=5).

Most of them lived in rural area (n=318) and rest in urban area (n=182).

Maximum are illiterate (n=160), followed by up to primary school education (n=114), middle school education (n=81), high school (n=55), intermediate (n=54), graduate/postgraduate (n=35) and professionally educated (n=1).

Maximum was unemployed (n=211), followed by clerical/shop-owners/farmers (n=155), skilled workers (n=57), semiskilled workers (n=41), unskilled workers (n=18), semi-professionals (n=12) and professionals (n=6). Maximum was native (n=486). Only few patients were migrants (n=14).

According to marital status (n=320) was married, followed by unmarried (n=96), widowed (n=79) and divorced (n=5).

Out of the 500 patients, maximum patients belonged to upper lower class (n=316), followed by lower middle class (n=95), lower class (n=55), upper middle class (n=29) and upper class (n=5).

Out of the 500 patients included in the study, 208 (41.6%) stated an HIV-positive status of their spouses and 148 (29.6%) stated an HIV-negative status of their spouses, while 144 (28.8%) did not know the HIV-status of their spouses. Also, on observing the HIV-status of the participants with respect to their gender and statistically analyzing it, a significantly higher number of females (62.78%, n=113) had a HIV-positive spouse as compared to the males (36.94%, n=82) ( $p < 0.01$ ). 96 patients were unmarried.

**ASSOCIATION OF HIV WITH TUBERCULOSIS**

**Table 2: Distribution of Patients according to History of Tuberculosis**

History of TB (Treatment/infection)	% of Patients (Figures in brackets show numbers)
Present	18.0% (n=90)
Absent	81.6% (n=408)
Unknown	0.4% (n=2)
Total	100% (n=500)

The observations for study sample revealed that the prevalence of positive history of TB in HIV-positive patients was 18.0% (n=90) while 2 patients could not state any confirmed history about TB infection. Rest of the 408 patients denied any history of previous or ongoing tubercular infection.

**ACCORDING TO TUBERCULOSIS CO-INFECTION**

**Table 3: Association of HIV-TB Co-infection with Age, Gender and Socio-economic Status of the Patients in the Study Sample**

Variable	Category	Number of Patients with History of TB Infection/ Treatment	Number of Patients without History of TB Infection/ Treatment	Number of Patients with Unknown History of TB	p-value
Age	<15 years	7	24	1	<b>0.124</b>
	15-29 years	17	111	0	
	30-39 years	34	144	0	
	40-49 years	25	86	1	
	>50 years	7	43	0	
	<b>Total</b>	<b>90</b>	<b>408</b>	<b>2</b>	
Gender	Male	65	233	1	<b>0.110</b>
	Female	25	171	1	
	Transgender	0	4	0	
	<b>Total</b>	<b>90</b>	<b>408</b>	<b>2</b>	
Socio-economic Status	Upper	0	5	0	<b>0.921</b>
	Upper middle	6	23	0	
	Lower middle	16	79	0	
	Upper lower	60	254	2	
	Lower	8	47	0	
	<b>Total</b>	<b>90</b>	<b>408</b>	<b>2</b>	

Above table shows the association of HIV-TB co-infection in study sample with age group, sex and socio-economic status of the patients. On applying chi-square test on the observations, the p-values obtained are >0.05 thus confirming that there is no statistically significant association between prevalence of HIV-TB co-infection and age, sex or socio-economic status of the patients.

**IV. Discussion**

In present study, 500 HIV-positive patients coming to ART centre, Gwalior was interviewed. Present available literature was reviewed and observations were tabulated which are discussed as following:

**AGE DISTRIBUTION**

The observations regarding age distribution in our study are consistent with other similar studies done in different states in India by Mallick et al<sup>[6]</sup>, Chakravarty et al<sup>[7]</sup>, Joge et al<sup>[8]</sup>, Parvez et al<sup>[9]</sup>, Ulhannan et al<sup>[10]</sup>, Jha et al<sup>[11]</sup>, Deshmukh et al<sup>[12]</sup>, Modi et al<sup>[13]</sup>, Toshniwal et al<sup>[14]</sup> and Unnikrishnan et al<sup>[15]</sup> as sexually active population was the major contributor to HIV-positive patients according to these studies as well.

**GENDER DISTRIBUTION**

In the present study, out of 500 patients, 59.8% were males while 39.4% were females. 4 patients registered as being transgender. This observation can be explained probably as a result of higher incidence of risky behaviour in the males in Indian scenario as well as the ignorance and stigma in female population regarding stepping forward with their health issues.

The findings of present study regarding the gender distribution of patients are consistent with the findings of studies done by Mallick et al<sup>[6]</sup>, Chakravarty et al<sup>[7]</sup>, Joge et al<sup>[8]</sup>, Parvez et al<sup>[9]</sup>, Ulhannan et al<sup>[10]</sup>, Jha et al<sup>[11]</sup>, Deshmukh et al<sup>[12]</sup>, Deshpande et al<sup>[18]</sup>, Modi et al<sup>[13]</sup>, Yadav et al<sup>[16]</sup>, Toshniwal et al<sup>[14]</sup>, Unnikrishnan et al<sup>[15]</sup> and Nayak et al<sup>[17]</sup>. In all of these studies, males were the more common gender in patients presenting at care centres.

### **RELIGION**

Out of 500 patients, most of the patients (94%) were Hindus followed by Muslims and Sikhs. These results were probably achieved as the catchment area for Gwalior ART centre is mostly inhabited by Hindus.

### **CASTE CATEGORY**

Out of 500 patients included in this study, maximum 43.8% belonged to general category followed by OBC category (37.2%). The proportion of patients from SC and ST category was further less reflecting the lack of awareness about HIV and lesser outreach of care services among the backward castes in the society.

### **RESIDENTIAL AREA**

Out of 500 patients, 63.6% lived in rural area while rest 36.4% belonged to urban area. This was consistent with findings of Deshpande et al.<sup>[18]</sup> Contrary to these findings; Jha et al<sup>[11]</sup> and Toshniwal et al<sup>[14]</sup> observed in their studies that most patients belonged to an urban setting. This difference can be explained as the catchment area for their studies was mostly urban based in metropolitan/capital cities.

### **EDUCATIONAL QUALIFICATION**

Out of the total 500 patients, 32% were illiterate. The proportion of patients was in decreasing trend with increasingly higher educational qualification. Only 18% patients were having intermediate or college degrees. Therefore the observations indicate that the approach of HIV preventive and CST services should be directed towards the illiterate and lesser educated strata of population. Also, this is another indirect statement of importance of education in prevention of HIV spread.

Our findings are consistent with the observations of Joge et al<sup>[8]</sup>, Ulhannan et al<sup>[10]</sup> and Jha et al<sup>[11]</sup> who all reported that more than half of their patients were literate. Also Deshpande et al<sup>[18]</sup> also reported in their study similar to the present study that most patients had a low level of educational qualification.

### **OCCUPATION**

These findings are consistent with the observations of Ibrahim et al<sup>[19]</sup> and Jha et al<sup>[11]</sup> who also reported that the largest group of patients in their studies in terms of occupation was unemployed.

### **MIGRATORY STATUS**

Contrary to this, Chakravarty et al<sup>[7]</sup> and Toshniwal et al<sup>[14]</sup> reported a contribution of migrants in their study population to be as high as 71.5% and 69.5% respectively which seems to be due to demographic differences in the catchment areas.

### **MARITAL STATUS**

In studies done by Jha et al<sup>[11]</sup>, Deshmukh et al<sup>[12]</sup> and Toshniwal et al<sup>[14]</sup> also, the proportion of married patients was largest in the study sample. Contrary to this Parvez et al<sup>[9]</sup> reported that in their study, only 14.9% were living a married life while 65.5% patients were widowed and 17.5% were divorced/separated.

### **SOCIO-ECONOMIC STATUS**

This distribution of sample again re-emphasizes the need to focus the efforts of HIV prevention and care on the lower and middle class population, especially in tier II cities, who have been emerging as the new high-prevalence group.

In other similar studies, Joge et al<sup>[8]</sup> reported that most patients in their study belonged to the lower socio-economic class. Jha et al<sup>[11]</sup> reported that 69.8% patients in their study belonged to upper lower class while in the study done by Deshpande et al<sup>[18]</sup>, most patients belonged to lower and lower middle classes. These findings are similar to findings of our study.

### **HIV STATUS OF SPOUSE**

Out of the total 500 patients included in the study, 208 (41.6%) stated an HIV-positive status of their spouses and 148 (29.6%) stated an HIV-negative status of their spouses, while 144 (28.8%) did not know the HIV-status of their spouses. 96 patients were unmarried.

Also, on observing the HIV-status of the participants with respect to their gender and statistically analyzing it, a significantly higher number of females (62.78%, n=113) had HIV-positive spouse as compared to the males (36.94%, n=82) ( $p < 0.01$ ). This is the result of social stigmatization and reduced awareness among females about STDs, particularly HIV.

In other similar studies, Joge et al<sup>[8]</sup> stated that in their study, 62.94% patients had a positive infection status of the spouse as well while in 19.77% patients, the status of spouse was unknown. Similarly, Toshniwal H et al<sup>[14]</sup> stated that in 45 % cases, spouses were HIV positive while 38 % cases did not know the HIV status of their spouses.

## **V. Conclusion**

The study conclude that maximum HIV-positive patients (35.6%) belonged to 30-39 years age group. Overall, 83.6% patients were from reproductively active age group (15-49 years). The number of males was approximately one-and-half times greater than number of females in the study group (59.8% males compared to 39.4% females). More patients (63.6%) were residents of rural area as compared to urban area (36.4%). In the

study sample, most (64.0%) patients were living a married life. 32% patients were illiterate in the study sample while 18% were educated up to intermediate or possessed college degrees. In the study sample, 42.2% patients were unemployed while in the employed subgroup of patients, maximum (31.0%) were clerks/farmers/shop-owners. Socio-economic status maximum (63.2%) belonged to the upper lower class.

## VI. Recommendations

On the basis of above observations in the present study, following recommendations can be suggested to improve the existing HIV/AIDS prevention and care strategies:

- To keep the focus of CST services for PLHIV and preventive services for general population on the adolescent and youth to halt and reverse the epidemic as well as to prolong the life-span of HIV-positive individuals. For this, schools and colleges need to have workshops and programmes oriented towards safe sex practices in later life.
- Linking of HIV/AIDS control programmes with women empowerment strategies for better outreach due to the ignorance and stigma in female population in the Indian scenario.
- Directing the approach of HIV preventive and CST services towards the lagging group of the population (backwards castes and illiterate population) that are still to avail the benefit of these services.

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