

ORIGINAL ARTICLE

SOCIO DEMOGRAPHIC PROFILE OF TB-HIV CO- INFECTED PATIENTS IN BUNDELKHAND REGION, UTTAR-PRADESH

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ABSTRACT

Background: Concomitant Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) infection is a lamentable medical phenomenon with dreadful social and economic impact across the globe, aptly described as the "accursed duet". The HIV epidemic has posed major and almost insurmountable challenges to TB control efforts across the world.

Aim: To study the socio-demographic correlates of TB - HIV co-infected cases.

Material & Methods: This is a hospital based observational study which was conducted in district Jhansi of Uttar Pradesh. The study was carried out in District Jhansi for a duration of one year from Dec.2007-Dec. 2008. The study subjects were selected from District Tuberculosis Center, Jhansi, TB clinic and Tuberculosis ward of MLB Medical College, Jhansi. After collecting necessary information from the study subjects, their blood samples were collected to test the HIV status.

Results: Maximum TB-HIV co-infection cases(8.65%) were found in 26-45 years of age, and the cases of co-infection were more in males(6.08%) as compared to females(1.84%). There was no significant variation found amongst TB-HIV co-infected cases by religion, however more TB-HIV co-infected cases were significantly found in SC/ST population and among illiterate group.

Conclusion: TB-HIV co-infection deserves special attention. Screening of HIV among TB patients should be attached more importance, which would be much more helpful for treatment and outcome of both diseases.

Keywords: Co-infection, TB-HIV, Accursed duet

INTRODUCTION

More than 125 years into its 'known' existence, *Mycobacterium tuberculosis* (MTB) continues to haunt the mankind and tuberculosis (TB) the disease caused by it remains the leading cause of preventable death worldwide. Tuberculosis is considered as a 'reemerging disease', because of its resurgence and increased incidence in the twenty-first century particularly in immuno-compromised patients as in HIV-AIDS.¹⁻³ HIV/AIDS pandemic has caused a resurgence of TB, resulting in increased morbidity and mortality

worldwide. *Mycobacterium tuberculosis* and HIV have a synergistic interaction; each accentuates progression of the other.

Mycobacterium tuberculosis (TB) and human immune deficiency virus (HIV) infections are two major public health problems in many parts of the world, particularly in many developing countries^{1,2}. TB is the most common opportunistic disease and cause of the death for those infected with HIV³. HIV infection is one of the most important risk factors associated with an

increased risk of latent TB infection progressing to active TB disease [4-5].

Mycobacterium tuberculosis is therefore indeed an enigmatic bug. Not only has it defied our efforts to eradicate it but is reemerging as the commonest lethal opportunistic infection, considering this it is essential to decipher that if the socio demographic factors affects the TB-HIV co-infection.

The rationale of the present study was to find the Socio-demographic profile of TB-HIV co-infected cases in the district Jhansi.

The current study was undertaken to find out the socio-demographic correlates of TB and HIV co-infected cases.

METHODOLOGY

Study Design: This is an observational study which was conducted from December 2007-December 2008 at district Jhansi.

Sample Size Calculation:

The desired sample size was calculated using the formula- $n = \frac{4pq}{L^2}$ where n = no. of subject required to conduct the study, p = positive character of previous study, q = 1-p and L = maximum allowable error and it is 10 or 20% of Positive character.

Different studies from India have reported rate of HIV infection among tuberculosis patient to range from 0.4% to 20.1%. Study from national AIDS research institute in Pune has reported the increase of HIV prevalence in newly diagnosed tuberculosis patient from 3.1% in 1991 to 20.1% in 1996 and reaching up to 30% in year 2000.

By putting the appropriate value of p, q, and L (i.e. p= 15, q= 85 and L= 3) the required sample size came out to be 566.

Methods

The present study was a Hospital based observational study carried out in M.L.B Medical College Jhansi, for a duration of one year from Dec.2007-Dec.2008.

After taking the written consent from each patient and detailing them about aim and procedure of the study, patients were interviewed on the pretested questionnaire at District Tuberculosis clinic (DTC), TB clinic, and Tuberculosis wards at DTC and MLB medical college, Jhansi on every Monday, Wednesday, and Friday till the desired sample size was completed. After recording the desired information, 3 ml blood was taken from each patient and stored in a labeled tube for HIV testing. A separate code was given to each sample after collection.

The blood specimens thus collected were stored at 4^o Celsius and later on blood was centrifuged and serum was separated on the same day and stored in the department of Microbiology of the institution. The

samples were first screened by ELISA, the samples found to be non-reactive on first testing were declared as negative. All samples found to be reactive on ELISA testing were subjected to HIV ELISA (enzyme linked immunosorbent assay), a solid phase enzyme immuno assay for the detection of antibodies to HIV-1 and HIV-2 in human serum or plasma. The repeated ELISA positive samples were further subjected to Tridot test for confirmative diagnosis. Every attempt was made to ensure the confidentiality of blood sample results.

RESULTS

Table 1: Seropositivity for HIV amongst Tuberculosis Cases By Age and Sex

Category	TB Cases (n=574)	HIV Positive (%) (n=28)	P value
Age Groups(yrs)			
6-15	61	00 (0.00)	$\chi^2=13.66,$ p= <0.01
16-25	178	03 (1.68)	
26-45	208	18 (8.65)	
45+	127	07 (5.51)	
Sex			
Male	411	25 (6.08)	$\chi^2 = 4.53,$ p= <0.05
Female	163	03 (1.84)	

Out of 574 TB study subjects, 28 (4.87%) were found to be HIV positive (Table-1).

Study subjects between age group 26-45 yrs. showed highest prevalence for HIV i.e. 8.65% (table-1), it was followed by 45+ year's age group (5.51%). None of the case was positive in 6-15 years age groups ($\chi^2 = 13.66,$ p= <0.01). Sex distribution of cases indicates that male were significantly more co-infected (6.08%) with HIV than the females i.e. 1.84% ($\chi^2 = 4.53, p= <0.05$).

Table 2: Prevalence of HIV amongst Cases by Religion and caste

Category	TB cases (n=574)	Positive for HIV (%) (n=28)	P value
Religion			
Hindu	428	25 (5.84)	$\chi^2 = 3.42,$ p= >0.10
Muslim	139	03 (2.15)	
Christian/Other's	7	00 (0.00)	
Caste			
General	58	01 (1.72)	$\chi^2 = 19.32,$ p= <0.001
OBC	319	07 (2.19)	
SC/ST	197	20 (10.15)	

The difference in prevalence of HIV infection in different religion was found statistically insignificant (Table-2), however the TB-HIV co-infection was found

significantly higher among SC/ST community than the General and OBC caste.

Table 3: Seroprevalence of HIV amongst Tuberculosis Cases by Social Class (according to Kuppuswamy classification)

Social Class	TB cases	Co-infected with HIV (%)
I	0	0 (0)
II	15	2 (13.33)
III	08	1 (12.50)
IV	69	19 (27.53)
V	482	06 (1.24)
Total	574	28 (4.87)

$\chi^2 = 92.72, p = <0.001$

Maximum no. of co-infected cases was found amongst class IV (27.53%) which was followed by class II (13.33%). No TB-HIV co-infected case was detected in upper class.

Difference in prevalence of HIV among different social class were found statistically significant ($\chi^2 = 92.72, p = <0.001$) Table 3.

Table 4: Relation of HIV Status and Place of Residence

Place of residence	Total	HIV status +ve (%)
Rural	247	7 (2.83)
Urban	304	21 (6.90)
Slum	23	0 (0.00)
Total	574	28 (4.87)

$\chi^2 = 12.76, p = <0.01$

Study subjects living in urban area were reported significantly higher number of co-infection than the subject living in urban and slum areas (Table-4).

Table 5: Relation between HIV Positive Status and Literacy Status of Cases

Literacy status	Total	HIV +ve (%)
Illiterate	251	20 (7.96)
Up to junior. High school	243	07 (2.88)
Intermediate & above	80	01 (1.25)
Total	574	28 (4.87)

$\chi^2 = 9.99, p = <0.01$

TB-HIV co infection amongst the studied cases was significantly associated with the literacy status, HIV co-infection was more among illiterate (7.96%) compared to those who were educated up to high school (2.88%). Least number of TB- HIV co-infected cases were found among graduate and above ($\chi^2 = 9.99, p = <0.01$)

DISCUSSION

In the present study, majority of the co-infected cases (8.65%) were in sexually active age group (26-45 years). Similar are the findings of study carried out by Deshwal et.al⁶ which found that most of the TB-HIV cases (99%) were in sexually active age group (20-49 years) which is in conformity with other studies by Kataria et.al⁷. However in the present study the TB-HIV co-infection among males was 6.08% and among females was found to be 1.84%. The difference between two sexes is appreciably significant ($p < 0.05$) which is similar to the findings of the study carried out by Anand. K Patel et.al⁸ which states that of all the detected patients, 82% were males and the rest were females. However contradictory were the findings of Deswal et.al⁶ in whose study the occurrence of co-infected cases in the different sex was not found to be significant. TB-HIV co-infection was found in all religions and there was no significant difference which goes along with the findings of study carried out by Kataria et al.⁷

In the present study it was found that TB-HIV co-infection was significantly associated with literacy status as 7.96% TB-HIV co-infected cases were found among illiterate patients as compared to 1.25% co-infected cases among literate ones, this is in concordance with the study carried out by Jain et.al⁹.

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