

## Original Research Article

# Socio-demographic determinants of tuberculosis patients attending directly observed treatment short course centre in urban Ghaziabad, Uttar Pradesh

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## ABSTRACT

**Background:** Tuberculosis was the first infectious disease declared by the WHO as a global health emergency. Men are more commonly affected than women. The case notifications were higher in males than in females most countries. The objective of the study was to assess socio-demographic determinants of tuberculosis patients attending directly observed treatment short course (DOTS) centre in Urban Ghaziabad.

**Methods:** This was an observational cross-sectional study. The study was carried out in selected DOTS centres of district Ghaziabad. 850 study subjects age group more than 15 years were included. Multistage sampling was done. Numbers and percentage were used. SPSS version 13 was used for statistical analysis.

**Results:** Majority 41.17% of tuberculosis (TB) patients belonged to 15-25 years age group. 30.58% patients were in 26-35 years age group followed by 23.52% in 36-45 years age group and least 4.70% were in >45 years age group. Majority 54.1% of TB patients were females that compared to 45.9% were males. Among tuberculosis patients majority 58.82% were married as compared to 40% were unmarried and least 1.18% were widow. 75.29% tuberculosis patients were Hindus as compared to 22.35% were Muslims and least 2.35% were Sikh/Christian. Among tuberculosis patients majority 44.71% were from nuclear family. 31.76% had joint family and least 23.53% had 3<sup>rd</sup> generation family.

**Conclusions:** It was concluded that socio-demographic determinants were low. It was recommended to raise socioeconomic standard of population, give health education to improve personal habit and stop TB transmission.

**Keywords:** Alcohol, DOTS, Socio-demographic determinants, Smoking, Tuberculosis patients

## INTRODUCTION

Tuberculosis (TB) is a specific infectious disease caused by *Mycobacterium tuberculosis*. The disease primarily affects lungs and causes pulmonary TB (PTB). It can also affect intestine, meninges, bones and joints, lymph glands, skin and other tissues of the body. The disease is usually chronic with cardinal features like persistent cough with or without expectoration, intermittent fever,

loss of appetite, weight loss, chest pain and haemoptysis with incubation period of 3-6 weeks.<sup>1</sup>

TB is a communicable disease requiring prolonged treatment. The World Health Organization (WHO) declared TB a global public health emergency in 1993 and since then intensified its efforts to control the disease worldwide.<sup>2</sup> Tuberculosis affects one third of the world's population and India alone accounts for one-fifth of the world's new TB cases.<sup>3</sup>

Global tuberculosis report (2015) released by the WHO has revealed that there were an estimated 9.6 million new TB cases 5.4 million among men, 3.2 million among women and 1.0 million among children in the year 2014.<sup>4</sup> Since the advent of HIV, the incidence of TB had steadily increased and it is responsible for 26% of all avoidable adult deaths in the developing world.<sup>5</sup> There were also 1.5 million TB deaths (1.1 million among HIV-negative people and 0.4 million among HIV-positive people) in 2014. With a timely diagnosis and correct treatment almost all people with TB can be cured. TB is slowly declining each year and it estimated that 43 million lives were saved between 2000 and 2014 through effective diagnosis and treatment.<sup>4</sup>

TB remains a major public health problem in India; India is the home of most TB patients.<sup>6</sup> TB kills more adults in India than any other infectious disease.<sup>7</sup> Unless sustained and appropriate action is taken, approximately 20 lakh people in India are estimated to die of TB in next five years. It had more new TB cases annually than any other country. In 2011, out of the estimated global annual incidence of 9 million TB cases, 2.3 million were estimated to have occurred in India.<sup>8</sup> In India, every day more than 5000 develop TB; more than 1000 people die of it (i.e. 1 death every one and half minutes). An estimated 100 million workdays were lost due to illness. Society and the country also incur a huge cost due to this disease. Nearly US\$ 3 billion indirect costs and US\$ 300 million in direct cost.<sup>9</sup> This study was conducted to assess socio-demographic determinants of tuberculosis patients attending directly observed treatment short course (DOTS) centre in Urban Ghaziabad.

## METHODS

The present observational cross-sectional study entitled was carried out in selected DOTS centres of district Ghaziabad Department of Community Medicine, Santosh Medical College, Ghaziabad. All new sputum smear positive pulmonary tuberculosis patients were taking treatment from sampled DOTS Centres. The study was carried out in one year from May 2014 to April 2015.

### Sample size

According to Government of India (2007) by using overall prevalence of defaulter 10.2% among patients put on DOTS (82).

The sample size was calculated by the formula

$$n = \frac{Z \cdot Z \cdot P \cdot Q}{L \cdot L}$$

Sample size (n)= $1.96 \times 1.96 \times 10.2 \times 89.8 / 2.0 \times 2.04 = 845.52$

=846

n= desired sample size, P= prevalence of defaulters among DOTS patient =10.2%, Q= (100-p), L= 20%.

Substituting all the values we get sample size (n)= 846.

Round figure is 850.

### Inclusion criteria

All new sputum smear positive pulmonary tuberculosis patient attended treatment in sampled dots centres whose age was >15 years from October 2014 till my desired sample size 850 patient were seen on working days.

### Exclusion criteria

Patient, whose contact information was incomplete and patient, who died or transferred to other DOTS centre were excluded.

### Sampling technique

Multistage sampling was used to cover the sample size for present study.

### Stage-I: selection of tuberculosis unit

The list of tuberculosis unit along with their designated microscopic centres and DOTS centres was obtained from district tuberculosis centre. There were two tuberculosis unit (TU) in Ghaziabad city named as 1. District tuberculosis clinic Ghaziabad 2. ESI hospital Sahibabad selected for study.

### Stage-II: selection of designated microscopic centres

In second stage three designated microscopic centres (DMCs) from each TU were selected randomly. District tuberculosis clinic Ghaziabad (TU) had five DMCs named as K. News, Khoda colony, Health post Vijay Nagar, district tuberculosis clinic Ghaziabad, R. K. Medicare Khoda colony and Santosh Medical College, Ghaziabad

Out of these three DMCs 2, 3 and 5 were selected randomly, ESI Hospital Sahibabad had five DMCs named as Vaishali Health Clinic, Vaishali; New PHC, Pasoda; New PHC, Chirodi; ESI Hospital, Sahibabad and Ashadeep foundation, Saheed Nagar. Out of five DMCs 1, 4 and 5 were selected randomly.

### Stage-III: selection of DOTs centres

All the DOTS centres under these selected DMCs were taken for study. All the new sputum smear positive (NSP) patients put on treatment on selected DOTS centres during the study period were taken for study till the desired sample size was achieved.

### Data processing and analysis

Data was coded and transferred to a master chart and simple and correlated tables were prepared and analyzed using SPSS.

## RESULTS

41.17% of TB patients were from 15-25 years age group, 30.58% from 26-35 years, 23.52% from 36-45 years and 4.70% from >45 years age group. Table 1 shows majority 54.1% of TB patients were females and 45.9% males. 75.29% TB patients were Hindus, 22.35% Muslims and 2.35% Sikh/Christian.

**Table 1: Age wise distribution of tuberculosis patients.**

Age (in years)	Number	Percentage (%)
<b>15-25</b>	350	41.17
<b>26-35</b>	260	30.58
<b>36-45</b>	200	23.52
<b>&gt;45</b>	40	4.70
<b>Total</b>	850	100

Almost half (49.41%) of TB patients were from other backward category (OBC), 35.29% from scheduled caste (SC), and 15.29% from general category. 44.71% were from nuclear family, 31.76% from joint family and 23.53% from three generation family.

**Table 2: Occupation wise distribution of tuberculosis patients.**

Occupation	Number	Percentage (%)
<b>Un employed</b>	380	45.70
<b>Un skilled worker</b>	120	14.10
<b>Semiskilled worker</b>	80	9.40
<b>Skilled worker</b>	170	20.0
<b>Clerical/shop owner</b>	10	1.20
<b>Semi-professional worker</b>	50	5.90
<b>Professional worker</b>	20	4.70
<b>Total</b>	850	100

**Table 3: Education wise distribution of tuberculosis patients.**

Education	Number	Percentage (%)
<b>Illiterate</b>	210	24.70
<b>Up to primary</b>	300	35.29
<b>Up to middle</b>	100	11.76
<b>Up to 10</b>	80	9.41
<b>Up to 12</b>	50	5.88
<b>Up to graduate</b>	100	11.76
<b>Up to post graduate</b>	10	1.17
<b>Total</b>	850	100

45.7% tuberculosis patients were unemployed, 20% from skilled worker, 14.1% unskilled worker, 9.4% semiskilled, 5.9% semi-professional, 4.7% professional and 1.2% were having their own shop (Table 2).

Table 3 depicts that 35.29% of TB patients were educated up to primary 24.70% from illiterate, 11.76% post graduate, 11.76% middle, 9.41% up to tenth, 5.88% up to twelfth and 1.17% post graduate.

Majority 54.11% of TB patients were from upper lower class. 34.11% from lower class followed by 10.58% from lower middle class, and 1.17% from upper middle class.

**Table 4: Risk factor associated with tuberculosis patients.**

Type of house	Number	Percentage (%)
<b>Kuccha</b>	110	12.94
<b>Kuccha-pakka</b>	50	5.88
<b>Pakka</b>	690	81.18
<b>Total</b>	850	100

Regarding housing Table 4 shows that majority 81.18% of TB patient lived in pakka house, 12.94% in kuccha house and 5.88% from kuccha-pakka house. Regarding smoking, it was seen that among the TB patients 76.47% smokers whereas 23.53% non-smoker. Regarding alcohol intake, it was seen that 77.65% were alcoholic and 22.35% non-alcoholic (Table 5).

**Table 5: Distribution of study subject according to their personal habit of substance abuse.**

Type of substance abuse	Number	Percentage (%)
<b>Smoking</b>		
Yes	200	23.53
No	650	76.47
<b>Total</b>	850	100
<b>Alcohol intake</b>		
Yes	190	22.35
No	660	77.65
<b>Total</b>	850	100

Regarding history of contact 83.53% TB patients had no Family history of contact and 16.47% TB patients had the history of contact with TB case in home/work place (Table 6).

**Table 6: Distribution of study subject according to the history of contact with TB case in home/work place.**

Family history of contact	Number (n=850)	Percentage (%)
<b>Yes</b>	140	16.47
<b>No</b>	710	83.53
<b>Total</b>	850	100

## DISCUSSION

The present study entitled were compared in the light of available data, information and observations made by other workers in the similar region or elsewhere.

In present study (Table 1), 41.17% of TB patients were from 15-25 years, 30.58% from 26-35 years, 23.52% from 36-45 years age group and 4.70% from >45 years age group. In a similar study done by Juvekar et al in 1995 showed that the patients interviewed were mostly 77% were up-to 45 years of age.<sup>10</sup> Gopi et al in south-India showed in their study that 39% were aged 45 years or more.<sup>11</sup>

In this study 54.1% of TB patients were female and 45.9% males. Gopi et al in 2007 in south-India showed in their study that 71% were males and 29% were female.<sup>11</sup> Kar et al conducted a study in Tamil Nadu showed that a total of 1985 people were interviewed, of whom 46% were males and 54% were females.<sup>12</sup> Vidhani et al conducted a study in Surat, Gujarat showed that 61.4% were male and 38.6% were female.<sup>13</sup> Khalil et al conducted a study in Aligarh showed that 61.4% were male and 38.6% were female.<sup>14</sup>

In present study religion wise analysis shows that 75.29% tuberculosis patients were Hindus, 22.35% Muslims and 2.35% Sikh/Christian. Kar et al conducted a study in Tamil Nadu showed that 94% were Hindu.<sup>12</sup> Vidhani et al conducted a study in Surat, Gujarat showed that 78.4% were Hindu while rest (21.6%) were Muslims.<sup>13</sup> Khalil et al conducted a study in Aligarh showed that 78.4% were Hindu while rest (21.6%) were Muslims.<sup>14</sup>

In this study, 44.71% was from nuclear family. 31.76% joint family and 23.53% three generation family. 45.7% tuberculosis patients were unemployed, 20% skilled worker, 14.1% unskilled worker, 9.4% semiskilled, 5.9% semi-professional, 4.7% professional and 1.2% their own shop. A similar study by Gopi et al in south-India showed in their study that 35% were unemployed.<sup>11</sup>

In this study, 35.29% of TB patients were educate up to primary, 24.70% patient illiterate followed by graduate (11.76%), middle (11.76%), 9.41% educated up-to 10<sup>th</sup>, 5.88% were up-to 12<sup>th</sup> and (1.17%) were post graduate. In a similar study done by Juvekar et al showed that 64% TB patients had some education.<sup>10</sup> Gopi et al in south-India showed in their study that 39% were illiterate.<sup>11</sup> Vidhani et al conducted a study in Surat, Gujarat showed that 32% were illiterate.<sup>13</sup> Kar et al conducted a study in Tamil Nadu showed that 39% of the study population were illiterate.<sup>12</sup>

54.11% of TB patients were from upper lower class, 34.11% from lower class, 10.58% from lower middle class, and 1.17% from in upper middle class. In a similar study done by Juvekar et al, showed that 59% of TB patients were from lower socioeconomic class.<sup>10</sup> A

similar study by Kar et al conducted in Tamil Nadu, showed that More than 70% of the people belonged to lower income group.<sup>12</sup>

76.47% TB patients were smoker whereas 23.53% were non-smoker. A similar study by Gopi et al in south-India showed that 41% smokers and 59% were non-smoker.<sup>11</sup>

In present study 77.65% TB patients were alcoholic and 22.35% were non-alcoholic. A similar study by Gopi et al in south-India showed that 31% were alcoholics and 69% were non-alcoholic.<sup>11</sup>

## CONCLUSION

The conclusions derived from the study that majority 41.17% of TB patients belonged to 15-25 years age group. Majority 54.1% of TB patients were females that compared to 45.9% were males. Among tuberculosis patients majority 58.82% were married as compared to 40% were unmarried and least 1.18% were widow. 75.29% tuberculosis patients were Hindus as compared to 22.35% were Muslims and least 2.35% were Sikh/Christian. Regarding smoking, it was seen that among the TB patients 76.47% were smoker whereas 23.53% were non-smokers. Regarding alcohol intake, it was seen that among the TB patients 77.65% were alcoholic whereas 22.35% were non alcoholic.

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