



SOCIO-DEMOGRAPHIC FACTORS AFFECTING THE TREATMENT OUTCOME IN PATIENTS OF TUBERCULOSIS

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ABSTRACT

Introduction: Tuberculosis is today the biggest infectious killer among young people and adults. Besides the disease burden, tuberculosis also causes an enormous socio-economic burden to India. DOTS have certainly put a dent to the problem of tuberculosis but still the desired results are not achieved. The present study is an attempt to know about the socio-demographic factors affecting the treatment outcome in patients of tuberculosis under DOTS.

Methods: The study was conducted on a total of 326 patients who were residing in the area of PHC Verka and registered with District Tuberculosis Centre, Amritsar. House to house visits were done and information about the socio-demographic parameters were recorded on a pretested and preformed questionnaire evolved for the study.

Results: Majority, 43.40% patients belong to 15-29 yrs of age. 57.90% were males and 42.10% were females. Male to female ratio was 1.37:1. Present study reveals that 90.6% of females had favourable outcome while favourable outcome was seen in 80.3% males. The result was found to be statistically significant ($p=0.03$). Relation between the literary status and outcome was found to be significant ($p=0.03$).

Conclusion: Socio-demographic factors affecting the treatment outcome were sex and literary status. Marital status, socioeconomic status, type of house, type of family and overcrowding were not significantly associated with treatment outcome.

Key words: Socio-demographic factors, Treatment outcome, DOTS

INTRODUCTION

Tuberculosis a highly feared disease, known for centuries to affect, debilitate, impoverish large sections of the populations and continues to ravage the world and especially the developing world. Tuberculosis is today the biggest infectious killer among young people and adults. TB is the second leading cause of death from an infectious disease worldwide after HIV¹. In 2013, there were an estimated 9 million incident cases of TB globally, equivalent to 126 cases per 100 000 population. Of the 9 million incident cases, an estimated 550 000 cases were children and 3.3 million occurred among wom-

en. There were an estimated 11 million prevalent cases of TB in 2013, equivalent to 159 cases per 100 000 population².

According to TB India 2014 annual status report, in 2012, out of the estimated global annual incidence of 8.6 million TB cases, 2.3 million were estimated to have occurred in India³.

Besides the disease burden, tuberculosis also causes an enormous socio-economic burden to India. Tuberculosis primarily affects people in their most productive years of life with important socio-economic consequences for the household and the

disease is even more common among the poorest and marginalized sections of the community. While two thirds of the cases are male, tuberculosis takes a disproportionately larger toll among young females, with more than 50% of female cases occurring before 34 years of age⁴. Recognition that TB is intimately associated with poverty and related socioeconomic determinants led to inclusion of TB control among the highest health priorities for development.

Sociodemographic factors such as education, employment & socioeconomic class affects treatment outcome. A study by Gajbhare et al by shows that the treatment success rate was more in males, educated patients, those who were unemployed & those who were in middle socioeconomic class⁵.

Study by Kanugo S showed that in the patients with good outcome, the majority were literate and the literacy status was found to be statistically significant with treatment outcome. Most of the patients (48.4%) with good treatment outcome had a high SLI⁶. This study aimed to determine certain sociodemographic factors that contribute to TB treatment outcome.

METHODS

The study was conducted in the area of Primary Health Centre (PHC) Verka which is the field practice area of department of Community Medicine, Government Medical College, Amritsar. Total population of Verka block is 2,64,567 out of which 1,60,491 is rural and 1,04,076 is urban.

All the patients belonging to the area falling under PHC Verka and registered with District Tuberculosis Centre, Amritsar from 1st April 2010 to 31st March 2011 were included in the study keeping in view the time period of treatment of category I & II which is six and eight months respectively. Patients of category III were also included because at time of registration (2010) there were three categories.

List of patients suffering from tuberculosis and their complete address who were residing in the area of PHC Verka and treatment record of these patients of tuberculosis was collected from District Tuberculosis Officer.

Data collected from the district tuberculosis center included demographic information, patient's address, treatment information including dates of tuberculosis registration, treatment initiation, treatment category, pre-treatment sputum result and record of follow up sputum examinations. Patients once started on treatment were included in the study.

Houses of all the patients were located using information available from the tuberculosis register, DOT provider or staff who knew the patients. If the patient was not available in the first visit, then every effort was made to contact the patient by subsequent visits as per convenience and suitability to the patient. Maximum five visits were made to trace the patients. In the event a patient no longer lived at a specific address, help of local neighbours and guides was taken to trace the patients. Patients who had migrated to another district were excluded from the study.

The patients who were below 14 years of age, the adult family member who accompanied the patient to the DOT centre was interviewed and the consent of the parent/ guardian was taken. The patient or the care taker was informed about the purpose of the study and informed consent was taken from each study subject in their own vernacular language.

Patients on DOTS therapy were only included for the study. The information regarding name, age, sex, occupation, marital status, type of family, housing, socio economic status was obtained personally by interviewing the patient. The information was recorded on a pretested and preformed questionnaire evolved for the study.

Information regarding follow up sputum examination was obtained from the patient's treatment card. In about 37 patients the information regarding sputum follow up was not available from the treatment card then an attempt was made to crosscheck the record from District Tuberculosis Centre, Amritsar.

Various criteria used for the study were:

For socio-economic status -Modified Kuppaswami's socio-economic status scale 2010 was used which takes into consideration education, occupation and monthly income.

For overcrowding-Criteria of persons per room was used.

Severity of sputum- Criteria for sputum grading was done according to RNTCP guidelines⁷.

Treatment -Criteria for patient treatment outcome was determined according to RNTCP guidelines⁵. Treatment outcome of cases was stated as cured, treatment completed, failure, default, transferred out and died.

Approval of college ethical committee was granted at the time of submission of the plan of the study. All the information so collected was compiled, analysed statistically with help of Epi info version 3.5.3. Chi-square test was used to evaluate differences in categorical variables and valid conclusions were drawn

RESULTS

The present study to assess the outcome of Directly Observed Treatment Short Course(DOTS) under Revised National Tuberculosis Control Programme was carried out on 326 tuberculosis patients belonging to the area falling under PHC Verka and registered with District Tuberculosis Center, Amritsar from 1st April 2010 to 31st March 2011. Following observations were made.

Out of the total 326 patients registered with District Tuberculosis Centre, Amritsar, only 228 (69.94%) patients were interviewed. 59 (18.10%) patients could not be traced as most of them had migrated to new place and some of them could not be traced due to their incomplete or wrong addresses. 36 (11.04%) had died by the time of interview. 3 (0.92%) patients did not give consent for interview.

Table 1 shows Distribution of patients according to age and sex. Among the 228 patients studied, 132 (57.90%) were males and 96 (42.10%) were females. Majority 99(43.40%) patients belonged to 15-29 yrs of age . 68.9% males and 65.6% females belonged to economically productive age group i.e 15-44 years

Table 1: Age and Sex wise distribution of patients

Age Group (years)	Male N=132 (%)	Female (N=96) (%)	Total N=228
1-14	9 (42.9)	12 (57.1)	21
15-29	55 (55.6)	44 (44.4)	99
30-44	36 (65.5)	19 (34.5)	55
45-59	24 (60)	16 (40)	21
60-74	8 (61.5)	5 (38.5)	99

Table 2: Distribution of patients showing outcome according to category of treatment during interview

Category of treatment	Outcome According To Interview				Total
	Cured (%)	Treatment completed (%)	Defaulted (%)	Failure (%)	
I	75 (46.58)	65 (40.37)	18 (11.18)	3 (1.86)	161
II	23 (46.93)	16 (32.65)	8 (16.32)	2 (4.08)	49
III	0 (0.0)	14 (77.77)	3 (16.66)	1 (5.55)	18
Total	98 (42.98)	95 (41.66)	29 (12.71)	6 (2.63)	228

$\chi^2 = 2.278$ df=2 p=0.3201

Table 3: Distribution of cases showing socio-demographic factors related to outcome

Socio-demographic factor	Favourable outcome (%)	Unfavourable outcome (%)	Total	Chi square	P value
Sex					
Male	106 (80.3)	26 (19.7)	132	4.5570	0.032
Female	87 (90.6)	9 (9.4)	96		
Literacy status					
Illiterate	65 (77.4)	19 (22.6)	84	6.94	0.03
Below matric and matric	92 (89.3)	11(10.7)	103		
Above matric	35 (92.1)	3 (7.9)	38		
socio economic status					
Lower	10 (83.3)	2 (16.7)	12	2.52	0.639
Upper lower	15 1 (83.9)	29 (16.1)	180		
Lower middle	19 (82.6)	4 (17.4)	23		
Upper middle	11 (100.0)	0 (0.0)	11		
Upper	2 (100.0)	0 (0.0)	2		
Marital Status					
Married	110 (82.1)	24 (17.9)	134	1.63	0.50
Single	83 (88.3)	11 (11.7)	94		
Type of Family					
Joint	68 (88.3)	9 (11.7)	77	1.20	0.27
Nuclear	125 (82.8)	26 (17.2)	151		
Overcrowding					
Present	151 (83.0)	31(17.0)	182	1.9642	0.16
Absent	42 (91.3)	4 (8.7)	46		
Type of house					
Kuchtha	21 (72.4)	8 (27.6)	29	3.88	0.1432
Kutchu-pucca	91 (85.8)	15 (14.2)	106		
Pucca	81 (87.1)	12 (12.9)	93		

*Favourable outcome: cured and treatment completed. Unfavourable outcome: failure, default and transfer out.

Table II shows that the outcome during interview in all the three categories. In Category I, 75(46.58%) patients were cured, 65 (40.37%) patients completed their treatment, 18(11.18%) patients defaulted and in 3(1.86%) cases it was failure. In category II, 23(46.93%) patients were cured, 16(32.65%) patients completed their treatment, 8(16.32%) patients defaulted and in 2(4.08%) cases it was failure. In Category III, 14(77.77%) patients completed their treatment, 3(16.66%) defaulted and in 1(5.55%) it was failure. The treatment outcome was categorized as favourable in cases of cure and treatment completed and as unfavourable in cases of failure, default and transfer out. Statistical test was applied between category of treatment and favourable and unfavourable. The result was not found to be statistically significant.

Table 3 shows the relation of socio-demographic profile of the patients with their treatment outcomes. Out of 132 males, 106(80.3%) had favourable outcome and 26(19.7%) had unfavourable outcome. Out of 96 females 87(90.6%) females had favourable outcome and 9(9.4%) had unfavourable outcome.

According to literacy status, favourable outcome was maximum i.e. 92.1% in those who were above matric and 89.3% among those who were matric and below matric. While unfavourable outcome was 22.6% among the illiterate group. The result was found to be highly significant ($p=0.03$).

Other socio-demographic factors like socioeconomic status, marital status, type of family, overcrowding and type of house did not affect the treatment outcome.

DISCUSSION

In the present study, 87.2% males and 82.3% females belonged to 15-59 years age group. Male to female ratio was 1.37:1 approximately. According to TB India 2012 report, tuberculosis primarily affects people in their most productive years of life. Almost 70% of TB patients are between 15-54 yrs of age⁴.

According to WHO global TB report 2014, the male: female ratio was 1.6 globally, ranging from 0.7 to 2.9 among high burden countries⁸.

Study conducted by Mohrana et al (2009) showed that 91.4% cases belonged to economically productive age group 15-59 years⁹.

Table II illustrates, in Category I, 140(87.0%) patients were cured and treatment completed (favourable outcome) while 21(13.0%) patients belonged to defaulted and failure group(unfavourable outcome). In category II, 39(79.6%) patients were cured and treatment completed (favourable out-

come).10(20.4%) patients belonged to defaulted and failure group(unfavourable outcome). In Category III, 14(77.80%) patients were cured and treatment completed (favourable outcome) while 4(22.3%) patients belonged to defaulted and failure group(unfavourable outcome). In study by Mittal and Gupta (2011) in patients of Agra city, 45.4% patients completed the treatment and 26.2% were cured. Among them, 15.1% defaulted, 5.9% died, 2.0% failed on treatment while 5.3% were transferred out to other centers¹⁰. Similar study conducted at Amritsar by Nagpal M. and Devgun P (2013) showed that among Category I patients 84.4% had favourable outcome and 15.6% had unfavourable outcome¹¹.

A perusal of table III shows that female sex and education were significantly associated with the favourable treatment outcome while other socio-demographic factors were not significantly associated with treatment outcome. A Study by Fatiregun et al (2009) also showed that males had a higher risk of poor treatment outcomes than females¹². Ahmad and Velhal (2013) found that the cure rate was significantly higher in females (53%) compared to males (39.35%), which is well supported by Mukherjee *et al.* (2012)^{13,14}. The treatment completion rate was also higher in females in both the studies. Thus, despite facing obstacles such as stigma, negligence, poverty, and low case detection rate, better results were seen in females.

In the present study favourable outcome was maximum (92.1%) in those who had studied above matric class. Similar result was seen in study by Kanungo S et al (2015) in which the patients with good outcome, the majority (67.6%) were literate and the literacy status was found to be statistically significant with treatment outcome ($P < 0.05$)⁶.

Present study showed other socio-demographic factors like socioeconomic status, marital status, type of family, overcrowding and type of house did not affect the treatment outcome. Study by Pandit and Choudhary (2006) reported that socioeconomic status were not significantly associated with outcome¹⁵. A study by Dudala SR et al showed that there is no significant association between overcrowding and treatment outcome¹⁶.

CONCLUSION

From our study we conclude that female sex and education were significantly associated with the favourable treatment outcome while socio-demographic factors like marital status, type of family, and socioeconomic status did not affect the treatment outcome.

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