Original Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20164254

Relationship between various social and demographic factors and its relation with treatment outcome in category II cases of tuberculosis in corporation area of Jamnagar, Gujarat, India

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Received: 29 September 2016 **Accepted:** 10 October 2016

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ABSTRACT

Background: Tuberculosis is a social disease with medical aspect. It has also been described as barometer of social welfare. India is the second-most populous country in the world. One fourth of the global incident TB cases occur in India annually. Various social and demographic factors are variably related to poor adherence.

Methods: A longitudinal study was designed and all category II TB patients registered for DOTS treatment during period from July 2014 to December 2014 (2 Quarter), of corporation area in tuberculosis register of district TB centre were included in present study. Considering exclusion criteria total 89 patients were studied in present study.

Results: Out of 89 patients mean age (+SD) of the patients were 38±16.1 years, 75.28% were male, 40.45% were labourers, 29.31% patients were illiterate, over all treatment success is 59 (66.29%). Out of 63 literate patients, 79.36% patients were successfully treated, while Among 26 illiterate patients, only 34.61% patients were successfully treated. Treatment outcome lower class (Modified B.G. Prasad classification class IV and class V) having only 53.70% treatment success rate.

Conclusions: The findings of this study suggest that improvement in quality of life is necessary for better outcome. Future programme or research should focus on improvement of quality of life as well as reducing the duration of treatment for better compliance with.

Keywords: Category II, Successful outcome, Tuberculosis

INTRODUCTION

Tuberculosis remains a major public health problem in the world. It infect one third of world population at any given point of time of whom 5–10% will develop clinical disease during their life time. Tuberculosis is a social disease with medical aspect. It has also been described as barometer of social welfare. Social factor include many non-medical factor such as poor quality of life, poor housing, overcrowding, population explosion, under-

nutrition, smoking, alcohol abuse, lack of education, large family, lack of awareness of illness etc. ¹

India is the second-most populous country in the world. One fourth of the global incident TB cases occur in India annually. In India, 2013 Incidence (includes HIV+TB) is 171per 100000 population and Prevalence (includes HIV+TB) is 211 per 100000 population 1 with mortality is 19 (including HIV + TB) per 100000 population. Case detection, all forms (%) 58 per thousand person.^{2,3}

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Considering the long term nature of the therapy, the socio-demographic and clinical profile of the patients could have an impact on treatment success of DOTS. To assess the progress of the patients at different time points during and at the end of treatment, the study of the socio-demographic factors (Such as age, sex, economic characteristic, effect of smoking, symptoms, treatment type, weight gain after treatment) is important. This study is done to know socio-demographic profile and treatment outcome of category II TB patients in a corporation area of Jamnagar, Gujarat, India.

METHODS

A longitudinal study, conducted over a period of 15 months from June 2014 to August 2015. The study was conducted on Tuberculosis Patients registering for treatment under RNTCP in the District tuberculosis centre in study corporation area. All category II TB patients registered for DOTS treatment during period from July 2014 to December 2014 (2 Quarter), of corporation area in tuberculosis register of district TB centre were included in present study.

After exclusion of newly diagnosed tuberculosis patients, patient not on RNTCP treatment (private AKT), tuberculosis patients on Non-DOTS treatment, Patient who could not be traced out after 3 visits (either migrated with in short time of starting treatment or given wrong address), patient who were from out of corporation area (transferred out), during treatment patient shifted to cat IV treatment, patient who die due to other causes than tuberculosis or its complication were excluded from study. So, present study was done on 89 category II patients.

In present study relapse cases defined as patients have previously been treated for TB, were declared cured or treatment completed at the end of their most recent course of treatment, and are now diagnosed with a recurrent episode of TB (either a true relapse or a new episode of TB caused by re-infection), Lost to follow up (defaulter) defined as have previously been treated for TB and were declared lost to follow-up at the end of their most recent course of treatment (these were previously known as treatment after default patients), failure patients are those who have previously been treated for TB and whose treatment failed at the end of their most recent course of treatment.

First visit was done after patient registered for DOTS treatment, within two month of starting of treatment, at this time demographic profile, social status, environmental condition, personal history, family history, past history regarding tuberculosis, addiction and clinical symptoms of disease were noted. 1st follow up was done after the end of intensive phase i. e. during 3 to 4 months of DOTS initiation. During this visit adherence with treatment, sputum report of the end intensive phase noted. 2nd follow up was done at the end of continuation phase,

and before the end of July 2015. During this visit history regarding symptoms and conversion report were noted.

The data entry was done using EPI INFO version 3.5.3 and data analysis was done using Microsoft Office Excel 2007 and MedCalc.

RESULTS

A total of 89 Category II TB patients were registered at district tuberculosis center for treatment between July 2014 and December 2014. The mean age (+SD) of the patients were 38±16.1 years and around 43% of patients were within the age range of 31-60 years. In present study the distribution of study population shows that the male were 75.28% and the female were 24.72% (Table 1).

Table 1: Distribution of category II patients according age and sex (n = 89).

Age group	Male (%)	Female (%)	Total (%)
0-30	21	13	34
31-60	34	5	39
>60	12	4	16
Total	67 (75.28)	22 (24.72)	89 (100)

Table 2: Socio-demographic characteristic of category II cases (n = 89).

Characteristic	Frequency	Percentage				
Family size						
1 – 5	39	43.82				
5 – 8	43	48.31				
>8	07	7.87				
Educational status						
Illiterate	26	29.31				
Primary	27	30.33				
Secondary	20	22.47				
Higher secondary	08	8.99				
Graduate and above	08	8.99				
Social class	Social class					
I	8	8.99				
II	10	11.24				
III	17	19.10				
IV	26	29.21				
V	28	31.46				
Occupation						
Service	07	7.86				
Labourer	36	40.45				
Business	13	14.61				
Study	07	7.86				
Housewife	10	11.24				
None	6	6.74				

Around 48.31% patients were having family size of 4 to 8. In study population individuals educated till primary classes were 30.33% while only 40.45% were educated secondary level and above. In present study there were 40.45% labourer, 22.47% were employed either doing business or services. Around 60% patients were belonging to lower middle and lower class (Table 2).

Around 29% patients were illiterate. With respect to the type of TB, Relapse patients were around 67% and of them 70.00% patients successfully treated, Lost to follow up was around 29% and of them 56.00% patients successfully treated. Successful treatment outcomes of the total 89 category II patients who initiated anti-TB treatment were around 66.29% (Table 3).

Over all treatment success is 59 (66.29%). Unsuccessful treatment includes treatment failure, lost to follow up patients (defaulters), patient who switched on MDR treatment and death (death during any time on treatment either due to disease or related complication). Of total 54 below 40 years age group patients 75.92% were successfully treated and out of 67 male patients 43 (64.17%) patients were successfully treated. When

comparing treatment outcome with education status, out of 63 literate patients, 79.36% patients were successfully treated. Among 26 illiterate patients, only 34.61% patients were successfully treated. And relationship between education and treatment outcome was found statistically significant (P=0.0001) (Table 4). On comparison with social class and treatment outcome lower class (Modified B.G. Prasad classification class IV and class V) having only 53.70% treatment success rate. And relationship between social class and treatment outcome was found statistically significant (P=0.003) (Table 4).

Table 3: Distribution of Category II patients according outcome of treatment (n = 89).

Type of Category II	Total cases	Successful (%)	Unsuccessful (%)
Failure	4	3 (75.00%)	1 (25%)
Lost to follow up	25	14 (56.00%)	11 (44.00%)
Relapse	60	42 (70.00%)	18 (30.00%)
Total	89	59 (66.29%)	30 (33.71%)

Table 4: Association of various demographic and social factors with treatment outcome in category II patients (n = 89).

Characteristic	Treatment outcome			
	Successful (%)	Unsuccessful (%)	Relative risk (95%)	P value
Age (years)				
0 -40	41 (75.92%)	13 (24.08%)	1.00	
>40	18 (51.42%)	17 (48.58%)	1.47 (1.03-2.11)	0.03
Sex				
Female	16 (72.72%)	6 (27.28%)	1.00	
Male	43(64.17%)	24 (35.83%)	1.13 (0.82-1.54)	0.63
Family size				
1–5	28 (71.79%)	11 (28.21%)	1.00	
>5	31(62.00%)	19 (38.00%)	1.16 (0.86-1.55)	0.45
Educational status				
Literate	50 (79.36%)	13 (20.64%)	1.00	
Illiterate	9 (34.61%)	17 (65.39%)	2.29 (1.33-3.95)	0.0001
Social class				
Upper class	30(85.71%)	5 (14.29%)	1.00	
Lower class	29 (53.70%)	25 (46.30%)	1.60 (1.20-2.12)	0.003

DISCUSSION

The effectiveness of tuberculosis treatment has been improved substantially since the implementation and expansion of DOTS strategy.⁴ However, this strategy is being challenged by poor treatment outcomes including low adherence, treatment failure and death in many countries, especially in low and middle-income countries.⁵ The WHO has recommended routine

monitoring of treatment outcomes in order to determine the effectiveness of TB control program and to circumvent the adverse outcomes.

In this study, we evaluated the treatment outcomes of 89 category II patients registered in district tuberculosis register during July 2014 to December 2014. In present study, maximum numbers of patients (42 patients) were within the age range of 30-59 years and the mean age of

patients was 38±16.1 years. Similar study conducted by Rajeswari R showed that 69% male and 84% female were in the economically productive age group 15 to 49 years. In an earlier study conducted by Sarpal SS et al the mean age of the patients in category II was 35±15.4years. Males 67 (75.28%) outnumbered females 22 (24.72%) in this study. Similar trends have been observed by Jha et al with 1198 (70%) males and 514 (30%) females in the study on retreatment TB cases. Education is one of the most important factor. In present study it 29.31% patients were illiterate, and of them only 15.25% were successfully treated. And relationship between education and treatment outcome was found statistically significant. This shows important relationship between education and treatment outcome.

In the present study among 89 patients around 67% were relapse patients, around 29% were lost to follow up patients and around 4% were failure cases while in a study done by Jha et al 33.0% were relapse patients, 37.6% were treatment after default, and 8.9% were failure cases.8 In one study done in a tuberculosis unit (TU) of Howrah district, West Bengal shows Overall 2.1% were relapse, 1.0% failure, 3.8% treatment after default and 14.7% were others category. Cure rate was highest in the failure, relapse and retreatment patients. In present study treatment success rate among upper class found around 85.71% and among lower class 53.70%. The lower success rate in lower class shows the lack of awareness of severity of disease. The lower class individuals are either daily workers (labourer), thus they could not give enough time for their own health. There was significant association between treatment success and Socioeconomic class of an individual (P=0.003).

CONCLUSION

In category II, duration of treatment as well as patient compliance is most important factors. Social factors such as education, socioeconomic class and occupation are most important factors that decide patient compliance and ultimately successful treatment outcome. In present study we found that age, literacy and social class are significantly associated with unsuccessful outcome. Future policy, programme or research should focus on improvement of quality of life as well as reducing the duration of treatment for better compliance with.

Funding: No funding sources Conflict of interest: None declared Ethical approval: Study was approved by M. P. Shah Medical College Institutional Ethics Committee, Guru Gobindsingh Government Hospital, Jamnagar, Indi (reg. No: ecr/6/inst/guj/2013). Iec protocol: 10/2/14.

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Cite this article as: Chauhan M, Mehta JP, Kansagara T, Dave P, Patel M. Relationship between various social and demographic factors and its relation with treatment outcome in category II cases of tuberculosis in corporation area of Jamnagar, Gujarat, India. Int J Community Med Public Health 2016;3:3353-6.