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Original Article

A Study on Socio-Demographic Profile and Treatment Outcome of Tuberculosis Patients Registered Under RNTCP in Urban Area of Jodhpur, Rajasthan

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Abstract
Background: *Tuberculosis affects all persons and has an enormous economic impact. India accounts for a quarter of the global burden of tuberculosis. It is a chronic stigmatized public health and social challenge in almost all communities of the developing countries.*
Aims: *To find out the socio-demographic profile and treatment outcome of tuberculosis patients.*
Material and Methods: *The study was a retrospective type; conducted in three tuberculosis units of Jodhpur city. Data were collected from tuberculosis registers and by interview. The data was grouped into cured and non-cured group. Chi-square test was applied as a test of significance.*
Results: *In study, total of 363 tuberculosis patients interviewed in which59.5% were males and 40.5% were females; 66.9% were in 15-45 years age group. 38.3% were illiterate and only 5.5% were graduate. By occupation 34.7% employed and 65.3% unemployed. Mostly (33.6%) belonged to socioeconomic class V. There were 34.7% cured, 50.1% had completed treatment, 1.1% had failure treatment, 8.3% defaulted, 4.1% died and 1.6% transferred out. Majority of patients (67.8%) were in category-I followed by (22.7%) in category II and (9.9%) patients were being treated as category-III.*
Conclusion: *Study revealed that RNTCP has effectively reached out to all. The high cure rate was due to concrete efforts by health and non-health personnel in the form of strict supervision and monitoring.*
Keywords: *Tuberculosis, Socio-demography, Treatment Outcome, Cured.*

Introduction

Tuberculosis is a disease of ancient era that affects all persons and has an enormous economic impact on many countries.[1,2]

Still, it remains one of the most worldwide serious health problems, despite the fact that the causative organism was discovered more than 100 years ago with highly effective drugs and vaccines are available making tuberculosis a curable and preventable disease.[3]

Globally, the best estimate is that 10 million people developed tuberculosis disease in 2017. There was a total of 1.6 million tuberculosis related deaths.[4] The estimated incidence of

tuberculosis in India was approximately 2.8 million accounting for about a quarter of the world's tuberculosis cases and mortality due to tuberculosis (exclude HIV) was 4,23,000.[5]

To control the menace of tuberculosis and its load, National Tuberculosis Control Programme (NTCP) was launched throughout the country in 1962. After review of NTCP, the Government of India adopted the newly developed Directly Observed Treatment, Short course (DOTS) strategy and initiated Revised National Tuberculosis Control Program (RNTCP) in phased manner during 1993, which evolved through pilot phase, Stop Tuberculosis Strategy, National Strategic Plan and currently, The End Tuberculosis Strategy with the vision of Tuberculosis Free World and Goal of Tuberculosis Elimination by 2035. Government of India has shifted its treatment approach from intermittent DOT (regimen) to daily DOT in 2017.[6]

The key to the success of the DOTS strategy is that it places the responsibility for curing tuberculosis patients on the health workers; not the patients. The one important component of the DOTS strategy is systemic monitoring and accountability. That means a systemic recording, reporting and evaluating the treatment outcome of every patient treated at different levels of the health systems.[7]

Objective

To find out the profile of socio-demographic factors of tuberculosis patients and to look for the treatment outcome and the factors that affect the outcome.

Material and Methods

The study was a retrospective type, carried out at all three tuberculosis units (KN chest hospital, Satellite hospital Paota and DTC Jalori gate) of urban area of Jodhpur city, Rajasthan from 1st July 2010 to 30th September 2010. Total 363 patients were registered during study period. All data regarding age, sex, religion, marital status, education status, occupation, socio-economical class, type of family, number of family members, social habits and outcome of patients in term of cured, treatment complete, treatment failure, defaulter, transferred out and died; were collected by interviewing all new tuberculosis patients, registered under RNTCP in all three tuberculosis units during study period so that the treatment outcome of those patients would be available by next 6 to 8 months. All the patients were interviewed, door to door, at their homes with the help of health visitor. These patients were followed up for sputum examination by smear microscopy during 3 visits carried out namely at the end of intensive period, mid-way of continuation phase and at the completion of treatment regimen. The final outcome and other relavant data were confirmed with the help of TB register. The data collected was grouped into cured and non-cured group and expressed in percentage. The cured group includes all those who were declared cured and completed the treatment. The non-cured group includes treatment failures, defaulters, died and transferred out cases. All collected data were transferred in a computer using excel sheet. Chi-square test was applied as a test of significance using SPSS version21.0.A p value < 0.05 was considered as significant. Tuberculosis patients, those were not on DOTS regime and not gave consent, excluded for the study.

Result and Discussion

During study period, a total of 363 patients were registered. Of these, 59.5% were males and 40.5% were females. DV Parmar et al also found 68.1% males and 31.9% females in their study.[8]The higher proportion of male could be because of their higher chances of exposure to the sources of tuberculosis infection.

Mostly patients 243 (66.9%) were in economically productive age group (15-45 years). Quy HTW also found similar result that 79.5% of patients were in 15-54 years age group.[9]

Majority were Hindu (74.1%) by religion in our study. Study of Vashney AM et al found 74% of the study population were belonged to Hindu community.[10]

Nearly 3/4th of the study population (76.6%) were married and 14.6% were unmarried. Study done by Mohanarani et al found 63% married, 26% unmarried, 8% divorced and 3% widower.[11]

Education status shows that 38.3% patients were illiterate and among literate group (61.7%), majority (22%) studied upto primary level, 21.2% were educated up to middle level, 12.9% were educated up to higher secondary level and only 5.5% had an education level of graduate or above. In a study of Muniyandi et al, 43% were illiterate and 67% were literate.[12]

By occupation, 34.7% patients were unemployed, 65.3% were employed. Among male patients, most of them (47.3%) were labourer and among female patients, majority were housewives. More than half study population (55.6%) had nuclear families. Mishra A et al also found in their study that 15.1% were students, 38.8% were unemployed/housewives, 14.1% were unskilled labourer, 18.3% were skilled labourer and 13.8% were in service class.[13]

It was observed that maximum numbers of patients (51.2%) had 4-8 family persons followed by (24.5%) had>8 family persons.

Majority of study population (33.6%) belonged to socioeconomic status class V and 4.13% in class I according to modified BG Prasad classification. Chadha et al also found majority of patients 79% belonging to lower socio-economic class.[14] Bhattacharya Krishna das et al found that 49.2% of the patients were from class IV followed by 25% class III supporting that TB is concentrated much in the lower socio-economic groups.[15]

227 (62.5%) patients had habits of Alcoholism/ Smoking/Tobacco consumption. Mostly patients (42.3%) were smoker followed by 32.2% alcoholics. Majority of the male patients were smokers and alcoholics; whereas tobacco chewing was the major habit among the female patients (51.7%). Subodh K et al found that 50% were smokers, 20% were alcoholic and 5% were drug abusers.[16]

Our study observed that cure rate was more (91.8%) in females. The ratio of cure rate between male and female was 1:1.3 and it was found statistically significant. In a study of Karnataka, cure rate was found to be 75% among females and 64% among males, compliance to treatment, cure and response to defaulter retrieval was better among female patients.[17]

Cure rate reported more than 90% in age group 0-24 years and > 65 years in our study. It is also statistically significant. Sutapa Mandal et al observed in their study that cure rate was 87.07% in 15-44 years age group and was statistically significant.[18]

Cure rate were higher in Hindu community (87.4%) than other communities; which is found statistically significant.

Cure rate were found higher (86.1%) in nuclear family. Marital status, type of family and number of family members had no any influence with cure rate because it was found statistically insignificant in our study.

It was found in study that as the level of education increased, cure rate were also increased. It was also found statistically significant. Thejeshwari HL et al and Pandit N et al also observed similar result that cure rate was more (94.4%) and (86.8%) in literacy group respectively.[19,20]

According to occupational level, it was statistically insignificant for cure rate. The lowest and highest cure rate was found in unemployed patients (78.3%) and in labourer class (89.1%) respectively. Diel et al observed that unemployment was considered as a risk factor for persistence of the disease.[21]Ahmed et alalso found that the cure rate was high among professionals and businessmen.[22]

The cure rate also influenced by socio-economic status of patients which was also statistically significant. As socio-economic level increase, cure rate were also increased. Johnson et al also observed that patient's economic situation had important determinant in treatment compliance

and cure rate.[23] Belo et al. revealed that unsuccessful treatment was associated with socioeconomic status.[24]

It was observed that majority of patients (85.7%) cured who had no any habits. 79.7% patients with habits were cured. Gajalakshmi et al revealed that mortality from Tuberculosis is about 4 times higher among smokers than non-smokers.[25]Diel et al had also proved that the risk of treatment interruption was 6 times higher among alcoholics (OR=0.6), 5 times higher among the drug abusers (OR=5.2) than in other patients.[21]

The study revealed that among 363 patients, 34.71% were cured, 50.14% had completed treatment, 1.1% had failure treatment, 8.26% defaulted, 4.13% died and 1.65% transferred our during study period. (Table 2) Sutapa Mandal et al observed that in respect to treatment outcome, among 180 patients, 37.8% were cured, 42.8% completed their treatment, 1.2% failure, 15% defaulted and 2.7% died during treatment period.[18] Thejeshwari HL et al found in their study that out of 123 patients38.2% were cured, 25.2% had completed treatment, 7.3% died, 3.2% failure, 23.6% defaulted and 2.4% transferred out.[19]

Majority of patients 264 (67.77%) were in category-I. 81 (22.7%) patients had past history of TB and treated for the same, so they were classified as category-II. Only 36 (9.92%) patients were being treated as category-III. (Table 2)

DV Parmar et al found similar result that there were 70%, 27.7% and 6.3% patients classified as category I, II and III respectively.[8] Amitava Chakraborty et al also found that there were 41.45%, 18.39% and 40.21% belonged to category-I, II and III respectively.[26]

Table 1: Distribution of patients according to Socio-demographic profile and treatment outcome

Socio-demographic profile	Treatment Outcome		Total (%)	x^2 *p* value
	Cured (%)	Not cured (%)		
Sex				
Male	176 (81.5)	40 (18.5)	216 (59.5)	x^2= 6.82 *p* value = 0.009
Female	135 (91.8)	12 (8.16)	147 (40.5)	
Age (years)				
0-14	23 (100)	0 (00.00)	23 (06.3)	x^2= 21.38 *p* value = 0.002
15-24	71 (94.67)	4 (05.33)	75 (20.7)	
25-34	78 (86.67)	12 (13.33)	90 (24.8)	
35-44	63 (80.77)	15 (19.23)	78 (21.5)	
45-54	36 (75.00)	12 (25.00)	48 (13.2)	
55-64	15 (68.18)	07 (31.82)	22 (06.1)	
>65	25 (92.59)	02 (07.41)	27 (07.4)	
Religion				
Hindu	235 (87.4)	34 (12.6)	269 (74.1)	x^2= 1.90 *p* value= 0.168
Others	76 (80.2)	18 (19.8)	94 (25.9)	
Marital Status				
Married	230 (82.73)	48 (17.27)	278 (76.6)	x^2= 9.28 *p* value= 0.01
Unmarried	52 (98.11)	1 (01.89)	53 (14.6)	
Others	29 (90.62)	3 (09.37)	32 (8.8)	
Education				
Illiterate	108 (77.7)	31 (22.3)	139 (38.3)	x^2= 14.71 *p* value = 0.005
Primary	69 (86.2)	11 (13.8)	80 (22.0)	
Middle	70 (90.9)	7 (9.1)	77 (21.2)	
Higher Secondary	44 (93.6)	3 (6.4)	47 (12.9)	
Graduate or above	20 (100)	0 (0)	20 (5.5)	
Occupation				
Unemployed	47 (78.3)	13 (21.7)	60 (16.5)	x^2= 5.33 *p* value= 0.425
Labourer	147 (89.1)	18 (10.9)	165 (45.4)	
Housewife	58 (87.9)	8 (12.1)	66 (18.2)	
Private Sector	28 (82.3)	6 (17.7)	34 (9.4)	
Govt. Sector	10 (83.3)	2(16.7)	12 (3.3)	
Business	21 (80.8)	5 (19.2)	26 (7.2)	

Type of Family				
Nuclear	174 (86.1)	28 (13.9)	202 (55.6)	x^2 = 0.017 *p* value = 0.895
Joint	137 (85.1)	24 (14.9)	161 (44.4)	
No. of family members				
1-4	76 (86.4)	12 (13.6)	88 (24.2)	x^2=2.27 *p* value=0.321
5-8	163 (87.6)	23 (12.4)	186 (51.2)	
>8	72 (80.9)	17 (19.1)	89 (24.5)	
Socio-economical class (Modified BG Prasad classification)				
I	14 (93.3)	1 (6.7)	15 (4.1)	x^2 = 12.07 *p* value = 0.017
II	51 (92.7)	4 (7.3)	55 (15.1)	
III	67 (90.5)	7 (9.5)	74 (20.4)	
IV	85 (87.6)	12 (12.4)	97 (26.7)	
V	94 (77.1)	28 (22.9)	122 (33.6)	
Social Habits				
No	130 (95.6)	6 (4.4)	136 (37.5)	x^2 = 16.15 *p* value= < 0.0001
Yes	181 (79.7)	46 (20.3)	227 (62.5)	

Table 2: Distribution of patients according to treatment outcome and Category

	Cured	Treatment Completed	Died	Failure	Defaulted	Transferred Out	Total
Category I	91 (37%)	130 (52.8%)	7 (2.8%)	1 (0.4%)	14 (5.7%)	3 (1.2%)	246 (67.8%)
Category II	35 (43.2%)	21 (25.9%)	8 (9.9%)	3 (3.7%)	11 (13.6%)	3 (3.7%)	81 (22.3%)
Category III	0 (0%)	31 (86.1%)	0 (0%)	0 (0%)	5 (13.9%)	0 (0%)	36 (9.9%)
Total	126 (34.7%)	182 (50.1%)	15 (4.1%)	4 (1.1%)	30 (8.3%)	6 (1.6)	363 (100%)

Conclusion

Our study revealed that tuberculosis was more common among males, economically productive group, illiterates, married persons, nuclear family, labourers, lower class group and those who have social habits. Marital status, type of family, number of family members and occupation were not found to have any bearing on the outcome of treatment, whether gender, age, religion, education, socio-economic status and social habits had correlation with cure rate. All these indicate that RNTCP has effectively reached out to all. The high cure rate was due to concrete efforts by health and non-health personnel in the form of strict supervision and monitoring.

Declaration

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