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A FOLLOW UP STUDY ON NEWLY DETECTED SPUTUM POSITIVE PULMONARY TUBERCULOSIS CASES ON ANTI-TUBERCULAR TREATMENT IN BIJAPUR TALUK

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ABSTRACT

Background: TB remains a challenge and major public health problem in 21st century, although there are treatment regimens that have a greater than 95% cure rate. This study was done to document the role of socio demographic profile in completing the schedule of treatment.

Materials and Methods: A follow up study was conducted on 248 newly detected sputum positive tuberculosis cases. Each patient was visited 4 times during their treatment course. After obtaining oral consent, information was collected using a pre-tested questionnaire. Data was analyzed using SPSS v.16.

Results: In our study majority of the patients belonged to economically productive age group of 21-50 years (67.34%). Cure rate was 81.85%, default rate was 5.64%. Main reasons for default were side effects of the drug and change of residence (28.57% each).There was no statistical association between socio- demographic factors and cure rate.

Conclusion: Even though accessibility to DOT center was better in our study cure rate was less than the RNTCP norm of 85%. This can be attributed to high default rate.

Key words: Pulmonary Tuberculosis, sputum, follow up, treatment.

INTRODUCTION

Tuberculosis (TB) continues to be one of the most devastating and widespread infections in the world. It is estimated that one third of the world's population is infected with mycobacterium tuberculosis. In 2011, there were an estimated 9 million new cases of TB and 1.4 million people died from TB. Over 95% of TB deaths occur in low- and middle-income countries. Poor communities and vulnerable groups are most affected.[1]

TB is among the top three causes of death for women aged 15 to 44 years. There were an estimated 0.5 million cases and 64 000 deaths among children in 2011. Though TB is a global disease its prevalence is not uniformly distributed. Prevalence of TB is very less in developed countries than in developing and underdeveloped countries.[1]

Besides the disease burden, TB also causes an enormous socio- economic burden to India. TB primarily affects people in their most productive years of life. Almost 80% of TB patients are between 15 and 45 years of age. TB kills more people in India than HIV, STD, malaria and leprosy combined. The direct and indirect cost of TB to the country amount to Rs 13,000 crore/ year.[2]

The social burden of TB is also immense. More than 1,00,000 women are stigmatized and rejected by their families each year due to TB. About 3,00,000 children are forced to leave school on account of their parents suffering from tuberculosis. TB kills more women in reproductive age group than all causes of maternal mortality combined and it may create more orphans than any other infectious disease. Nearly one third of female infertility in India is caused by TB.[3]

To control this dangerous communicable disease, Government of India launched National Tuberculosis Control Program in the year 1962 as per guidelines of National Institute of Tuberculosis, Bangalore. Later in 1992, program got revised as Revised National Tuberculosis Control Program. Under this program, to motivate and encourage the patients to adhere to the regimens strictly, Directly Observed treatment short course (DOTS) strategy was implemented.[2]

In spite of these the incidence of TB in India is still high. The incidence of multi drug resistant tuberculosis is also increasing.[4]Under such scenario it becomes necessary to study and understand the factors which are affecting the prevalence and cure. This research was done to study the socio demographic profile of newly detected sputum positive pulmonary tuberculosis cases and to document its role in completing the schedule of treatment.

METHODOLOGY

A longitudinal study was done in Bijapur Taluk for 2 years. All newly detected pulmonary TB cases during November 1st 2011- October 31st 2012 registered from Bijapur Taluk at DTC, Bijapur were included. During this study period 248 new sputum positive cases were registered at District Tuberculosis Center. After obtaining institutional ethical clearance and permission from respective district authority the study was started.

Inclusion Criteria: All newly detected pulmonary TB cases during November 1st 2011- October 31st 2012 registered from Bijapur Taluk at DTC, Bijapur who gave consent to participate in the study.

Exclusion Criteria: Patients who are not willing to cooperate and patients who could not be contacted even after 3 visits were excluded from the study.

Data Collection: Name and address of newly detected sputum positive tuberculosis patients was obtained as and when cases were registered in DTC during the study period by personal visit. Each patient was visited 4 times during their treatment course-at the end of 1st month, 3rd month, 6th and 8th month. A pre- tested questionnaire was used to collect the data. During the follow up visits information about regularity of the treatment, results of the repeat sputum examination was collected.

Statistical Analysis: SPSS v.16 (Statistical Package for Social Sciences) was used to analyze data. Data was presented in the form of percentages, graphs and figures. Chi square test and Chi square test for trend was applied to the data. A p value of < 0.05 was considered to be significant.

RESULTS

The study was conducted on 248 new sputum positive pulmonary tuberculosis cases.

In our study majority of the patients belonged to economically productive age group i.e. 21-50 years (67.34%). Majority of the patients were male [165 (66.5%)] (Table 1). 118(47.5%) patients were illiterate. 107 (43.1%) had education up to primary school (Table 1). 211(85.1%) patients belonged to Hindu religion and 37 (14.9 %) were Muslims.

In this study majority of the patients were unskilled workers [136 (54.8%)] while 24 (9.67%) were unemployed. 104 (41.9%) patients were from nuclear family (Table 2). Majority of the patients belonged to class IV socio- economic status (56.4%), according to updated modified B.G. Prasad's classification[5] while 39.5% were in class II I and 4.03% in Class II category.. 85.08% of patients were living in kutcha- pucca house and cross ventilation was absent in 89.9% of the houses.

Majority of the patients approached the health facility after 2 weeks of appearance of symptoms like cough and fever [131(52.8%)]. 114 (46%) approached the health facility within 15 days of appearance of symptoms. 135 (54.4%) patients approached private health facility for initial treatment, where as 113 (45.6%) patients approached government set up for initial treatment.

In our study majority of the DOT agents were ASHA workers [142 (57.3%)]. Remaining patients had either doctors (19.4%), health workers (12.9%), pharmacists (6.9%) or relatives (3.6%) as their DOT agents. Among 248 patients, 217(87.5%) patients had their DOT center within the distance of 1 km. 31(12.5%) patients had to travel 1-3 km for collecting their medication. None of the patients had spent money for collecting drugs.

Cure rate in our study was 81.85%. 19(7.66%) patients died during the course of treatment. 14(5.64%) patients defaulted from the treatment. 12 (4.83%) were treatment failure cases (Table 3). Among the 14 defaulters 10 (71.42%) were male and 4 (28.58%) were female.

Table 1: Distribution of patients based on age, gender and education (n=248)

Demographic Variables	Male (n=165)	Female (n=83)	Total (n=248)
Age group			
<20 yeays	12(7.27)	1(1.2)	13(5.2)
21-30 years	30(18.18)	24(28.91)	54(21.7)
31-40 years	38(23.03)	27(32.53)	65(26.2)
41-50 years	29(17.57)	19(22.89)	48(19.3)
51-60 years	26(15.75)	7(8.43)	33(13.3)
> 60 years	30(18.18)	5(6.02)	35(14.1)
Total	165(100)	83(100)	248(100)
Education			
Illiterate	82(49.69)	36(43.37)	118(47.5)
primary school	68(41.21)	39(46.98)	107(43.1)
secondary school	12(7.27)	8(9.63)	20(8.06)
College	3(1.81)	0	3(1.2)

Figure in parenthesis indicate percentage

Table 2: Distribution of patients based on other socio- demographic factors (n= 248).

Socio-demographic factors	Frequency (%)
Religion	
Hindu	211 (85.1)
Muslim	37 (14.9)
Occupation	
Unskilled worker	136 (54.8)
Skilled worker	88 (35.48)
Unemployed	24 (9.67)
Type of family	
Nuclear	104 (41.9)
Joint	82 (33.1)
Three generation	62 (25)

Table 3: Outcome during the treatment

Outcome	Number (n=248) (%)
Cured	203 (81.85)
Deaths	19 (7.66)
Treatment failure	12 (4.83)
Default	14 (5.64)

Table 4: Showing the reasons for default

Reason for default	Frequency (n=14) (%)
Relief from the symptoms	3 (21.4)
Side effect of the drug	4 (28.57)
Long duration of treatment	3 (21.4)
Change of residence	4 (28.57)

Table 5: Relationship between cure rate and age group

Age group	Frequency (n=248)	Cured (%*)
<20 years	13	12 (92.3)
21-30 years	54	44 (81.48)
31-40 years	65	56 (86.15)
41-50 years	48	38 (79.16)
51-60 years	33	25 (75.75)
> 60 years	35	28 (80)
Total	248	203 (81.85)

*Percentage were calculated from cases in respective category

Table 6: Relationship between education and cure rate

Education	Cases (n=248)	Cured (%*)
Illiterate	118	93 (78.81)
Primary school	107	89 (83.17)
Secondary school	20	18 (90)
College	3	3 (100)
Total	248	203 (81.85)

*Percentage were calculated from cases in respective category; $\chi 2$ test for trend = 2.311; df = 1 ; p= 0.1285

In our study 4 main reasons were given by the cases for default from the treatment (Table 4). Majority i.e., 8 (57.14%) defaulters were aged more than 50 years. 5 (35.7%) were between the age group of 31-50 years. 50% of defaulters were unskilled workers and 64.28% defaulters were illiterate. Most of the defaulters [8 (57.14%)] belonged to class IV socio- economic class.

Cure rate was more among the patients < 20 years (92.3%) and it decreases as the age advances. This trend is found to be statistically insignificant (Table 5). Cure rate was 100% among the patients who had education up to college level and it decreases as the education level decreases. However, there was no significant relationship found between education and cure rate (Table 6).

DISCUSSION

In this study majority of the patients belonged to economically productive age group of 21- 50 years (67.34%). This is comparable to studies done by S Bawri et al (74%)[6] and KasiSrinivas et al (60%).[7]

In our study majority of the patients were male (66.5%) which is similar to study done by Moharana PR et al in Orisssa where 65% were male.[8] In our study, majority of the patients were illiterate (47.5%) which is higher as compared to studies done in Orissa by Moharana et al (35%)[8] and tuberculosis research center (40%).[9]

A study by Yadav et al showed that majority of the patients were Hindus (70.5%) which is similar our study.[10] Studies done by M.Muniyandi et al[11] and Bawankule S et al[12] shows higher proportion of unemployment compared to this study.

In our study majority of the patients belonged to class IV socio- economic status (56.4%), 39.5% to class III and 4.03% to class II socio- economic status. This is similar to study done by Bhattacharya Krishnadas et al. where 49.2% of the patients were from class IV SES followed by 25% from class III and 10.8% from class II.[13] A study done in Gwalior showed 27.5% were belonging to class IV socioeconomic status.[14]

Total 52.8% patients approached health facility only after 2 weeks of appearance of symptoms. This reflects their indifference towards their own health.

Among 248 patients, 217(87.5%) patients had their DOT center within the distance of 1 km. 12.5% had to travel 1-3 km for collecting their medication. Accessibility to treatment was better in our study as compared to study done by Shalini Srivastav where 48.18% had to cover almost 2-3 km to avail the treatment facility and 15.45% patients had to cover > 3 km to reach the center.[15]

Cure rate in our study was 81.85% which is less compared to RNTCP objective which is > 85%.[1] Cure rate is less compared to a studies done by KasiSrinivas et al (91.11%)[7] and R. Prasad et al (89.5%).[16] Although default rate in our study was higher than RNTCP target of < 5%[17], it is less compared to studies done by Chhayya Mittal et al (15.1%)[18], N.Pandit et al (6.93%)[19] and V.Chandrasekaran et al (15%).[20]

The failure rate in our study was 4.83% which exceeds the target set under RNTCP i.e. 4%.[17] The failure rate is higher as compared to studies done by SL Chadha et al (1.6%)[21], RKS Chaudhari et al (3.3%)[22] and is less compared to a study by Sanjay Rajpal et al (8.8%).[23]

The four main reasons given by the defaulters in our study were side effects of the drug and change of residence (28.57% each) followed by long duration of treatment and relief from symptoms (21.4% each). In a study done by N. Pandit et al main reasons for default were toxicity of drugs (63.2%) and feeling better during treatment (15.8%).[19]

A study by moharana et al shows that default was due to side effects of drugs (37.5%), early relief of symptoms (25%).[8] Reasons found in study done by Jaggarajamma et al were side effects of drugs (42%), migration (29%), relief from symptoms (20%).[24]

Although it is statistically insignificant we observed that cure rate was more among the patients <20 years (92.3%). This may be because of the better supervision by their parents. A trend of decreasing cure rate was observed among the patients as the education level decreases though it is statistically insignificant. This may be because of the better knowledge and positive attitude towards treatment among literate patients.

CONCLUSION

From our study we can conclude that tuberculosis is a social disease which mainly affects the economically productive age group and lower socioeconomic status people.

Even though accessibility to DOT center was better in our study cure rate was less than the RNTCP norm of 85%. This can be attributed to high default rate. The main reasons for default were change of residence and side effect of the drug. These problems can be tackled by better health education to patients and better communication in case of transfer out and transfer in of the patients. In depth research is needed to identify the reasons for high failure rate.

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