



TREATMENT OUTCOME OF REGISTERED TUBERCULOSIS CASES FOR YEAR 2013 IN TUBERCULOSIS UNIT IN TRIBAL DISTRICT BASTAR OF CHHATTISGARH, INDIA

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Financial Support: None declared
Conflict of interest: None declared
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How to cite this article:

Brahmapurkar KP, Brahmapurkar VK, Khan QH. Treatment Outcome of Registered Tuberculosis Cases for Year 2013 in Tuberculosis Unit in Tribal District Bastar of Chhattisgarh, India. Ntl J Community Med 2016; 7(5):377-381.

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Date of Submission: 09-02-16

Date of Acceptance: 21-04-16

Date of Publication: 31-05-16

ABSTRACT

Introduction: Tuberculosis (TB) is a major global health problem. It causes ill-health among millions of people each year and ranks alongside the human immunodeficiency virus (HIV) as a leading cause of death worldwide. The study was planned to assess treatment outcome among tuberculosis patients registered in year 2013 at Tuberculosis Unit (TU), Maharani Hospital, Jagdalpur, district Bastar in Chhattisgarh.

Materials and Methods: It was a record based analysis for year 2013 data from TU Jagdalpur, District Bastar, Chhattisgarh, for year 2013. Data entry and analysis was done by using STATA/SE 14.1 software.

Results: Overall rate of unfavorable treatment outcome among 468 TB patients was 96(20.5%). Factors associated with unfavorable outcome were age more than 40 years ($P < 0.001$), male gender ($P 0.048$) and retreatment cases ($P < 0.001$). Death rate was higher 4(4.3%) among patients of Category II. Higher default rate were noted in New Smear negative 40 (18.6%) and retreatment 26(27.4%) and HIV positive TB patients.

Conclusions: Age more than 40 years, male sex, HIV positive and retreatment category were factors associated with unfavorable outcome. Defaulters were higher in new smear negative and retreatment cases of TB patient in the present study.

Key-words: Treatment outcome, Tuberculosis Unit, Bastar

INTRODUCTION

Tuberculosis (TB) is a major global health problem. It causes ill-health among millions of people each year and ranks alongside the human immunodeficiency virus (HIV) as a leading cause of death worldwide. In 2014, 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. ¹ There were also 1.5 million TB deaths, of which approximately 890 000 were men, 480 000 were women and 140 000 were children. India had the 23% of cases global total. ¹ Treatment success

rate in 2013 was 88% for India for all new and relapse cases. ¹

World Health Assembly targets for tuberculosis control in 1991, a WHA resolution set "a global target of cure of 85% of sputum-positive patients under treatment and detection of 70% of cases by the year 2000". ²

The unfavourable treatment outcome in TB is death, defaults and failure ³. To tackle highest TB burden, Revised National Tuberculosis Control Programme (RNTCP) based on the DOTS (Directly Observed Treatment-Short course) strategy has been made available in the entire country by

March 2006. RNTCP has achieved improved cure rates and a success rate of 88% among new smear positive cases was reported in 2011.⁴

In 2013, in Chhattisgarh, treatment outcome was 80 % cured and 8 % treatment completed i.e. treatment success was 88%, died and default rates were 4 % and 7 % respectively.⁴

The creation of a sub-district level Tuberculosis Unit (TU) is a major organizational change in RNTCP, and is the nodal point for TB control activities at the sub-district level.⁵

At this point, when we are moving from MDG to SDG, it is important to know whether it is heading towards right direction as par as quality of DOTS is concerned. Keeping this in view the present study is an attempt to evaluate RNTCP through treatment outcome of patients registered for treatment under RNTCP in a TU of district Bastar, Chhattisgarh.

MATERIAL AND METHODS

Bastar District is a district of the state of Chhattisgarh in central India. Jagdalpur is the district headquarters. Bastar, the land of tribes and about 70% of the total population of Bastar comprises tribals, which is 26.76% of the total tribal population of Chhattisgarh.

The District Tuberculosis Center, Jagdalpur, Bastar, Chhattisgarh covers approximately 1,413,199 population. Total 6 TU in District Bastar (Bastar, Bakawan, Dharbha, Jagdalpur, Lohindiguda and Tokapal) and total DMC 18.

TU Jagdalpur has population of 125,463 of which 63,989 are males while 61,474 are females.⁶ Has 5 DMC as LBRKM GMC, Jagdalpur, DTC, Jagdalpur, MPM, Jagdalpur, Nangur DMC and Nagarnar DMC.

The present study was a record based analysis of TB register for year 2013 data from TU Jagdalpur at Maharani Hospital Jagdalpur, District Bastar, Chhattisgarh.

Permission was obtained from District Tuberculosis Officer, District Tuberculosis Center, Jagdalpur of district Bastar of Chhattisgarh state of India for the record based study of the concerned TU.

Definitions: Favorable treatment outcome is cured and treatment completed.

Cured: Cured is defined as a pulmonary TB patient with bacteriological-confirmed TB at the beginning of treatment who was smear- or culture-negative in the last month of treatment and on at least one previous occasion.

Completed treatment : A TB patient who completed treatment without evidence of failure but with no record to show that sputum smear or culture results in the last month of treatment and on at least one previous occasion were negative, either because tests were not done or because results are unavailable.

Successfully treated: A patient who was cured or who completed treatment

Unfavourable treatment outcome is died, defaulted, failed and transfer out.

Died: Died is defined as a TB patient who died from any cause during treatment.

Failed: It is defined as TB patient whose sputum smear or culture is positive at month five or later during treatment.

Defaulted or Lost to follow-up: A TB patient who did not start treatment or whose treatment was interrupted for two consecutive months or more.

Transfer out or not evaluated: A TB patient for whom no treatment outcome is assigned. This includes cases 'transferred out' to another treatment unit as well as cases for whom the treatment outcome is unknown to the reporting unit.

Statistical Analysis: Data entry was done in excel and analyzed by STATA/SE 14.1 software.

RESULTS

Table 1 showed, even if the percentage of cured in male patient was 49.5 % i.e. 164 out of 331, but it was only 27.8% for treatment completed. Overall the percentage of treatment success was 116(84.7%) i.e.(55+61) out of 137 female patients compared to male in which it was 77.3% (164+92=256 out of 331).The unfavorable treatment outcome was more in male patients except in failure and transfer out. Died and defaulter in male were higher i.e. 9(2.7%) and 58(17.5%) respectively as compared to female. The overall difference between treatment outcome in male and female TB patients was found significant(P 0.048) .The treatment outcome among patients of tuberculosis in age more than 40 and less than 40 years, that age more than 40 had treatment success of 159(73.6%)compared 213(84.5%) in age less than 40 years. Also age more than 40 had significantly higher unfavorable treatment outcome i.e. died 7(3.2%), defaulter 44(20.4%) compared to 3(1.2%) died and 30(11.9%) defaulter and it was found significant (P 0.001).

It was observed from table 1, that 94 (20.1%) of total registered TB patients were of category II, out of which 61(64.9%) had treatment success i.e. 38 cured plus 23 treatment completed compared to

311(83.2 %) (Sum of 181 cured and 130 treatment completed) in category I and the rate of died, defaulter and transfer out was higher in category II and the difference was found significant

(P<0.001).The defaulter rate was 26(27.7%) in category II as compared to 48(12.8%) in category I. The percentage of TB patient died was 4.3 % i.e. 4 out of total 94 in category II.

Table 1: Sex wise, category wise and age less than and more than 40 years distribution of treatment outcome of patients of tuberculosis

Variables	Treatment outcome							P value*
	Cured	Treatment Completed	Died	Failure	Defaulter	Transfer out	Total	
Sex								
Female	55(40.1)	61(44.5)	1(0.7)	2(1.5)	16(11.7)	2 (1.5)	137(29.3)	0.048
Male	164(49.5)	92(27.8)	9(2.7)	4(1.2)	58(17.5)	4(1.2)	331(70.7)	
Category								
Category I	181(48.4)	130(34.8)	6(1.6)	5(1.3)	48(12.8)	4(1.1)	374(79.9)	0.001
Category II	38(40.4)	23(24.5)	4(4.3)	1(1.1)	26(27.7)	2(2.1)	94(20.1)	
Age								
<40 years	121(48.0)	92 (36.5)	3(1.2)	3(1.2)	30(11.9)	3(1.2)	252(53.8)	<0.001
>40 years	98(45.4)	61(28.2)	7(3.2)	3(1.4)	44(20.4)	3(1.4)	216(46.2)	

* Favorable treatment outcome= Cured+ Treatment completed vs. Unfavorable treatment outcome=Died+ Failure+ Defaulter+ Transfer out; Figure in the parenthesis indicate percentage

Table 2: Sex wise distribution of Pulmonary and extra-pulmonary patients of tuberculosis

Sex	Pulmonary No. (%)	Extra-Pulmonary No. (%)	Total No. (%)
Female	95 (69.3)	42(30.7)	137(29.3)
Male	277(83.7)	54(16.3)	331(70.7)
Total	372(79.5)	96(20.5)	468(100.0)

Chi square value 12.22 P <0.001

Table 3: Treatment Outcome TB cases registered in 2013

TB cases	Treatment outcome					
	Treatment success† (%)	Died (%)	Failure (%)	Defaulter (%)	Transfer out (%)	Total (%)
New Smear Positive	138(86.8)	6(3.8)	3(1.9)	8(5.0)	4(2.5)	159(34.0)
New Smear Negative§	173(80.5)	0(0.0)	2(0.9)	40(18.6)	0(0.0)	215(45.9)
Retreatment cases	61(64.9)	4(4.2)	1(1.1)	26(27.4)	2(2.1)	94(20.1)
HIV positive	3(60.0)	0(0.0)	1(20.0)	1(20.0)	0(0.0)	5(1.1)
HIV Negative	369(79.7)	10(2.2)	5(1.1)	73(15.8)	6(1.3)	463(98.9)
Pulmonary	280(75.3)	10(2.7)	4(1.1)	72(19.4)	6(1.6)	372(79.5)
Extra-Pulmonary	92(95.8)	0(0.0)	2(2.1)	2(2.1)	0(0.0)	96(20.5)

¶Treatment success for New Smear Positive is cured and treatment completed; §Treatment success for New Smear Negative is treatment completed; †Favorable treatment outcome vs. Unfavorable treatment outcome P<0.001

Table 4: Treatment outcome of Retreatment Cases in category II

Type	Cases	Success No. (%)	Died No. (%)	Failure No. (%)	Defaulted No. (%)	Transfer No. (%)
Relapse	4	3(75.0)	1(25.0)	0(0.0)	0(0.0)	0(0.0)
Failure*	3	3(100.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
TAD	21	16(76.2)	1(4.8)	1(4.8)	2(9.5)	1(4.8)
Others	66	39(59.1)	2(3.0)	0(0.0)	24(36.4)	1(1.5)

Table 2 describing the sex wise distribution of Pulmonary and extra-pulmonary patients of tuberculosis, total 372(79.5%) having pulmonary tuberculosis and out of them 277(83.7%) were male patients. The difference was found significant (P<0.001).

Table 3 had described the treatment outcome for TB cases registered in 2013, out of total 468, 159(34.0%) were new smear positive (NSP) and 215(45.9%) were new smear negative and remain-

ing 94(20.1%) retreatment cases and the treatment success rate in NSP was 138(86.8%) and it was 61(64.9) in retreatment cases. The percentage of died was 4.2% in retreatment as compared to 0.0% in new smear negative and 3.8% in NSP cases. (4 out of 94,0 out of 215 and 6 out of 159 respectively) Treatment outcome in HIV positive TB patients, total 5 TB patients were HIV positive out of registered 496 i.e.1.1%.3 (60.0%) had treatment success and 1 (20.0%) defaulted and 1(20.0%) had failure

during the treatment. It was seen from sex details, 4 (80.0%) were male and 1 (20.0 %) was female. Also it can be seen that out of total 96 of 468 TB patients i.e. 20.5% were cases of extra-pulmonary TB. 94 (95.8%) completed treatment and 2(2.1 %) had defaulted and no died.

The treatment outcome of Retreatment Cases as revealed from table 4 for category II, it was seen that other cases had lowest treatment success 39 out of 66 i.e.59.1% and highest percentage of defaulter 36.4% followed by TAD cases i.e. 9.5% (24 out of 66 and 2 out of 21 respectively).

DISCUSSION

In the present study, out of 468 patients 372(79.5%) were pulmonary and 96(20.5%) were extra-pulmonary. The ratio between the two was 2.4: 1 as compared to the expected RNTCP norm of 10: 1 and also as per the estimated number of TB patients based on Annual risk of TB infection (ARTI) the extra-pulmonary cases to be around 20% of new smear positive(NSP) i.e. in our study NSP cases were 138 ,so 28 new extra-pulmonary were expected ^{7,5}, this relatively higher case load of extra-pulmonary cases needs to be evaluated by further studies for, is it due to the HIV epidemic that has caused a substantial increase in the percentage of cases of smear negative pulmonary and extra-pulmonary TB disease. ²

The male to female ratio for PTB was 2.9 (277/95) in our study which was higher than 2.29, which was found by Chandrashekhar T ⁸ in his retrospective study. The overall male to female ratio of TB cases in our study was 2.4 which was higher than 1.6. For EPTB patients, the male to female ratio was 1.2(54/42) which was consistent with ratio of 1.07.

The proportion of extra-pulmonary cases was higher in the females (30.7%) as compared with males (16.3%) similar to findings by Sandeep Singh Sarpal i.e. (28.4%) in females as compared with males (17%). Also similar finding was found that males outnumbered females in the unfavorable outcomes death and default. The default in males was 17.5% as compared to the females (11.7%)

Higher proportions of males were affected by TB as compared with females; also more number of pulmonary TB cases, similar results was seen in study carried out at Paithan, Aurangabad and Howrah district in India ^{10, 11}. In present study the percentage of defaulters in age above 40 was 44(20.4%), similar findings noted that as age advanced, percentage of defaulters was found to be increased ^{8, 10}. Poor outcome in patients older than 40 years of age as compared to those with less than 40 years was noted by Gebretsadik Berhe in study

conducted at Northern Ethiopia ¹². Younger age was associated with favorable outcomes as per study conducted by F. Tesgaye¹³.Death rates were higher in male patients. This may be due to high default rate in male 58(17.5%) as compared to female 16(11.7%).Same findings were noted by VD Karanjekar ⁸ and Muhammad Atif ¹⁴.

In New Smear Positive Treatment Success percentage was 138(86.8%), which is lower than national average 88% and in New Smear Negative , default 40(18.6%) was higher than national average 6%. ⁴

In Retreatment cases relapse had higher died 1(20.0%) as compared to 9%. at national level and 36% defaulted in others i.e.24 out of 66. Similar high defaulters were noted by VD Karanjekar and Sukamal Bisoi. ^{8, 9} Also Kingsley N Ukwaja ¹⁵, had found treatment success of 75.3 % in retreatment cases which was higher success percentage as compared to 64.9 % in our study , also the default percentage in retreatment cases was lower i.e.3.7% as compared to 27.4% defaulted in our study. Died percentage was 13.6% as compared to 4.2% in retreatment cases in our study,but higher default (27.4%) was a concern in our study.

When we try to compare our study findings with state Chhattisgarh, we found 277% as treatment success in relapse (62% cured + 215 % treatment completed) and 113 % (79 % cured + 34 % treatment completed) treatment success in new Smear Positive which is serious concern regarding data as this finding was only with state Chhattisgarh. ⁴

In our study out of 5 (1.1%) HIV positive TB patients 3(60.0%) had treatment success and 1(20.0%) failure and 1 (20.0%) defaulted similar to annual status report 2012. ² Tuberculosis and HIV duo forms the deadly synergy; the patients with these diseases more often will have unfavorable outcomes. The HIV among estimated incident TB patients was 5.6 % 95 Confidence Interval (5.4-6.2) ⁴.

CONCLUSION

Age more than 40 years, male sex, HIV positive and retreatment category were factors associated with unfavorable outcome .Defaulters were higher in new smear negative and retreatment cases of TB patient in the present study.

Limitations

The limitations of the study include the retrospective analysis using routine records which are subject to information bias. Categorization of the patients and their treatment outcomes as mentioned in the records were not independently validated, thus misclassification may not have been identified.

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