Original article:

Sociodemographic profile and treatment outcome of tuberculosis patients registered under directly observed treatment short course chemotherapy in a TB unit, Hyderabad

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ABSTRACT

Background: Tuberculosis continues to be one of the devastating and widespread infections of the world infecting almost one third of the world's population at any point of time. This is despite the availability of treatment which can cure the disease most of the times. The objectives of this study are to describe the sociodemographic profile of patients registered for treatment of tuberculosis, to study the comorbidities in these patients and to assess the treatment outcome in them.

Materials and methods: The study was conducted in Dabeerpura Tuberculosis Unit among patients who registered for DOTS from April to September 2012. Only patients receiving Category 1 treatment were included for the study. 232 patients were enrolled for the study and details were collected from them after obtaining an informed consent. Permission from institutional ethical committee and from relevant authorities was obtained before the start of the study.

Results: Most of the patients (85%) belonged to 15-49 years age group and males were mostly affected. About a third of the patients were labourers and illiterates. About three fourth of the patients belonged to Class IV and Class V socioeconomic status. About 50% of them lived in a pucca house with overcrowding seen in almost 58% of the households. Diabetes and HIV/AIDS were the common comorbidities. 79.74% were cured, 1.72% died and 2.16% were failures.

Conclusion: In the present study the treatment success rate was good and sociodemographic factors have a role to play in it.

Key words: Tuberculosis, Comorbidites, Treatment outcome, Tuberculosis unit

INTRODUCTION

Tuberculosis is still one of the major public health problems responsible for considerable amount of morbidity and mortality in developing countries even after being known to humanity as an oldest disease[1, 2]. It is caused by an infection with mycobacterium tuberculosis complex[3]. It is estimated that about one third of the world's population is infected with mycobacterium tuberculosis and that each year almost nine million people develop tuberculosis of whom about two million die[4, 5].

In India, the estimated incidence in 2015 was 2.8 million cases and estimated mortality was 4, 80, 000[6]. This is despite the fact that there is a definitive treatment that is available for tuberculosis and complete cure is possible following the treatment in most of the cases[7]. Tuberculosis is one of the most common opportunistic infections among people living with HIV. Approximately 5% of the incident TB cases have comorbidity with HIV[6]. India has a wide spectrum of TB epidemiology. Data from India indicates that the country has varied epidemiology ranging from very high TB prevalence to very low TB prevalence, high and low TB/HIV co infection, and Drug resistant (DR) TB depending on states/regions. There is also an epidemiological difference between rural and urban areas with urban areas typically having a lower prevalence but with a higher Annual risk of TB infection (ARTI). Rural areas are charcterised by a higher prevalence but with a lower ARTI. TB is also a cause for socioeconomic burden in India as it affects mostly the young and productive age group, commonly 15-54 years. Malnutrition, poor standards of living and overcrowding contribute to the spread of the disease[6].

Several socio-demographic factors contribute towards the increasing incidence to TB. Age, gender, literacy, socioeconomic status, smoking, alcoholism, drug addiction, living conditions, overcrowding, poor sanitation, poor ventilation, malnutrition and certain occupational factors have some contribution in this rising incidence[8]. As of 2011, RNTCP covers 853 lakh population in Andhra Pradesh and 53 lakh population in Rangareddi district[9]. Modern anti-TB treatment can cure virtually all patients. It is, however, very important that treatment be taken for the prescribed duration. Because treatment is of a longer duration and patients feel better after just few doses of treatment, and because many TB patients face other problems such as poverty, ignorance and unemployment, treatment is often interrupted. Hence this study was undertaken to study the profile of patients registered for DOTS treatment and to describe the various comorbidities associated with tuberculosis.

MATERIALS AND METHODS

The present study was done as a prospective observational study among all sputum smear positive cases registered in second and third quarter (April to September) of 2012 in Dabeerpura TB unit. This TB unit has three DMCs located at Saroor Nagar PHC, Vanasthalipuram PHC and Balapur PHC. The study was conducted between March 2012 to August 2013. Smear positive cases with retreatment (Category 2) were excluded. A total of 232 patients were registered. Information from each case was recorded on a separate performa. A pilot study was conducted among 18 patients at Saroor Nagar PHC. Institute Ethical Committee approval was taken prior to the study. The study was explained and permission obtained from the District TB Officer(DTO), State TB Officer (AP), MO-TC and concerned DOTS- providers of study area.

The study subjects were interviewed at PHC and information was collected on sociodemographic profile, whether they took treatment (DOTS) under supervision, difficulties in taking treatment under DOTS. The follow-up, interruption from treatment and reasons for non-adherence details were obtained. Patients who did not report to health centers were followed up to their homes after getting their addresses with the help of local people, DOTS provider/AWW. The data was entered in Microsoft Office Excel 2007 and analysis was done by IBM SPSS statistics 20.

RESULTS

All cases registered at Tuberculosis unit, Dabeerpura, fulfilling the inclusion and exclusion criteria between April and September 2012 constituted the study population. A total of 232 patients fulfilling the inclusion and exclusion criteria registered for DOTS during the study period. From Table 1, it can be seen that maximum patients (85%) belonged to 15 – 49 years age group, followed by 11.21% in the elderly age group i.e more than 50 years age group. Only a small proportion of them (3.45%) belonged to pediatric age group i.e less than 15 years. About three fourth of the study subjects were males (72%) and the rest, a little more than a quarter were females (28%) making the male: female ratio approximately 3:1. A little less than a third of the patients (31.90%) were illiterates and 68.10% were literates. A little more than a third of the patients (34.4%) were labourers , either doing agriculture related labour or others. 65.95% of the study population were married, 28% were unmarried and 6% were either widowed or divorced. 83.19% belonged to a nuclear family with 43.97% of them belonging to Class V socioeconomic status. It was seen that almost three quarter of the patients belonged to Class IV and Class V combined. About half (50.86%) of the study population were living in a pucca house. But a majority of the households of the study subjects were overcrowded (58.62%).

88% of the patients approached the peripheral health institution as they were referred by some health professional. 8% approached the peripheral health institution by their selves and the rest were referred by Anganwadi workers. Most of the patients (65.95%) , had contacted the health institute with complaints of Persistent cough. Rest 34.05% presented with evening rise of temperature or prolonged fever. Among the comorbidities that were seen in patients with positive sputum smear, diabetes (20.69%) and HIV/AIDS (19.40%) topped the list. 48.71% of the patients did not have any comorbidity (Table 2). All patients were put on Category I DOTS and in 72.84% of the patients, DOTS was provided by health care professional. In 22% of the patients, DOTS was provided by either Community level health workers or Anganwadi worker. Since there was a difficulty in access to a DOTS provider, 4.74% of them were given medications to be taken in a self administered way. It was found that , in 96.55% of the patients , the TB card was updated regularly. 50.86% of the patients had to travel more than 2 kilometres to receive their treatment.

The major complaint of the patients receiving DOTS was gastrointestinal upset. The commonest presenting complaint being nausea and vomiting followed by Burning sensation of digits and Red orange urine which was found in 6.90% and 5.17% respectively. History of interruption of treatment during DOTS was seen in 13.79%. It was found that the majority of them were males i.e. 17.37 % whereas only 4.62% of females interrupted from treatment (Figure 1). Among those who interrupted their treatment, 68.75% interrupted to less than 2 weeks and the rest were considered as defaulters. The most common factors for non adherence or interruption of treatement were a sense of well being in 34.37% and due to adverse effects (34.37%) followed by migration (18.75%), dissatisfaction of DOTS Provider (9.38%) and work load (3.13%).

Out of 232 subjects, 79.74% were cured, 10.34% were considered as treatment completed, 1.72 % died, 2.16% were failures, 3.45% were defaulter after treatment and 2.59 % was considered as transferred out (Table 3). In total, the success rate of treatment was found to be 90% which shows high performance of TB Unit. The cure rates were comparatively better in the age groups of 15-49 years (81.82%) and >50 years (76.92%) when compared with <14

547

years age group (37.50%). The cure rate was more among females (83.08%) than males (78.44%). Cure rates were high among literates (82.28%). Most of the defaulters and those who died belonged to the labour class. Cure rates were almost similar in alcoholics (77.46%) and non alcoholics (80.75%). But all those who had died were alcoholics (5.63%). There was also no significant difference in treatment outcome between Smokers and non Smokers (Table 4).

The sputum conversion at the end of 2nd month is 93.53%, at the end of 4th month it is 90.08% and at the end of treatment the same is 90.08%.

TABLE 1: SOCIODEMOGRAPHIC PROFILE OF THE STUDY PARTICIPANTS

SNO.	VARIABLES	FREQUENCY (%)
AGE DISTRIBUTION		
1	≤ 14 YEARS	8 (3.45%)
2	15 – 49 YEARS	198 (85.34%)
3	≥ 50 YEARS	26 (11.21%)
GENDER		
1	MALE	167 (72%)
2	FEMALE	65 (28%)
OCCUPATION		
1	AGRICULTURAL LABOURER	7 (3.02%)
2	OTHER LABOURERS	96 (31.38%)
3	CULTIVATORS	16 (6.90%)
4	BUISNESS	4 (1.72%)
5	PROFESSIONAL	65 (28.02%)
6	UNEMPLOYED	44 (18.97%)
MARITAL STATUS		
1	MARRIED	153 (65.95%)
2	UNMARRIED	65 (28.02%)
3	WIDOWED/SEPERATED	14 (6.03%)
FAMILY TYPE		
1	NUCLEAR	193 (83.19%)
2	JOINT	39 (16.81%)
SOCIOECONOMIC STATUS		
1	CLASS I	6 (2.59%)
2	CLASS II	11 (4.74%)
3	CLASS III	39 (16.81%)
4	CLASS IV	74 (31.90%)
5	CLASS V	102 (43.97%)

	TYPE OF HOUSE	
1	PUCCA	118 (50.86%)
2	SEMIPUCCA	78 (33.62%)
3	KUTCHA	36 (15.52%)
	OVERCROWDING	
1	PRESENT	136 (58.62%)
2	ABSENT	96 (41.38%)

TABLE 2: COMORBIDITIES IN PATIENTS WITH TUBERCULOSIS

SNO.	COMORBIDITIES	NO. OF PATIENTS (%)
1	HTN	23 (9.91%)
2	HTN and DM	3 (1.29%)
3	DM	48 (20.69%)
4	HIV/AIDS	45 (19.40%)
5	None	113 (48.71%)

TABLE 3: TREATMENT OUTCOME IN THE STUDY POPULATION

SNO.	FINAL OUTCOME	NO. OF PATIENTS (%)
1	Cured	185 (79.74%)
2	Treatment completed	25 (10.34%)
3	Died	4 (1.72%)
4	Failure	5 (2.16%)
5	Defaulter after treatment	8 (3.45%)
6	Transferred Out	6 (2.59%)

TABLE 4: TREATMENT OUTCOME IN PATIENTS WITH ADDICTIVE HABITS

FINAL OUT COME	SMOKERS		NON-SMOKERS		ALCOHOL		NON ALCOHOLIC	
	No.	%	No.	%	No.	%	No.	%
Cured	32	86.49%	153	78.46%	55	77.46	130	80.75
Treatment completed	4	10.81%	20	10.26%	9	12.68	15	9.32
Died	0	0.00%	4	2.05%	4	5.63		0.00
Failure	0	0.00%	5	2.56%	0	0.00	5	3.11
Defaulter after treatment	1	2.70%	7	3.59%	1	1.41	7	4.35
Transferred Out	0	0.00%	6	3.08%	2	2.82	4	2.48
Total	37	100.00%	195	100.00%	71	100.00	161	100.00

FIGURE 1: INTERRUPTION OF TREATMENT IN THE STUDY POPULATION
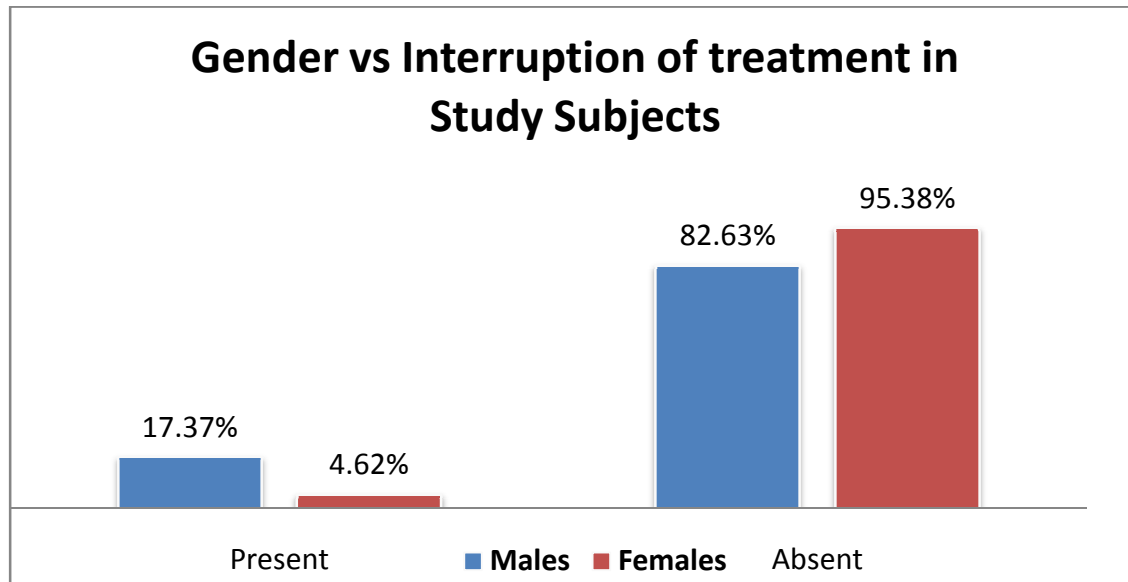
DISCUSSION

In the present study, 85% of the study subjects belonging to 15 – 49 years age group. This is similar to observations done by Pandit et al[10] in Gujarat where 85% of them were between 15 – 55 years and 63% were males. Hence it can be seen that TB seems to be more prevalent in the productive age group of 15-49 years, who are usually the bread winners of their family, and their sickness can bring untold misery to their family. About three fourth of the study subjects were males 72% and 28% females. Similar findings were noted by Narang P et al[11] and Gopi P G et al[12]

550

who in their studies noted that the prevalence of cases was higher in males than females. a Higher prevalence of infection in males maybe because they are more exposed to environmental factors causing tuberculosis than females.

Gopi P G[12] et al reported 39% illiteracy among tuberculosis cases which was almost close to 31% observed in our study. 34.4% were labourers in our study which was close to the observations of Pandit et al[10]. Laborers are considered to be more prone to TB infection because of various social factors like poor quality of life, poor housing, overcrowding, lack of education. About three quarter of the study population belonged to Class IV and V combined which was similar to observations done by Pandit et al[10]. Low socioeconomic status is an important social factor for tuberculosis. Only 15% of our study population resided in kutcha houses while 50% were living in pucca houses. Rathi S K et al[13] and Muniyandi M[14] et al have reported that the prevalence of tuberculosis was higher in those living in kutcha houses and poor housing contributes to the spread of the disease.

Proportion of study subjects with diabetes was 20% and with HIV/AIDS was 19%. The proportion of diabetics was close to a study done by Chethana R[15] who reported 16.25%. The proportion of HIV co infection is more than WHO estimate of disease burden for India[7].The main reasons for nonadherence or treatment interruption in our study was adverse effects and a sense of well being. Difficulty in accessing health facility, lack of knowledge about treatment, lack of information and dissatisfaction with delivery of drugs were the reasons quoted by other studies[10, 12, 16, 17]. Out of 232 subjects in our study, 79.74% were cured, 10.34% were Treatment completed, 1.72 % died, 2.16% were failures,3.45% were defaulter after treatment and 2.59 % was Transferred out. Similar results were observed by Radilla-Chávez P[18] where 70% of the patients under DOTS were cured. But in studies conducted by V.Chandrasekaran, et al[19] and. Masthi NR, et al [20] the cure rate was more than 70%.

CONCLUSION

Tuberculosis affects the most productive age group and thus hampers the development of the society and the country as a whole. Early diagnosis and prompt initiation of treatment is very essential for control of tuberculosis. Continuous supervision and monitoring is essential to prevent default and interruption of treatment. Also, patients on treatment should be counseled to stop smoking and alcohol. Counselling, building good rapport with the patient and their family members , repeated motivation and efforts to ensure timely provision of drugs are all required for success of the program.

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