

Original Article**AN EVALUATION OF THE TREATMENT BEHAVIOR OF THE PATIENTS ON DOTS OF ANAND DISTRICT, GUJARAT****Donald Christian¹, Uday Shankar Singh², Sidhyartha Mukherjee³, Deepak Sharma⁴**

¹Assistant Professor, Department of Community Medicine, SBKS Medical Institute & Research Center, Piparia, Waghodia, Gujarat ² Professor ³ Professor & Former Head of Department ⁴Assistant Professor, Department of Community Medicine, Pramukhswami Medical College, Karamsad.

Correspondence: donald_christian2002@yahoo.com

ABSTRACT

Background: To achieve goals of RNTCP, issues like treatment adherence & treatment behavior of TB (Tuberculosis) patients taking DOTS should also be focused, considering long duration of drug therapy. **Objective:** To analyze various factors that could affect the treatment behavior during the course of DOTS among the patients attending the TB units. **Material & Methods: Design:** Cross-sectional study, **Participants:** 100 diagnosed TB patients on DOTS, from all TB units (25 from each TU) of Anand District, who had reported to health center at least after 3 weeks of initiation of symptoms. Information was filled up in a pre-tested questionnaire. **Results:** A total 100 TB patients (68 males, 32 females) were interviewed; among which, 29% were illiterate and 46% were laborer. 24% of the subjects had any side-effect. Social stigma was faced by 10% of subjects (6 males, 4 females). 16% of the respondents had a treatment interruption during current treatment. The commonest reason for treatment interruption was "thought of being cured" (75%). **Conclusion:** The treatment behavior of the patients on DOTS also depends on various social-economical characteristics. The issues of side-effects of drugs and "thought of being cured" also need to be focused. Health system changes in terms of efficient staff and adequate drugs should also be considered.

Key words: treatment behavior, DOTS patients, social stigma, side effects of DOTS drugs, treatment interruption.

INTRODUCTION

Tuberculosis is a worldwide, chronic communicable bacterial disease. It is a strange disease because of its varied clinical presentation, host response, chemotherapeutic response, etiology and social implications. Because of which community suffers from economic, social and health burden. India accounts for nearly 1/3rd of the global burden of tuberculosis. Indirectly, every year more than 17 crore work-days are lost due to tuberculosis at the above mentioned cost (Rs.12,000 crore per year).¹ Once patient is put on treatment, adherence to treatment becomes very important aspect of the DOTS as the duration of therapy is long and often the patients have a low socio-economic profile. There could be many determining factors which ultimately decide treatment behavior of the patient on DOTS. The study tries to find out few of the factors which had a bearing on treatment behavior of such patients. **Objective:** To analyze various factors that could affect the treatment behavior during the course of DOTS among the patients attending the TB units.

MATERIALS AND METHODS**Methodology of the study:**

A cross sectional study was carried out among hundred diagnosed TB patients on DOTS who were taking treatment from one of the four TB units of Anand district, namely Petlad, Khambhat, Anklav & Sarsa. The study period was for in total of about a year during 2008-09. The sample size of 100 was based on a type of non-probability sampling, purposeful sampling, as the study aimed at finding out behavior characteristics.

Study population: After the approval of the project from the institutional research ethic committee, four TB units in the district were approached. Medical Officer in charge of the concerned TB unit was consulted and objective of the study was explained. From each TB unit, 25 patients were identified, who had reported 3 weeks or later to the health centre. The patients were visited at their residence to provide appropriate privacy and time for the interview. Consent of the subject regarding their participation in the study was obtained before hand. Inclusion criteria: Patients diagnosed with TB who had reported to the health center at least after 3 weeks from the onset of symptoms related to TB and had given informed consent to take part in the study. The data were analyzed by making frequency tables

and using test of significance (chi-square) for various determinants like occupation etc.

OBSERVATIONS

The study shows that among total 100 patients taking DOTS, 68 were male and 32 were female. The mean age was 34.59 years (8.21- 60.93 years). The minimum age was 15 and maximum 70 years. Per capita income was on an average Rs. 766±1732.51. From total 100 patients, 65 were self dependent; while 8 depended on their parents, 14 depended on spouse, 8 were depended on their children and 5 depended on close relatives like

uncle etc. 22 % of the respondents replied that, on falling ill, they would like to take the treatment on the same day, while almost half (49%) replied that they would prefer taking treatment on the next day. 13% of them would opt for treatment on after even 3rd day of starting the treatment, and for 16% respondents, it was undecided. 4% of the respondents would prefer any of the providers.[Table 1]. The subjective preference had a significant relationship with the educational status of the subject. That is, preferences for Bhuva were seen exclusively among less educated persons.($p < 0.05$).

Table 1: Subjective preference for health provider among different educational groups

Education	Preference for the type of care provider			
	Doctor (%)	Bhuva (%)	Both (%)	Total (%)
Graduate and above	6 (6.66)	0 (0)	0 (0)	6 (6)
SSC-HSC	19 (21.11)	0 (0)	0 (0)	19 (19)
1-10 std	44 (48.88)	2 (33.33)	0 (0)	46 (46)
Illiterate	21 (23.33)	4 (66.67)	4 (100)	29 (29)
Total	90 (100.00)	6 (100)	4 (100)	100 (100)

Table 2: Subjective preference for health provider among different occupational groups

Type of occupation	Preference for care provider			
	Doctor (%)	Bhuva (%)	Both (%)	Total (%)
Agriculture	5 (5.55)	0 (0)	1 (25)	6 (6)
Dairy	1 (1.11)	0 (0)	0 (0)	1 (1)
Home based work	15 (16.66)	0 (0)	1 (25)	16 (16)
Office work	13 (14.44)	0 (0)	0 (0)	13 (13)
Labor	39 (43.33)	5 (83.33)	2 (50)	46 (46)
Lawyer	1 (1.11)	0 (0)	0 (0)	1 (1)
Unemployed	13 (14.44)	1 (16.67)	0 (0)	14 (14)
Salesman	2 (2.22)	0 (0)	0 (0)	2 (2)
Business	1 (1.11)	0 (0)	0 (0)	1 (1)
Total	90 (100)	6 (100)	4 (100)	100 (100)

Among 100 respondents, persons who had any side-effect during treatment were 24 (24%). The most common side effect was related to Gastrointestinal upset (62.8%, n=15) following drug therapy. Others were Giddiness (24.9%, n=6), exaggeration of previous symptoms (4.1%, n=1) and others like headache and numbness. (8.2%, n=2).

Three fourth of the respondents (75%) told that they were having complaints for 3-6 weeks when they visited a health facility. Rest of them told that they were having complaints of more than 6 weeks when they did so.

Table 3 : Gender wise distribution of social stigma among subjects ($p > 0.05$)

Gender	Social Stigma		
	Yes (%)	No (%)	Total
Male	6 (60)	62 (68.89)	68 (68)
Female	4 (40)	28 (31.11)	32 (32)
Total	10 (100)	90 (100)	100 (100)

For getting DOTS, the patients were inspired by mainly by their family members (36%) or health care workers (32%). Only few of them got inspirations by themselves (18%) or by their

neighborhoods (14%). The problem of social stigma affected only 5% of the respondents. [Table 3]

The problem of social stigma was most commonly faced by laborers among all occupants. [Table 4].

Out of 10% respondents facing social stigma, 4 experienced denial from social groups, 4 experienced withdraw from services and rest of 2 experienced verbal exploitation. 16% (N=16, 11 males and 5 females) of the respondents replied

that their treatment had interrupted during the prescribed course. The most common reason (75%) was that they thought they didn't need the treatment anymore after getting relief from the symptoms. The next major reason accounting for just around 18% was side effects. The relationship between treatment interruption and prevalence of any side-effect was found to be significant. ($p < 0.05$). [Table 5]

Table 4 : Distribution of social stigma among various occupational groups

Type of occupation	Social Stigma		
	Yes (%)	No (%)	Total (100)
Agriculture	1 (10)	5 (5.55)	6 (6)
Dairy	0 (0)	1 (1.11)	1 (1)
Home based work	0 (0)	16 (17.77)	16 (16)
Office work	1 (10)	12 (13.33)	13 (13)
Labor	7 (70)	39 (43.33)	46 (46)
Lawyer	0 (0)	1 (1.11)	1 (1)
Unemployed	1 (10)	13 (14.44)	14 (14)
Salesman	0 (0)	2 (2.22)	2 (2)
Service	0 (0)	1 (1.11)	1 (1)
Total	10 (100)	90 (100)	100 (100)

Table 5: Relation of interruption of treatment and subjects having any side-effect ($p < 0.05$)

Side effects	Interruption		
	Yes (%)	No (%)	Total (%)
Yes	8 (50)	16 (19.04)	24 (24)
No	8 (50)	68 (80.96)	76 (76)
Total	16 (100)	84 (100)	100 (100)

The most common reason for interruption of treatment was "thought of being cured" ($n=13$, 81.25%). Other reason was experiencing side-effects of the drugs ($n=3$, 18.75%).

DISCUSSION

The study focuses on medical, socio-cultural as well as behavioral determinants of DOTS patients, on their treatment behavior. Tuberculosis and DOTS have been known for more than a decade now in India, but still a lot many barriers prevent the success of DOTS in all corners of the society. The possible reasons have been evaluated in some of the developed/developing countries including India²⁻⁶.

The mean age (34.59%) in the study is quite comparable as TB can affect any age, specifically young adults. Treatment behavior would depend on the level of education among patients. The study shows that three quarters of the patients

enrolled in the study had not reached beyond 9th standards. Further, a significant proportion (29% of total) of patients was illiterate [Table 1], possibly an opposing factor for a successful long term treatment. Similar proportion (46%) of subjects was laborers by occupation, while 14% of them were unemployed [Table 2]. This finding is important, as regular income is associated with high treatment success rates, as revealed by a study in Bangkok by Okanurak and co-workers⁷. His study also said that the level of education and knowledge was also significantly associated to treatment success. A study by Leung et al also showed that unemployment is associated with longer patient delay⁸.

The prevalence of any side-effect among patients was almost 1/4th of total [Table 5]. The commonest side effect was gastro-intestinal upset. The high prevalence of such side-effects demands education of the patients as well as health care provider for advocating proper advice how to take the prescribed drugs. This is an important observation, as treatment adherence is the first among the standards prescribed for treatment under ISTC (International Standards for TB Care)⁹. The study reveals the prevalence of social stigma among study subjects was 10% [Table 3]. This shows that although, India has entered to development era, such social issue still persists. In a study

conducted by Quereshi and others among TB patients of Pakistan, showed that the prevalence was on higher side (27%). The differences may be due to the level of socialization between the two countries¹⁰. Here also, the most common occupation group was laborers, although not significant for relation with social stigma as their total numbers were high. ($p>0.5$)[Table 4].

The prevalence of interruption of treatment by the patients was 16%. [Table 5]. This was far better than the rate found by a study from Kaona F and others, where the same prevalence was around 36% on an average, conducted in Zambia¹¹. The reason again could be smaller sample size of the present study, compared to the study of Kaona (N=400). The low interruption rate could also reflect a better health care system of India than Zambia. The most common reason for interruption was found that the patients thought they were cured. (75%). A study by Kaona also revealed the same reason as the most frequent (45.1%). The next frequent reason was side effects due to drugs (18.75%). Kaona revealed nearly the same rate for interruption in his study (20.2%). The other reasons, which were prevalent in previous studies, were not found in present study due to smaller sample size or due to higher proportions for a single reason. In contrast to this, a study conducted by Ito K. and others revealed multiple factors among TB defaulters of Japan.¹² Drug adverse effect also contributed to significant proportions of relapse (22.6%) in such defaulters. Side-effect had a significant relationship with treatment interruption ($p<.05$), thus every efforts should be made from DOTS advisors to educate patients in such a way to reduce those unwanted side-effects. (e.g. taking with food etc).

CONCLUSION

The study shows that issues like perceived side-effects of drugs, social stigma, treatment interruption and others like education etc need to be addressed for treatment success for such low profile patients. Health system changes in terms of efficient staff and adequate drugs should also be considered.

ACKNOWLEDGEMENT

The authors would like to acknowledge the State Operational Research Committee-Gandhinagar, Gujarat State under Revised National Tuberculosis Control Program-RNTCP, for funding the

Operational Research Project, of which the present study is a part.

REFERENCES:

1. Govt. of India. TB India 2001: RNTCP status report, Central TB division, DGHS, Min of H & FW, New Delhi.
2. Ngamvithavapong J, Yanai H, Winkvist A, Diwan V " Health seeking behaviour and diagnosis for pulmonary tuberculosis in an HIV-epidemic mountainous area of Thailand", *Int J Tuberc Lung Dis*, 2001 Nov; 5(11):1013-20.
3. Sarmiento K; Hirsch-Moverman, Y. Colson "Help-seeking behavior of marginalized groups: a study of TB patients in Harlem, New York", *Int J Tuberc Lung Dis*, October 2006, 10(10):1140-5(6).
4. Yaya Kasse, Momodou Jasseh: "Health seeking behavior, health system experience and tuberculosis case finding in Gambians with cough" *BMC Public Health*, 2006, 6:143.
5. Rajamma K J; Rao D V; Narayana A S; Ramachandran Tuberculosis Research Centre(ICMR), Chetput, Madras-600 031 "Health seeking behaviour, acceptability of available health facilities and knowledge about tuberculosis in a tribal area.", *Indian J Tuberc*, 1996 Oct; 43(4): 195-9.
6. Grover A, Kumar R, Jindal S K, "Socio-demographic Determinants of Treatment-Seeking Behavior among Chest Symptomatics", *Indian J Community Med*, 2007, 31 (3), 206-9.
7. Oksnurak K, Kitayaporn D. & Akarasewi P., Factors contributing to success among TB patients – a cohort study in Bangkok, *Int J Tuberc Lung Dis*, 2008, 12(10): 1160-5.
8. Leung E, Leung C & Tam C., Delayed presentation and treatment of newly diagnosed pulmonary TB patients in Hong Kong, *Hong Kong Med J*, 2007, 13(3): 221-7.
9. Kishore J., National Health Programs of India, International standards for TB care, 7th edition, Century Publications, 2007.
10. Qureshi S., Morkve O. & Mustafa T., Patient and health system delays: health care seeking behavior among pulmonary TB patients in Pakistan, *J Pakistan Med Ass*, 2008, 58(6): 318-321.
11. Kaona F., Tuba M. & Siziya S., An assessment of factors contributing to treatment adherence and knowledge of TB transmission among patients on TB treatment, *BMC Health Service*, 2008, 8: 202.
12. Ito K, Yoshiyama T, Nagata Y, Kobayashi N, Kato S, Ishikawa N, What is needed to prevent defaulting from TB treatment?, *Kekkaku*, 2008, 83(8): 620-8.