

ADHERENCE TO DOTS THERAPY AMONG DIAGNOSED CASES OF TUBERCULOSIS IN RURAL AREAS OF WEST GODAVARI DISTRICT

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ABSTRACT

Background: India is the second most populated country in the world, and one-fourth of global incident Tuberculosis (TB) cases occur in India annually. However, several advances in the field of diagnosis and drugs have developed and the disease has shown a downward trend. Still education about adherence of the treatment play a important role in the reduction of tuberculosis burden in the country. **Objectives:** To determine the adherence to DOTS Therapy among diagnosed cases of Tuberculosis in rural area of West Godavari district and to identify the factors for non-adherence among the tuberculosis patients registered under RNTCP, who are non-adherent to DOTS therapy. **Methodology:** This was a community based cross sectional study carried out in the rural field practice area of Alluri Sitarama Raju Academy of Medical

Sciences, during the study period from July 2016 to August 2016. From TB registry, about 27 cases were selected through simple random method. Data was entered in MS office Excel 2007 Sheet. Data was represented in the form of tables and figures and necessary statistical tests like chi square tests were applied. **Results:** Out of 27 TB patients, 15/27 (55.5%) were

taking drugs regularly labelled them as adherent and 44.5% of the study population is not adherent to TB treatment. Maximum number of DOT providers (74%) were health workers in this study as TB treatment providers. Among the non adherent people, about 58.3% of Tb patients were missing the doses due to out of station of the individuals and another 16.6 % of Tb patients were not taking medicines because of feeling better tendency. **Conclusions:** Based on the study results, adherence of the Tuberculosis medication among the study population was low. There is a need to create more awareness about TB treatment advantages, duration of the treatment and also need to insist on importance of the adverse events of the untreated TB.

KEYWORDS: Age, Adherence, DOTS provider, Reasons for not adherent.

INTRODUCTION

Tuberculosis remains a worldwide public health problem despite the availability of effective drugs and vaccination. However new issues such as drug resistance, association of TB with diabetes, HIV, and Pediatric TB are a matter of concern.^[1] Tuberculosis is a chronic condition requiring treatment for at least a minimum of 6 months for new cases under the Revised National Tuberculosis Program. The retreatment cases and drug resistant Tuberculosis cases require longer durations of treatment.

In 2013, among the 9 million new cases of tuberculosis, 2.8 million cases occurred in India. Estimates of the urban and rural distribution of the annual risk of tuberculosis infection suggest that on average, smear-positive tuberculosis incidence in India is 69.2% higher in urban compared with rural areas. Crowded living conditions in urban districts are one possible factor. However, the increased prevalence of diabetes in urban areas may also play a role.^[7] As per Tuberculosis Control office report for India 2014, in the year 2012, 5.3 Lakh suspects were examined and of them 75 thousand were found out to be sputum smear positive cases in Andhra Pradesh. Annual risk of infection (ARI) with TB is 1.5%. (Correspond to 75 new cases of smear - positive pulmonary tuberculosis, per year for 1 lakh general population).^[8]

The DOTs strategy is accepted as an effective strategy for improving patient compliance. Adherence to treatment in tuberculosis is dependent on many factors such as lack of knowledge, cultural beliefs, language barriers, lack of access to healthcare and poor relationship between the Patient and the Health Care Worker ,competing priorities ,stigma

and mental health.^[2] A systematic review identified eight major themes across the studies: organization of treatment and care; interpretations of illness and wellness; the financial burden of treatment; knowledge, attitudes, and beliefs about treatment; law and immigration; personal characteristics and adherence behaviour; side effects; and family, community, and household support.^[3] A study from Mumbai in India reported that overall 50% (78/156) were non-adherent to ATT that is they interrupted treatment for ≥ 1 month. Study from Assam identified several reasons for non adherence.^[4] A recent article from WHO bulletin discussed the role of patients and health system in treatment adherence for tuberculosis.^[5] Literature search revealed less information from this part of the Country about adherence to treatment in tuberculosis.

Poor patient adherence to the treatment regimen is a major cause of treatment failure and of the emergence of drug-resistant TB. Previous research reported travel expenses, travelling to treatment centers, male sex, poor patient information and communication, alcoholism and homelessness as the major determinants of non-adherence to anti-TB treatment. Patient adherence to the standard anti-TB therapy in developing countries has been estimated to be as low as 40%.

Treatment adherence by TB patients is a complex and multifaceted behavioural issue that needs to be understood better. The TB literature is written almost entirely from a bio medical perspective. Recent studies to show why people interrupt and may stop taking anti tuberculosis treatment (ATT) are still scarce. Lack of a comprehensive and holistic understanding of barriers to and facilitators of, treatment adherence is currently a major obstacle to find effective solutions. Behavioural and social research for ATT adherence is important particularly when epidemiology of the disease has changed. The present study was undertaken at the rural areas of West Godavari, India, to determine the extent of adherence in pulmonary and extra pulmonary TB patients receiving DOTS therapy and to evaluate the factors contributing to non-adherence.

OBJECTIVES

1. To determine the adherence to DOTS Therapy among diagnosed cases of Tuberculosis in rural area of West Godavari district.
2. To identify the factors for non-adherence among the tuberculosis patients registered under RNTCP, who are non-adherent to DOTS therapy.

MATERIALS AND METHODS

Study Design and Setting

This was a community based cross sectional study carried out in the rural field practice area of Alluri Sita Ramaraju Academy of Medical Sciences, Eluru, West Godavari, Andhra Pradesh.

Study period

This study was conducted from July 2016 to August 2016.

Target Population: People diagnosed as cases of tuberculosis as per the RNTCP guidelines and currently receiving DOTS therapy in RHTC area of medical college.

Sampling procedure

Calculation of sample size: As per WHO (2014), global Tuberculosis report 2014 an estimated 9 million people developed Tuberculosis which is equivalent to 126 cases per 1,00,000 population. One of the rural area of West Godavari is Akiveedu, which is our rural field practice area of Alluri Sita Ramaraju Academy of Medical Sciences, Eluru. From the TB registry, 27 cases were selected through simple random method and address of the patients from DOTS directory.

Inclusion Criteria

Those cases (patients) over 18 years,
Either Pulmonary or extra pulmonary cases,
Either new or retreatment cases.

Exclusion criteria

Those <18 years
Those who are not willing to participate in the study.

Operational definition

Adherent: If the patient is consuming anti tuberculosis drugs as per the schedule of treatment.

Non-adherent: If patient has skipped more than a week's doses of DOTs regimen in the last one month either continuously or intermittently.

Ethical clearance

Institutional ethics committee approval (IEC/ASR/002/2016) was taken before conducting the study. Informed consent in local language was obtained from patients before including them in the study.

Method of Data Collection

An interview questionnaire was prepared in consultation with the experts in the department and under supervision of the guide. The list of patients receiving DOTS therapy was obtained from the rural health centre and the patients were interviewed at their houses. Information about medication was asked using the interview schedule and verified through treatment card and physical verification of blister packs of the drugs. All the study subjects were explained in detail about the purpose and methodology of the study and were fully assured of strict confidentiality.

Data and Statistical Analysis

Data was entered in MS office Excel 2007 Sheet and compiled as percentages. Data was represented in the form of tables and percentages and necessary statistical tests like chi square tests were applied.

RESULTS

Table 1: Age and sex wise distribution of study population.

Age in Years	Male	Female	Total
18 - 30	1 (33.3%)	2 (66.7%)	3 (100%)
30 - 50	10 (62.5%)	6 (37.5%)	16 (100%)
50 - 60	6 (85.7%)	1 (14.3%)	7 (100%)
> 60 years	1 (100%)	0 (0%)	1 (100%)
Total	18 (66.7%)	9 (33.3%)	27 (100%)

Out of 27 registered Tuberculosis (TB) patients, 18 (66.7%) were females and 9 (33.3%) were males. Maximum number of Tb patients in the age group of 30-50 yrs age group. There was no statistically significant association was found between age and sex of the TB patients (P=0.32, 1df, $X^2 - 0.94$).

Table 2: Type of the people involved as DOTS Providers in study population.

DOTS Provider	Number	Percentage (%)
Health worker	20	74%
ASHA	5	19%
Anganwadi	2	7%
Total	27	100%

Maximum number of DOT providers (74%) were health workers in this study and only 7% were Anganwadi workers.

Table 3: Knowledge on duration of treatment of TB among study Population.

Category of TB treatment	Correct duration replied	In correct duration replied	Total
Cat - I	8 (57.1%)	6 (42.9%)	14 (100%)
Cat - II	5 (38.4%)	8 (61.6%)	13 (100%)
Total	13 (48.1%)	14 (51.9%)	27 (100%)

Out of 27 TB patients, Category I i.e new cases were 14, of which 42.9% had incorrect knowledge about duration of treatment. Among Category II individuals, 61.6% answered incorrect duration of TB treatment. There was no statistically significant difference was observed between knowledge and category of treatment ($P=0.32$, 1df, $X^2=0.94$).

Table 4: Place of TB drugs Intake.

TB Medicine in take	Number	Percentage (%)
Health Facilities	10	37%
DOTS provider	15	56%
Home	2	7%
Total	27	100%

Out of 27 Tb patients, 56% of TB patients were receiving treatment from DOTS provider at their place, 37% were taking treatment from health facility/ centre and 7% were taking treatment from the home.

Table 5: Treatment status of intensive phase (IP) completion at DOTS.

Treatment of IP from DOTS agent	Number	Percentage (%)
Yes (correctly taking treatment)	25	93%
No (incorrectly taking treatment)	2	7%
Total	27	100%

Out of 27 Tb patients, 93% were taking intensive phase treatment from DOTS agent and 7% were not taking treatment from DOTS agent.

Table 6: Adherence status in study population.

Adherence	Number of people	Percentage (%)
Yes	15	55.5%
No	12	44.5%
Total	27	100%

Out of 27 TB patients, 15/27 (55.5%) were taking drugs regularly labelled them as adherent and remaining 12 (44.5%) were labelled as non adherent (Those missed more than 1 week treatment in a month).

Table 7: Reason for missing doses in study subjects.

Reasons	Number	Percentage (%)
DOTS provider not available	2	16.6%
Not informed about medicine	0	0%
Side effects	1	8.3%
Social reasons	0	0%
Out of station	7	58.3%
Feeling better	2	16.6%
Total	12	100%

Out of 27 TB patients, 12 (44.5%) were missing doses (more than 1 week treatment) not taken. Out of 12 cases as non adherent, due to various reasons and mentioned as follows. About 58.3% of Tb patients were missing the doses due to out of station of the individuals and another 16.6% of Tb patients were not taking medicines because of feeling better tendency.

DISCUSSION

Out of 27 registered Tuberculosis (TB) patients, 18 (66.7%) were females and 9 (33.3%) were males. Maximum number of Tb patients in the age group of 30-50 yrs age group. Tuberculosis affects the adult age group in their most productive age group.^[1] Tuberculosis is also considered to be a social diseases and affects the poor. Tuberculosis is considered as a Social disease affecting the most vulnerable population. Though the treatment for tuberculosis is available free under RNTCP, the chronicity of the condition leads to inability to perform work for days together. This causes the economic burden to the family to increase.

The treatment for tuberculosis is through multi-drug approach so as to act upon the various forms of Mycobacterium tuberculosis. The delays in initiating treatment may be from both patient side and the provider side such as seeking second opinion by patient, long distance between health facility and patients home, the delay in the mandatory home visit by the health worker.^[9]

In the study population, 52% were started on Category I and 48% were receiving Category II treatment and the incorrect answer about the duration of treatment was given by 42.9% of Category I and 61.6% of Category II subjects respectively. The lack of knowledge about

duration of treatment is comparable to other studies, previous study from Mumbai identified that treatment adherence is associated with correct knowledge about the duration of treatment.^[5] A cause of concern in the present study are that nearly half the patients are receiving Category II treatment i.e. Are defaulters, treatment failures or relapse cases. The high proportion of Category II patients giving the incorrect answer to the duration of treatment highlights the importance of providing Health education on the duration of treatment to avoid the emergence of drug resistance.

It was observed in current study that 7% were taking treatment from the home. In spite of Revised National Tuberculosis Control Program (RNTCP) promoting DOTS where the treatment is provided under supervision of a DOTS agent who is responsible and accountable to the health system and acceptable to the patient. It is observed from two subjects (7%) are receiving treatment at home. The health care workers availability and attitude may be one reason for patients to take treatment at home. A previous study through Focused group discussions revealed unfriendly attitudes of health care workers as barriers to adherence to treatment.^[10]

Out of 27 TB patients, about more than half (55.5%) were taking drugs regularly, and were labelled as adherent and remaining 12 (44.5%) were labelled as non adherent (Those missed more than 1 week treatment in a month). Previous studies from across the globe and the country have also reported high non-adherence, similar to our study.^[5] However other studies have reported lesser adherence rates when compared to current study.^[4,11] The differences in prevalence of non-adherence may be partially due to sample size, setting of the study and the definition used for non-adherence. Previous Meta analysis identified that factors associated with non-adherence are organization of treatment and care, interpretation of illness and wellness, financial burden of treatment, knowledge about treatment, personal characteristics and side effects.^[3]

The commonest cause of missing doses was due to going out of station by the individuals and feeling better tendency of the subjects. Hence, there is a need to address these issues in order to promote treatment adherence and complete cure of the disease. Other factors such as DOTS provider not being available and patient suffering from side effects were reported. Hence, motivating the DOTS provider and patient about the importance of completing the treatment without missing the doses should be addressed. Previous studies identified poor compliance due to shortage of drugs. However this did not appear to be a problem in the

current study. An analysis of the risk factors for non-adherence was not taken up in the study as the sample size was small. However other studies have identified that lack of knowledge about treatment, male gender, illiteracy were associated with poor adherence.^[11,12] The limitation of our study, as it is a ICMR project of short term student fellowship program as the study period itself is short and small sample and results of this study cannot be generalising for the population interventions. Need similar large sample studies are required to substantiate the present study findings in the population.

CONCLUSIONS

Non-adherence to tuberculosis treatment was observed as high among the study subjects. Diagnosis of Tuberculosis was good, starting TB treatment, continuation of intensive phase treatment was satisfactory. There is a need to improve the adherence of the treatment for tuberculosis through Health education/counselling of the patients about the duration of treatment. More monitoring and supervision of the DOTS by the medical officer and other supporting staff to promote better service delivery of the DOTS provision. Patients must be counselled about the side effects and advised to report to the Medical Officer, RHC. Reasons for non adherence to be discussed and addressed among Tuberculosis patients and also relatives of the patients regarding timely detection of Tuberculosis (TB), correct length of TB treatment and adherence to the treatment to be periodically discussed. Further In depth analysis through a qualitative approach may help to identify other reasons for Non-adherence.

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