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Original Research Article

A cross sectional study on factors influencing non-adherence to treatment among paediatric tuberculosis patients in field practice area of Osmania Medical College, Hyderabad

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ABSTRACT

Background: Tuberculosis (TB) remains to be a major burden in India. Treatment adherence is a key factor in the outcome of therapy. Non-adherence may also result in acquired drug resistance. This study has been one of the very few research endeavours to identify factors associated with non-adherence to TB treatment among paediatric patients in Hyderabad. The objectives are to determine the factors influencing non-adherence to treatment among paediatric TB patients and to study the role of sociodemographic factors in non-adherence to treatment.
Methods: A cross sectional study was conducted between June 2021 to September 2021 among paediatric TB patients ≤18 years old who were on anti-TB treatment in field practice area of Osmania Medical College, Hyderabad. By using convenient sampling method, a sample size of 150 has been taken. Data was collected using a pretested semi structured questionnaire. Data was entered into Microsoft excel and analysed using Epi Info version 7.2.2.6 and frequencies, proportions, and Chi square tests used.
Results: Among the 150 paediatric TB patients, majority 56.2% of the patients belong to male gender. Non-adherent to anti-tuberculosis treatment were 18%. In this, 10% belongs to younger age (<5 years), 4% females, 14% males, 13.3% rural residence, 4.7% urban residency, 14% were having side effects. The presence of side effects to anti-tubercular is the main influencing factors for non-adherence to treatment.
Conclusions: The identification of various factors could help in increasing the knowledge about TB and in taking measures to cope-up with side effects to anti-tubercular medications which is required to improve treatment adherence.

Keywords: Tuberculosis, Adherence, Paediatric TB, DOTS, Anti-tuberculosis treatment

INTRODUCTION

Tuberculosis (TB) remains to be a major burden in India. It is an infectious disease caused by Mycobacterium tuberculosis and it primarily affects lungs and causes pulmonary TB. It can affect intestine, meninges, bones and joints, lymph glands, skin and other tissues of the body. It is usually chronic with varying clinical manifestations and is transmitted mainly by droplet infection and droplet nuclei. The time from receipt of infection to the development of a positive tuberculin test ranges from 3 to 6 weeks, and thereafter, the development of disease depends upon the closeness of contact, extent of the disease and sputum positivity of the source case (dose of infection) and host-parasite relationship.[1] Thus the incubation period may be weeks, months or years.[1]

TB occurs in every part of the world. Every year, 10 million people fall ill with TB. Despite being a preventable and curable disease, 1.5 million people die from TB each year – making it the world's top infectious killer.[3]

According to World Health Organization (WHO): a bacteriologically confirmed TB case is one from whom a biological specimen is positive by smear microscopy, culture or WRD (such as expert MTB/RIF). All such cases should be notified, regardless of whether TB treatment has started.[2]

Also, according to WHO, a clinically diagnosed TB case is one who does not fulfil the criteria for bacteriological confirmation but has been diagnosed with active TB by a clinician or other medical practitioner who has decided to give the patient a full course of TB treatment. This definition includes cases diagnosed on the basis of X-ray abnormalities or suggestive histology and extrapulmonary cases without laboratory confirmation. Clinically diagnosed cases subsequently found to be bacteriologically positive (before or after starting treatment) should be reclassified as bacteriologically confirmed.[2]

Bacteriologically confirmed or clinically diagnosed cases of TB are also classified according to: anatomical site of disease; history of previous treatment; drug resistance; and human immunodeficiency virus (HIV) status.[2]

Treatment adherence is a key factor in the outcome of therapy. Non-adherence may also result in acquired drug resistance.

Non-adherence

Missing of more ≥2 consecutive weeks of directly observed therapy (DOTS) was taken as non-adherent.6

Need for the study

The problem of non-adherence continues to persist due to varied reasons. In the Indian context, most of the studies in the literature have focused on identifying the factors affecting non-adherence to TB treatment. This study has been one of the very few research endeavours to identify factors associated with non-adherence to tuberculosis treatment among paediatric patients in Hyderabad.

Objectives

Objectives of the study were: to determine the factors influencing non-adherence to treatment among paediatric tuberculosis patients; and to study the role of sociodemographic factors in non-adherence to treatment.

METHODS

Study design

The study was a cross sectional study.

Study period

The period of the study was from June 2021 to September 2021.

Study population

Paediatric TB patients ≤18 years old who were on anti-TB treatment were a part of the study population.

Sample size

150 paediatric TB patients using convenient sampling technique was the sample size.

Selection of study subjects

There are 26 DOTS centres under Osmania TU in urban field practice area and one in rural field practice area. By identifying the DOTS centres under urban and rural field practice areas, list of information containing paediatric tuberculosis patients who were under treatment was obtained. From the list a sample of 150 patients were selected by convenient sampling technique.

All paediatric TB patients registered under DOTS from June 2021 to September 2021 were taken into study.

Inclusion criteria

All paediatric pulmonary TB patients registered under DOTS who have given consent for the study were included in the study.

Exclusion criteria

TB patients who did not give informed consent; and patients who are unavailable, unable to communicate, seriously ill at the time of data collection were excluded.

Data was entered into Microsoft excel and analysed using Epi Info version 7.2.2.6.

Study tool

Data was collected using a pretested semi structured questionnaire.

Statistical tests employed

Statistical tests such as frequencies, proportions, and Chi square test were employed.

RESULTS

The mean age of the study population was 10±3 years. Among the 150 paediatric TB patients, 43.8% were females. Non-adherent to anti-TB treatment were 18%. In this, 10% belongs to younger age (<5 years), 4% females, 14% males, 13.3% rural residence, 4.7% urban residency, 14% were having side effects like skin rashes, itchy skin, nausea, vomiting, diarrhoea, loss of appetite, tingling sensation of hands, feet. The presence of side effects to

anti-tubercular is the main influencing factors for non-adherence to treatment.

In the present study, majority 56.2% of the patients belong to males among the total study population. 43.8% belong to females (Figure 1).

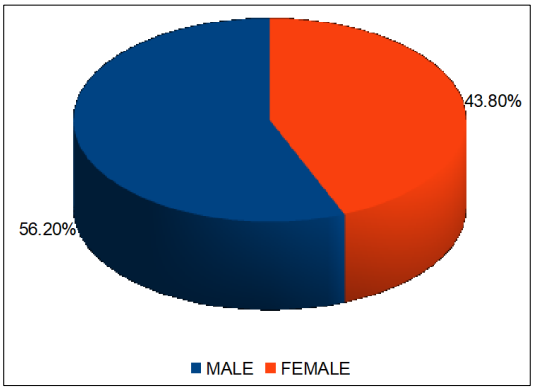

Figure 1: Gender wise distribution.

In the present study, majority 50.64% of the patients belong to Muslim religion among the total study population. 7.02% and 42.34% belong to Christian and Hindu religion respectively (Figure 2).

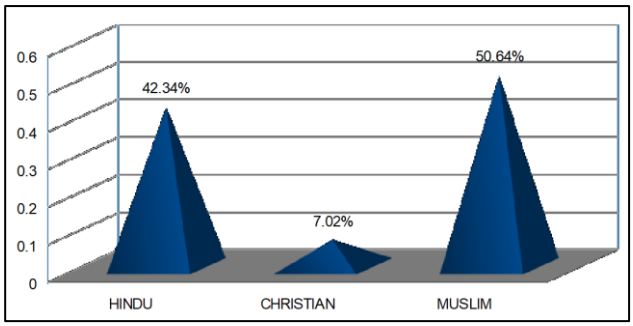

Figure 2: Distribution based on religion.

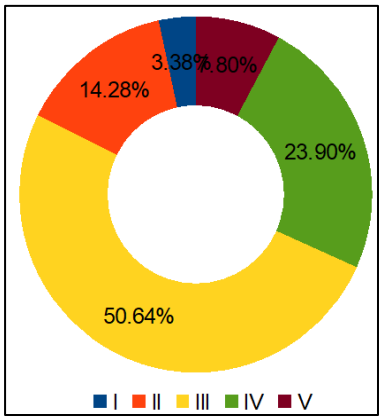

Figure 3: Distribution based on SE status.

In the present study most of the patients 50.64% belonged to III socio-economic class among total study population. 23.90% belonged to IV socio-economic class. 14.28%, 7.8% and 3.38% belonged to II, V and I socio-economic class respectively (Figure 3).

In the present study, majority 82% of the patients were adherent to anti-TB medications among the study population whereas 18% were non-adherent to medications (Figure 4).

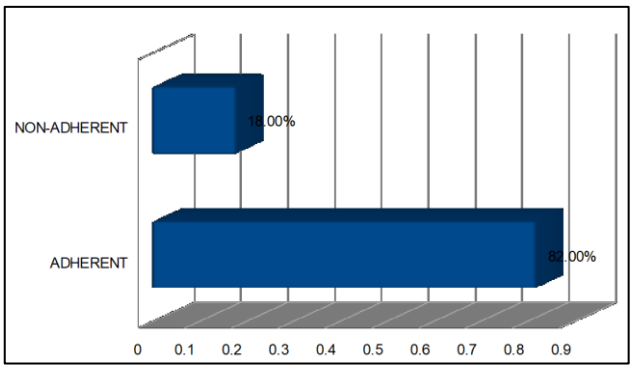

Figure 4: Distribution based on treatment adherence.

Table 1: Predictors of non-adherence to treatment.

Variable	Adherent	Non-adherent	P value
Age (years)			
0-5	20	15	0.00007
6-10	50	6	
11-18	53	6	
Gender			
Female	66	6	0.003
Male	57	21	
Place of residence			
Urban	63	7	0.017
Rural	60	20	
Presence of side-effects			
Yes	6	21	<0.0001
No	117	6	

In the present study, younger age (<5 years), female gender, rural residence, presence of side effects like skin rashes, itchy skin, nausea, vomiting, diarrhoea, loss of appetite, tingling sensation of hands, feet were some of the factors influencing non-adherence to treatment (Table 1).

DISCUSSION

Poor adherence contributes to worsening of TB not only by increasing incidence but also by increasing drug resistance. Resistance to drugs has become a serious obstacle in control of the disease. Adherence to tuberculosis treatment regimen is the major and main factor that contributes to its cure rate and better patient health outcomes.

In the present study the prevalence of non-adherence to anti-TB medications was 18% among total study population. Similar findings were seen in study done by

Fekadu et al where 26.7% were non-adherent and 73.3% of them have adhered to the treatment regimen.5 In the present study, younger age (<5 years), female gender, rural residence, presence of side effects was some of the factors influencing non-adherence to treatment. Similar findings were seen in study done by Fekadu et al where female gender, younger age, living in urban area, and patients who did not experience side effect were significant predictors.[5] Similar findings were seen in study done by Bagchi et al.[6] In another study done by Santos et al showed that the majority of patients were compliant (63.9%).[7] Non-compliance was found in 36.1%. Non-compliance was related to social problems/family dysfunction (low socioeconomic status and parent's unemployment).

In a study done by showed Chang et al that failure to complete isoniazid therapy in patients aged 0-18 years was affected by older age, non-hispanic race, development of hepatitis, and symptoms of adverse effects.[8] This was in contrast to the present study where younger age group was significantly associated with non-adherence to treatment. In another study done by Laghari et al showed that the independent variables that had a statistically significant positive association with non-adherence were male sex, age, caregivers with no formal education, financial barriers, insufficient counselling by healthcare workers and unfriendly attitude and poor support from healthcare professionals.[9]

Limitations

The present study was conducted with a small sample size. Therefore, the findings of the study may not be generalizable to the whole population of Hyderabad. Another limitation was the short time span which did not allow follow up of the study subjects to know the treatment outcome.

CONCLUSION

The present study was a cross sectional study done to determine the factors influencing non-adherence to treatment among paediatric tuberculosis patients in field practice area of Osmania Medical College, Hyderabad. The mean age of the study population was 10±3 years. Among the 150 paediatric TB patients, 43.8% were females. Non-adherent to anti-tuberculosis treatment were 18%. In this, 10% belongs to younger age (<5 years), 4% females, 14% males, 13.3% rural residence, 4.7% urban residency, 14% were having side effects like skin rashes, itchy skin, nausea, vomiting, diarrhoea, loss of appetite, tingling sensation of hands, feet. The presence of side effects to anti-tubercular is the main influencing factors for non-adherence to treatment.

Recommendations

The identification of various factors could help in increasing the knowledge about TB and in taking measures to cope-up with side effects to anti-tubercular medications which is required to improve treatment adherence.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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