

Pediatric Tuberculosis: A study of the socio-demographic profile of the patients**Desh Dipak Sinha¹, Manoj Kumar Singh², Rakesh Kumar^{3*}**¹Assistant Professor, Department of Pediatrics, PMCH, Patna, Bihar, India²Associate Professor, Department of Pediatrics, PMCH, Patna, Bihar, India³Assistant Professor, Department of Pediatrics, PMCH, Patna, Bihar, India

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Abstract

Background: Tuberculosis (TB) is considered to be one of the top ten causes of mortality in children. Of the nine million annual tuberculosis cases, about one million (11%) occur in children (under 15 years of age). Childhood tuberculosis is a neglected aspect of the tuberculosis epidemic. It infects one third of the world's population at any point of time. Children are especially vulnerable to the effects of tuberculosis, which is often difficult to diagnose and therefore difficult to treat effectively. Pediatric TB results from failure of TB control in adults. **Aim:** The aim of the study was to study socio demographic profile of pediatric tuberculosis patients. **Methods:** This was a cross sectional observational, descriptive epidemiological study. The study was conducted among 148 pediatric TB patients who were currently under treatment at Hospital. A pre-designed, pre-tested and semi-structured questionnaire was used to interview caregivers of pediatric TB patients and they were followed up at two more occasions and socio demographic information was collected. The collected data was analyzed using statistical package for social science (SPSS 17 Trial version). **Results:** Out of 148 pediatric patients 85 (57.4%) were male. Age range of the children was 1 to 14 years. In our study mean age of children was 8.41±2.86 years. 67 (45.2%) patients were adolescents. 125 (84.4%) patients were from rural area. 62 (41.8%) heads of the family of patients were illiterate. 114 (77.02%) of the patients lived in joint family. 88 (59.4%) patients had kuccha house. Overcrowding was present in 87.8% of the patients. Family history of TB was present in only 22.9 % of the patients. 77.7% of the patients belonged to social IV and V according to modified Prasad's classification. 103 (69.5%) patients had extra pulmonary TB. Category-1 constituted 123 (83.1%) cases. 3 % patients had HIV infection. **Conclusions:** Apart from pharmacological treatment, poor housing condition and illiteracy of the parents of these patients need to be addressed.

Keywords: TB, Pediatric TB, Tuberculosis, Socio demographic profile, Extra pulmonary TB.

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Introduction

Tuberculosis (TB) is considered to be one of the top ten causes of mortality in children. The worldwide burden of pediatric TB as estimated by World Health Organization (WHO) in 2011 was found to be about 0.5 million with 64,000 deaths among children due to TB. The annual risk of TB infection in children in developing countries like India is 2–5%. Tuberculosis is a worldwide, chronic communicable bacterial disease. It is a very strange disease because of its varied clinical presentation, host response, chemotherapeutic response, etiology and social implications. It continues to be one of the most important public health problems worldwide. It infects one third of the world's population at any point of time. There are approximately 9 million new cases of all forms of TB occurring annually and 3 million people dying from it each year. 95 % of cases and 98 % of the TB deaths are contributed by developing countries[1]. India is the highest TB burden country accounting for one fifth of the global incidence and it is 17th among 22 high TB burden countries in terms of TB incidence rate.² Every year, approximately 1.8 million persons develop tuberculosis, of which about 0.8 million are new smear positive highly infectious cases. Tuberculosis kills about 0.32 million people every year. Two out of every five Indians are infected with TB bacillus. Every day about 5000 people develop the disease[2,3].

Most of new cases of TB and deaths due to TB occur in developing countries where infection is often acquired in childhood. No other chronic infection of childhood comes anywhere close to TB. It is one of the giant killers of children. Childhood deaths from TB are usually caused by disseminated disease[4].

Tuberculosis causes poverty but also found more amongst poor. The majority of its victims are migrant, labourers, slum dwellers, residents of backward areas and rural and tribal pockets. Poor living conditions, malnutrition, shanty housing and overcrowding are the main reasons for the spread of the disease. Children are especially vulnerable to the effects of tuberculosis, which is often difficult to diagnose and therefore difficult to treat effectively. Pediatric TB results from failure of TB control in adults[5]. This study is a humble effort to throw light on socio demographic profile of pediatric tuberculosis patients.

Materials and methods

This Cross sectional observational, descriptive epidemiological study was conducted at Upgraded Department of Paediatric, Patna Medical College and Hospital, Patna. The study was approved by the institutional research and ethical committee. The study was conducted between September 2020 and July 2021. An informed and written consent was taken from the participating subjects prior to the commencement of the study.

The study was conducted among all the 148 pediatric TB patients who were currently under treatment at Hospital. All patients and their parents were interviewed at center. Each interview was conducted at a time when patient come into OPD and ward. Parents of the patient were informed about the purpose of the study and their informed written consent was taken. By interviewing them on the basis of pre-designed and pre tested Performa, socio demographic information was collected. The collected data was analyzed using statistical

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package for social science (SPSS 17 Trial version).

Results

Out of 148 pediatric patients 85 (57.4%) were male. Age range of the children was 1 to 14 years. In our study mean age of children was 8.41±2.86 years. Mean age of male patient was 9.12±4.26 years. Mean age of female patient was 7.12±3.86 years. 67 (45.27%) patients were adolescents. 125 (84.4%) patients were from rural area. 62 (41.8%) heads of the family of patients were illiterate. 114 (77.02%) of the patients lived in joint family. 88 (59.4%) patients had

kuccha house. Overcrowding was present in 87.8% of the patients. Family history of TB was present in only 22.9% of the patients. 77.7% of the patients belonged to social IV and V according to modified Prasad’s classification (Table 1). 103 (69.5%) patients had extra pulmonary TB (Table 2). These pediatric TB cases were divided into two categories as per Revised National Tuberculosis Control Programme (RNTCP). Category-1 constituted 123 (83.1%) cases. 25 (16.8%) cases were in Category-2 (Table 3). 3% patients had HIV infection. 56 % of patients preferred syrup formulation, if available.

Table 1: Socio demographic profile of pediatric tuberculosis patients

Character	Specific Character	No. of Patients (n=148)	Percentage
Sex	Male	85	57.4
	Female	63	42.5
Age groups (in years)	Preschool (1-4 Years)	26	17.5
	Primary school (5-9 years)	55	37.1
	Adolescent (10- 14 years)	67	45.2
Residence	Rural	125	84.4
	Urban	23	15.5
Education of Heads of Family	Illiterate	62	41.8
	Primary	40	27.0
	Secondary	17	11.4
	Middle school	14	9.4
	Higher secondary	11	7.4
Type of family	Above Highersecondary	4	2.7
	Nuclear	34	22.9
Housing condition	Joint	114	77.0
	Kuccha House	88	59.4
	Pukka House	60	40.5
	Overcrowding Present	130	87.8
Family history of TB	Overcrowding Absent	18	12.1
	Present	34	22.9
Social Classification according to Modified Prasad’s Classification	Absent	114	77.0
	Class-1	0	0.0
	Class-2	11	7.4
	Class-3	22	14.8
	Class-4	68	45.9
	Class-5	47	31.7

Discussion

In Thakor N et al out of 100 patients, 60 were female and 40 were male. Age range was 1-14 year. Mean age of children was 8.63±3.66 years. Mean age of male patients was 9.36±3.16 years. Mean age of female patients was 7.53±4.10 years. According to modified Prasad’s classification, 78% patients belonged to lower socioeconomic class. 94% patients were in Category-1 and 79% had extra pulmonary TB. 4% patients had HIV infection. Parents of 90% patients didn’t have knowledge of TB. 60% of patients preferred syrup formulation, if available [5].

Table 2: Age group and type of TB wise distribution of the patients

Age Group	Type of TB		Total
	Extra Pulmonary TB	Pulmonary TB	
Preschool (1-4 years)	19	7	26 (17.5)
Primary school (5-9 years)	42	12	54 (36.4)
Adolescent (10-14 years)	42	26	68 (45.9)
Total	103 (69.5)	45 (30.4)	148 (100)

In the study carried out by S.K. Kabra et al, mean age of the children was 7.75 years and sex distribution was almost equal. Category-1 constituted 70.4% cases. Category-2 and Category-3 cases were 2.6% and 27.0% respectively [6].

Table 3: Gender and category wise distribution of the patients

Category	Female	Male	Total
Category 1	55	68	123 (83.1)
Category 2	8	17	25 (16.8)
Total	63 (42.5)	85 (57.4)	148 (100)

In the study of V K Arora et al, Extrapulmonary TB (EPTB) was seen in 47 percent of children. Among EPTB, lymphadenopathy was seen in 75 % of cases in their study [7]. Whereas, in the study carried out by Saumyaswaminathan et al, lymphadenopathy was the most

common (67%), among extrapulmonary manifestations [8]. In our study Out of 148 pediatric patients 85 (57.4%) were male. Age range of the children was 1 to 14 years. In our study mean age of children was 8.41±2.86 years. 67 (45.2%) patients were

adolescents. 125 (84.4%) patients were from rural area. 62 (41.8%) heads of the family of patients were illiterate. 114 (77.02%) of the patients lived in joint family. 88 (59.4%) patients had kuccha house. Overcrowding was present in 87.8% of the patients. 77.7% of the patients belonged to social IV and V according to modified Prasad's classification. 103 (69.5%) patients had extra pulmonary TB. Category-1 constituted 123 (83.1%) cases. 3% patients had HIV infection. 56% of patients preferred syrup formulation, if available. In our study family history of TB was present in only 22.9 % of the patients similar to the findings observed by Madhi F et al in a Paris suburb, where 22% had history of contact with TB patients[9]. Prevalence of HIV infection in the patients was 3%. Several studies have shown prevalence between 0.8 to 2%[10-12].

Conclusion

Majority of the patients (69.5%) had extra pulmonary TB. Majority of the patients (83.1%) were in category-1. More than half of the cases (54.05%) were in age group of 1- 9 years. Overcrowding was present in 87.8% of the patients. 77.7% of the patients belonged to social IV and V according to modified Prasad's classification. This study has observed that pediatric TB still continues to be a major problem in 1- 9 years of age group and belonging to low socio-economic status. Poor housing conditions which continue to haunt our population is an important risk factor for TB transmission. Thus improving the socio-economic conditions and proper treatment of adult TB who are the sources of infection to children will go a long way in preventing pediatric TB and protect children who are the future of our country.

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