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Research article

A study of knowledge of adolescents who are suffering with tuberculosis, regarding anti-tuberculosis treatment and its compliance, from various hospitals of Mumbai

P. N. Pimpalkar*, Bharti P. Pimpalkar

Government College of Nursing, Aurangabad, Maharashtra, India

Abstract

Introduction: Tuberculosis (TB) is a contagious, infectious disease, due to *Mycobacterium tuberculosis* (MT), which usually lasts throughout the life course and determines the formation of tubercles in different parts of the body. **Methodology:** In the present study adolescents between age group 14-18 years diagnosed with tuberculosis, and adolescents who take ant tuberculosis treatment regularly. The researcher used the technique of interview and questionnaire schedule to collect the data for the study. A semi-structured interview and questionnaire were scheduled to assess the knowledge of adolescents who are suffering from tuberculosis, regarding anti-tuberculosis treatment and its compliance. The tool had two sections with the section I including demographic data of adolescents who were suffering from tuberculosis and section II with knowledge of adolescents who were suffering from tuberculosis regarding definition, cause, clinical manifestation, investigations, treatment, drug compliance, complications, and reason of noncompliance for treatment of tuberculosis. **Results:** In the present study, we found that 46% subjects belonged to 17-18 years age group category. 56% subjects were females (table 1). We also found that 66% subjects completed their SSC. 64% subjects were Hindu by religion followed by 26% Muslims. Among the 50 subjects, 28% were involved in clerical work while only 2% were unemployed. There were 2% each subject who was earning > Rs. 19,575 and < Rs. 979 respectively. 64% subjects were living in the joint family while the majority of the subjects belonged to Chawal (46%) and Zopadpatti (40%). 78% were diagnosed with pulmonary TB while remaining 22% subjects were diagnosed with extrapulmonary TB. 94% subjects were aware of ATT while 80% were aware of the regularity of the treatment. 96% responded that discontinuation of the treatment may result in relapse while 70% responded that the discontinuation may lead to spread of the complication to the other part of the body. **Conclusion:** The present study identified that the TB adolescent had adequate knowledge about TB treatment and its compliance; however, increasing knowledge about the same could be an effective means to prevent and spread the disease.

Key words: Anti-tuberculosis, tuberculosis, adolescents.

*Corresponding author: Mr. P. N. Pimpalkar, Government College of Nursing, Aurangabad, Maharashtra, India. Email: pimpalkar10@gmail.com

1. Introduction

Tuberculosis (TB) is a contagious, infectious disease

due to *Mycobacterium tuberculosis* (MT), which usually lasts throughout the life course and determines the formation of tubercles in different parts of the body. MT has very ancient origins: it has survived over 70,000 years and it currently infects nearly 2 billion people worldwide; with around 10.4 million new cases of TB each year, almost one-third of the world's population are carriers of the TB bacillus and are at risk for developing active disease.[1]

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It has been hypothesized that the genus *Mycobacterium* originated more than 150 million years ago. *Mycobacterium ulcerans*, causing infections since ancient times, requires specific environmental conditions as reflected nowadays in its distribution worldwide.[2]

Three million years ago, an early progenitor of MT might have infected early hominids in East Africa and 20,000-15,000 years ago, for the first time, the common ancestor of modern strains of MT might have appeared.[3,4] Egyptian mummies, dating back to 2400 BC, reveal skeletal deformities typical of tuberculosis; characteristic Pott's lesions are reported and similar abnormalities are clearly illustrated in early Egyptian art.[5] The first written documents describing TB, dating back to 3300 years ago, was found in India.[1]

TB has always been associated with a high mortality rate over the centuries, and also nowadays, it is estimated to be responsible for 1.4 million TB deaths, among infectious diseases after human immunodeficiency virus (HIV).[6] TB is a major public health problem especially in South East Asian region and other under-developed countries. India is the highest TB burden country. It contributes more than 25% of the world's incident TB cases.[7] Increase in anti-TB drug resistance has worsened the situation. No adherence to Anti-Tuberculosis Treatment (ATT) remains a major challenge in TB control activities. It contributes significantly to the development of prolonged infectiousness, drug resistance, relapse, and death. A wide range of factors interact, impacting treatment adherence like socioeconomic condition, knowledge of TB and its treatment, extent of patient-provider interaction, stigma, illness representation, etc.[8]

Due to its infectious nature, complex immunological response, chronic progression and the need for long-term treatment, TB has always been a major health burden; in more recent years, the appearance of multi-drug resistant forms and the current TB-HIV epidemic, associated with its severe social implications, treating and preventing TB have represented a permanent challenge over the course of human history.[9]

Tuberculosis has long been a disease of poverty and early efforts to control the disease are focused on the elimination of poverty. In urban areas in particular tuberculosis, epidemiology parallels stark economic disparities. Although effective treatment has allowed the control of tuberculosis through public health programmers, complete elimination of tuberculosis is unlikely without board improvement in the social consents of the disease both in India and abroad.

In India, the prevalence of primary tubercular infection in the pediatric population is alarming. The annual risk of tubercular infection is 1.5 percent in the country and 40 percent of children by 16 years have acquired the infection. Nearly 10 percent of infected eventually develop the disease (5% of these children may be expected to develop TB in the first two years of life);

this large pool of infected people, means that TB will continue to be a major problem in the foreseeable future. Assessment of knowledge of TB patients about their disease and treatment is needed to assess impact of ongoing Information, Education, and Communication (IEC) activities and TB control activities regarding patients' education under Revised National Tuberculosis Control Program (RNTCP).

The present study was aimed to study knowledge among tubercular adolescent regarding TB, and its treatment and compliance.

The proposed study was conducted in selected hospitals which predominantly diagnose and treat the patients with TB, i.e with a bed strength of 1800, 500 and respectively. All the two hospitals had well-established department of tuberculosis. These hospitals received the maximum number of adolescents diagnosed with tuberculosis. All these hospitals are attached to medical and nursing educational institutions. These hospitals provide comprehensive services to all age groups.

2. Methodology

In this study, the sample size consisted of 50 adolescents suffering from tuberculosis that fulfilled the criteria laid down for selection of the sample. The period of data collection was from 5th April to 3rd May 2010 from 7 a.m. to 6 p.m. prior to the commencement of the study, permission for conducting the study was obtained from the concerned authorities. In the present study, inclusion criteria were: Adolescents between age group 14-18 years diagnosed with tuberculosis, who can speak, read and write English/Marathi/Hindi, and adolescents who take anti tuberculosis treatment regularly. The subjects who excluded because of adolescents with other complications of tuberculosis and not willing to participate.

In this study, the sampling technique used was non probability purposive sampling. The selections of samples depend upon their ready availability and fulfillment of the inclusion criteria until a desired size of fifty (50) was reached. The investigator preferred to choose this sampling technique mainly because of the time constraint, in order to complete the data collection within the stipulated time.

Technique and tool for data collection

The researcher used the technique of interview and questionnaire schedule to collect the data for the study. A semi-structured interview and questionnaire was scheduled to assess the knowledge of adolescents who are suffering from tuberculosis, regarding anti-tuberculosis treatment and its compliance. The tool had two sections with the section I including demographic data of adolescents who were suffering from tuberculosis and section II with knowledge of adolescents who were suffering from tuberculosis

regarding definition, cause, clinical manifestation, investigations, treatment, drug compliance, complications, and reason of noncompliance for treatment of tuberculosis.

This section had 60 questions. All questions had one correct option in yes or no form. Each question carried 1 mark each. The maximum score one was 60 marks

Data analysis

Data were presented as frequency and percentages.

3. Results

After fulfilling the inclusion criteria, a total of 50 subjects were included in the study.

Sociodemographic characteristics of the subjects

In the present study, we found that 46% subjects belonged to 17-18 years age group category. 56% subjects were females (table 1). We also found that 66% subjects completed their SSC. 64% subjects were Hindu by religion followed by 26% Muslims. Among the 50 subjects, 28% were involved in clerical work while only 2% were unemployed. There were 2% each subject who were earning > Rs. 19,575 and < Rs. 979 respectively. 64% subjects were living in the joint family while the majority of the subjects belonged to Chawal (46%) and Zopadpatti (40%). A detailed analysis of the characteristics has been shown in table 1.

Table no 1. Socio demographic characteristics of the subjects (n=50)

Socio demographic Characteristics		n (%)
Age-group	14 – 15 years	5 (10%)
	215 – 16 years	10 (20%)
	16 – 17 years	12 (24%)
	17 – 18 years	23 (46%)
Sex	Male	22 (44%)
	Female	28 (56%)
Education	Higher Secondary / Diploma	2 (4%)
	S.S.C.	33 (66%)
	Primary / Literate	15 (30%)
Religion	Hindu	32 (64%)
	Muslim	13 (26%)
	Christian	5 (10%)
Occupation	Business	1 (2%)
	Semi Business	3 (6%)
	Clerk /Shop	14 (28%)
	Skilled Worker	13 (26%)
	Semi Skilled Worker	6 (12%)
	Unskilled Worker	12 (24%)
	Unemployed	1 (2%)
Family Income	≥ Rs. 19,575	1 (2%)
	Rs. 4,894 – Rs. 7,322	6 (12%)
	Rs. 2,996 – Rs. 4,893	15 (30%)
	Rs. 980 – Rs. 2,395	27 (54%)
	≤ Rs. 979	1 (2%)

Sociodemographic Characteristics		n (%)
Family Type	Nuclear	32 (64%)
	Joint	18 (36%)
Type of House	Flat System	7 (14%)
	Chawal	23 (46%)
	Zopadpatti	20 (40%)

The hospital-based incidence of TB among the subjects

Our study observed that among 50 subjects, 78% were diagnosed with pulmonary TB while remaining 22% subjects were diagnosed with extra pulmonary TB (fig 1).

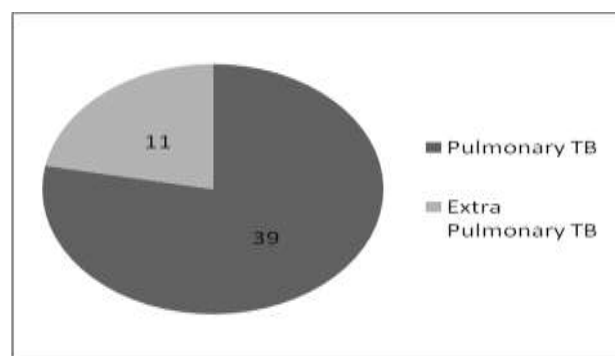


Fig no 1: The hospital-based incidence of TB among the study subjects

Knowledge of adolescents regarding anti-tuberculosis treatment and its compliance

Our study found that 98% subjects were aware of TB. All the subjects responded that lungs are affected in TB followed by 92% patients who responded with a brain as an organ. 52% subjects responded that spinal cord is also affected while 56% subjects were aware that any part of the body could be affected due to TB (fig 2).

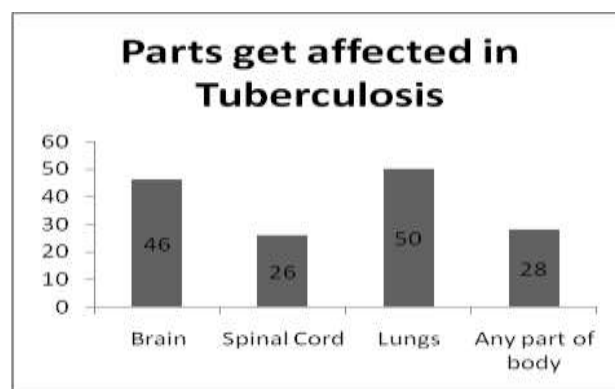


Fig no 2: Parts get affected by tuberculosis

Among 50 subjects, 98% were aware of the cause of TB while 74% were aware that TB can spread through

contact. The medium of the spread of the TB was responded by 74%, 58%, 54%, and 64% for droplets, food, water, and clothes respectively (fig 3).

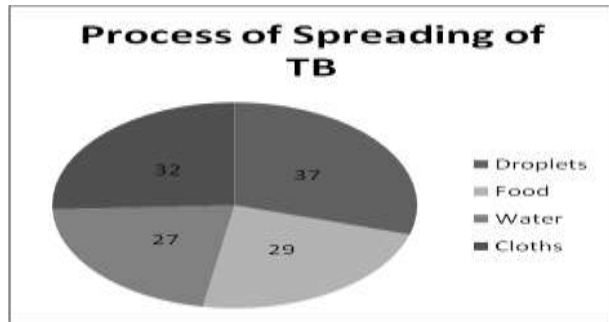


Fig no 3: The process of Spreading of TB 94% subjects were aware of signs and symptoms of TB while 100% subjects responded that a cough is the most common signs and symptom followed by mild fever (94%), and loss of appetite and weight (92% each) respectively (fig 4).

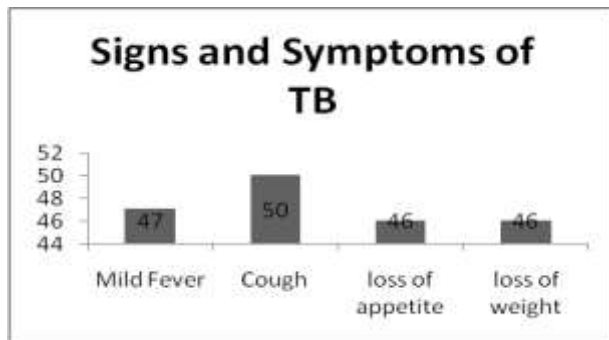


Fig no 4: Signs and symptoms of TB

96% subjects responded that they were aware of the examinations which were required for the diagnosis of TB. All the subjects were aware that sputum examination is conducted for the diagnosis of TB. 20% responded that Mantoux test is performed for TB.

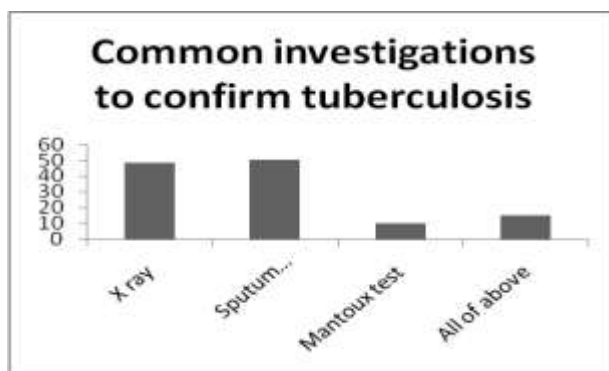


Fig no 5: Common investigations to confirm tuberculosis

94% subjects were aware of ATT while 80% were aware of regularity of the treatment. 96% responded that discontinuation of the treatment may result in relapse while 70% responded that the discontinuation may lead to spread of the complication to the other part of the body (fig 6).

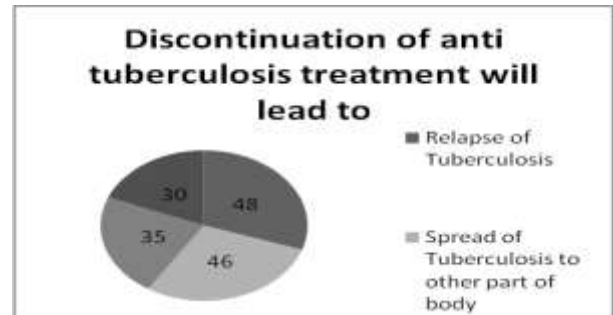


Fig no 6: Discontinuation of anti-tuberculosis treatment will lead to disease

All of them were aware of the drugs being given to them. Rifampicin was the most common drug (62%) followed by Ethambutol (38%), Isoniazid (28%), Pyrazinamide (10%), and Streptomycin (6%). 92% responded that they were taking medicine either at bedtime or at the time of the meal. 92% were maintaining chart for time and dose of the drugs. 84% responded that they may forget taking medicine while 98% responded that they consult a physician if they forget to take medicine.

98% responded that relapse the most common complication followed by metastasis (90%), and infections (56%). The family issue was the most common reason for non-compliance with the treatment for all the subjects followed by lack of time (98%), no leave (96%).

We also summarized that 70.6% were aware about the definition, 53.64% about the causes, 94.6% about clinical manifestations, while 68.4%, 82%, 65%, 81.33%, and 68.22% were aware of that investigation, treatment, drug complications, complications, and reasons of non-compliance of ATT for TB (fig 7).

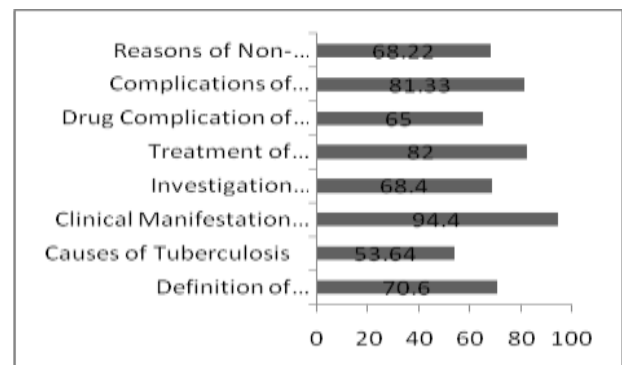


Fig no 7: Knowledge about TB and treatment (%)

4. Discussion

The present study was aimed to study knowledge of adolescent with TB regarding their knowledge to for ATT and its complications. The study results have been discussed below:

- 46% subjects belonged to 17-18 years age group category. 56% subjects were females
- 66% subjects completed their SSC. 64% subjects were Hindu by religion followed by 26% Muslims
- 28% were involved in clerical work while only 2% were unemployed
- There were 2% each subject who were earning > Rs. 19,575 and < Rs. 979 respectively
- 64% subjects were living in the joint family while the majority of the subjects belonged to Chawal (46%) and Zopadpatti (40%)
- among 50 subjects, 78% were diagnosed with pulmonary TB while remaining 22% subjects were diagnosed with extra pulmonary TB
- 98% subjects were aware of TB. All the subjects responded that lungs are affected in TB followed by 92% patients who responded with a brain as an organ. 52% subjects responded that spinal cord is also affected while 56% subjects were aware that any part of the body could be affected due to TB
- 98% were aware of the cause of TB while 74% were aware that TB can spread through contact.
- The medium of the spread of the TB was responded by 74%, 58%, 54%, and 64% for droplets, food, water, and clothes respectively
- 94% subjects were aware of signs and symptoms of TB while 100% subjects responded that a cough is the most common signs and symptom followed by mild fever (94%), and loss of appetite and weight (92% each) respectively
- 96% subjects responded that they were aware of the examinations which were required for the diagnosis of TB. All the subjects were aware that sputum examination is conducted for the diagnosis of TB. 20% responded that Mantoux test is performed for TB.
- 94% subjects were aware of ATT while 80% were aware of regularity of the treatment. 96% responded that discontinuation of the treatment may result in relapse while 70% responded that the discontinuation may lead to spread of the complication to the other part of the body
- All of them were aware of the drugs being given to them. Rifampicin was the most common drug (62%) followed by Ethambutol (38%), Isoniazid (28%), Pyrazinamide (10%), and Streptomycin (6%).
- 92% responded that they were taking medicine either at bedtime or at the time of the meal. 92% were maintaining chart for time and dose of the drugs. 84% responded that they may forget taking medicine while

98% responded that they consult a physician if they forget to take medicine.

- 98% responded that relapse the most common complication followed by metastasis (90%), and infections (56%).
- The family issue was the most common reason for non-compliance with the treatment for all the subjects followed by lack of time (98%), no leave (96%).
- 70.6% were aware of the definition, 53.64% about the causes, 94.6% about clinical manifestations, while 68.4%, 82%, 65%, 81.33%, and 68.22% were aware of that investigation, treatment, drug complications, complications, and reasons of non-compliance of ATT for TB

Conclusion

The present study identified that the TB adolescent had adequate knowledge about TB treatment and its compliance; however, increasing knowledge about the same could be an effective means to prevent and spread the disease.

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