International Journal of Medical and Health Research
ISSN: 2454-9142
www.medicalsjournals.com
Volume 1; Issue 3; October 2015; Page No. 25-28

Socio-Demographic characteristics of tuberculosis patients in a tertiary care hospital

[1] Manjusha Sajith, **[2] Ansu Thomas, Jaydeep J Kothia, Bhumika Chandrakar**, [3] **Medha Deepak Bargaje**

[1]Assistant Professor, Department of Clinical Pharmacy, Bharati Vidyapeeth Deemed University, Poona College of Pharmacy, Pune, Maharashtra, India.

[2] Student, Pharm. D Program, Bharati Vidyapeeth University, Poona College of Pharmacy, Erandwane, Pune, Maharashtra, India.

[3] Associate Professor & Nodel officer (RNTCP), Department of Pulmonary Medicine, Bharati Hospital and Research centre, Pune, Maharashtra.

Abstract
Aim: To assess the socio-demographic characteristics of tuberculosis patients in a tertiary care hospital.
Materials and method: A prospective observational study was conducted from August 2014 to April 2015 in Pulmonary Department of Bharati hospital and Research centre, Pune. Patients under inclusion criteria were selected and socio demographic details were collected.
Results: The most of patients were in the age group of 15-34 years (61.7%). Majority of patients lived in urban area 69.6% and belonged to low socio-economic status (8.9%). In the study 50.9% had PTB, 43.7% had EPTB and 5.4% had Pulmonary TB and Extra Pulmonary TB.
Conclusion: Prevalence of infection was noticed between PTB and EPTB with age and it was more common in younger age. However, based on our results TB control programme might usefully target young middle age populations for early diagnosis of TB to decrease TB morbidity and mortality.

Keywords: extra-pulmonary tuberculosis; pulmonary tuberculosis; socio-demography; organ involvement.

Introduction

Tuberculosis (TB) is one of the leading causes of mortality among infectious disease worldwide and has an enormous economic impact on many countries [1]. India is the highest TB burden country accounting for one fifth of the global incidence of TB. In 2013, an estimated nine million people developed TB and 1.5 million died from the disease, 360,000 of whom were HIV-positive [2]. India accounts for a fourth of the global burden of TB and 29% of global mortality due to TB [3]. The disease is more prevalent in the productive age group of 15-54 yrs which causes an economic burden on the individual's household when they fall sick.

The number of TB patients is increasing at a horrifying speed for several reasons. One is the lack of awareness of the disease, which makes patients neglect their symptoms till it is too late, another is the fear of death, for many feel that they will surely die if they have TB and are therefore unable to accept the fact, they go into a state of denial. A very important reason for hiding the truth is the social stigma attached to TB. Women are thrown out of families, people lose their jobs, children thrown out of school because of the irrational belief that TB is fatal and will kill all those who live in proximity to a TB patient. On an average, 100,000 married family members are expelled from the family unit once they begin to show symptoms of the disease. Once removed from the family, these people have a seriously diminished quality of life and die on the streets of India due to complications of the disease and starvation [4]. Extra pulmonary TB occurs outside the lungs and may spread through lymphatic or haematogenous dissemination. The TB bacteria may remain dormant for years at a particular site before causing the disease. Nearly all organs of the body can be infected by EPTB. It can also have a wide variety of clinical manifestations, thus leading to difficulty and delay in its diagnosis [5].

Materials and Methods

A prospective observational study was conducted over a period of Nine months from August 2014 to April 2015 in Pulmonary Department of Bharati hospital and Research centre, Pune. 112 patients, who came to pulmonary Outpatient department between August 2014 and April 2015, were interviewed. The inclusion criteria of our study was Pulmonary and extra pulmonary TB cases diagnosed on the basis of sputum smear, culture, Chest-radiograph, cytological and histopathological examination receiving antitubercular drugs therapy. Patients who were not willing to participate in the study and HIV patients with tuberculosis were excluded from the study. Informed consent was taken for the study. Patient's informed consent form includes information regarding the study which should be provided to patient for their understanding about the study and participation. Patient informed consent was in English and Marathi (regional language). Primary data from each patient was included in Tuberculosis Patient Profile form such as age, gender, marital status, literacy level, annual income, occupational status, social habits and family history of tuberculosis. Form of tuberculosis (pulmonary or extra pulmonary tuberculosis), types of tuberculosis (smear positive /smear negative or sputum positive / negative were collected from medical record.

Result

Out of 112 patients studied, 50(44.6%) were males and 62 (55.4%) were females; the majority of patients 69 (61.7%) were in the age group of 15-34 years. 78 (69.6%) patients were from urban area. Annual family income of 10 (8.9%) patients ranged between 50,000- 1,20,000 rupees. 18(16.1%) patients were illiterate and 36 patients (32.2%) were unemployed. The highest number of smokers (17 patients) and alcoholics (33 patients) had pulmonary tuberculosis as compared to extrapulmonary tuberculosis (Table 1)

Table 1: Socio-demography and other Characteristics of tuberculosis patients

Characteristics	Number of patients			Total Number of patients	Percentage
	Pulmonary	Extra pulmonary	Pulmonary & Extra pulmonary		
Gender					
Male	31	16	3	50	44.6
Female	26	33	3	62	55.4
Age group					
5-14	-	3	1	4	3.6
15-24	17	16	1	34	30.4
25-34	14	19	2	35	31.3
35-44	6	5	-	11	9.8
45-64	16	5	1	22	19.6
>64	4	1	1	6	5.3
Place of residence					
Rural	17	14	3	34	30.4
Urban	40	35	3	78	69.6
Education					
None	10	7	1	18	16.1
Primary	16	13	2	31	27.7
High school	23	19	1	43	38.4
University	8	10	2	20	17.8
Annual family income(₹)					
50,000-1,20,000	5	4	1	10	8.9
1,21,000- 2,20,000	23	15	1	39	34.8
2,21,000- 3,20,000	21	18	-	39	34.8
>3,20,000	8	12	4	24	21.5
Employment status					
Employed	25	19	3	47	41.9
Unemployed	16	18	2	36	32.2
Retired	5	1	-	6	5.3
Student	11	11	1	23	20.6
Marital status					
Single	15	17	1	33	29.5
Married	42	32	5	79	70.5
Social Habits					
Smokers	17	6	1	24	21.4
Alcoholic	30	13	3	46	41.1
History of hospitalization					
yes	16	22	6	44	39.3
No	41	27	0	68	60.7
Co morbid condition					
Yes	12	7	2	21	18.8
No	45	42	4	91	81.2

50.9% had pulmonary tuberculosis, 43.7% had extra pulmonary tuberculosis and 5.4% had pulmonary and extrapulmonary tuberculosis. (Figure 1)

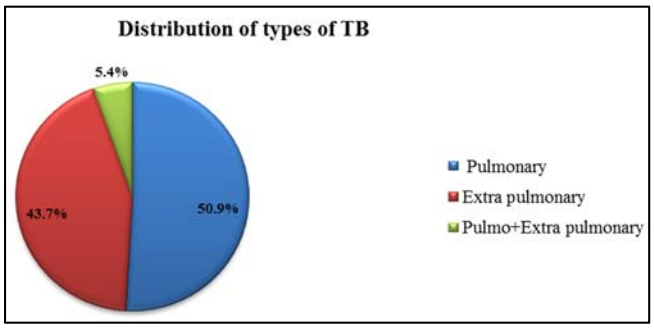

Fig 1: Distribution of types of tuberculosis

Among Extrapulmonary tuberculosis subjects, lymph node tuberculosis was most common followed by pleural tuberculosis as shown in the figure 2.

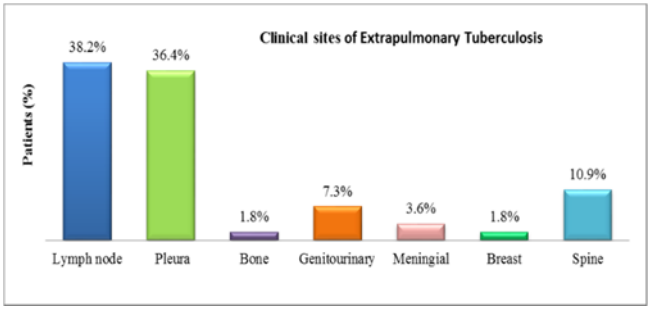

Fig 2: Clinical sites of extrapulmonary tuberculosis

The most common symptoms observed in Pulmonary Tuberculosis patients were cough with expectoration (96.5%) followed by weight loss (80.7%), fever (73.7%) and loss of appetite (54.4%) whereas in EPTB patients majority had weight loss(79.6%), fever (67,3%), loss of appetite (61.2%). Pulmonary+extrapulmonary patients had fever (83.3%) and loss of appetite (66.7%) as major clinical symptom. (Table 2)

Table 2: Clinical presentation of patients with pulmonary and extra pulmonary tuberculosis

Characteristics	Percentage		
	Pulmonary N=57	Extra pulmonary N=49	Pulmonary+ Extra pulmonary N= 6
Cough with expectoration	55 [96.5%]	20 [40.8%]	03 [50%]
Loss of appetite	31 [54.4%]	30 [61.2%]	04 [66.67%]
Fever	42 [73.7%]	33 [67.3%]	05 [83.33%]
sweating	19 [33.3%]	06 [12.2%]	01 [16.67%]
chills	27 [47.4%]	22 [44.9%]	03 [50%]
Fatigue	25 [43.9%]	11 [22.4%]	04 [66.67%]
Weight loss	24 [42.1%]	15 [30.6%]	02 [33.33%]
Chest pain	04 [7.0%]	13 [26.5%]	-
Abdominal pain	19 [33.3%]	11 [22.4%]	03 [50%]
Breathlessness	13 [22.8%]	19 [38.8%]	04 [66.67%]
Swelling	-	16 [32.7%]	-
Body ache	13 [22.8%]	18 [36.7%]	01 [16.67%]

Discussion

The TB incidence is one of the most important surveillance indicators in public health. TB notification rates have been found to be similar in both sexes till puberty, followed by a continuing widening of the gap between male and female cases. Our study includes 112 patients. Of these 50 (44.6%) were males and 62(55.4%) were females, which suggests that the number of female patients are more as compared to male patients which is similar to a study conducted by Gamil Qasem Othman *et al*. [6] This could be because women often face some obstacles such as high female's illiteracy, childcare, housework and economic dependency that allow them only limited access to health care.

Of the 112 tuberculosis patients evaluated, 69 (61.7%) patients were within the age group of 15 – 34 years. This shows that TB mainly infects the productive age group constituting to a strong economic burden and affect their work in the state. Mario *et al*. [7] reported that age is an important determinant for the risk of disease after infection. Among infected persons, the incidence of tuberculosis was highest during late adolescence and early adulthood the reasons are unclear [8]. A large number of study populations were educated 94(83.4%). As level of education is an important factor in association with knowledge about disease and the various services available at government centres. Educational status of the community is very key factor for the success or failure of the treatment in tuberculosis. Health seeking behaviour of[v] individual depends on the educational level. In the present study, there were 41.9% were employed and 32.2% were unemployed. This result was found to be consistent with the studies from Brazil conducted by Ricardo Steffen *et al*. [9] Employment status affects the treatment outcome as well as treatment adherence.

There were no cases from upper class in present study. This shows that tuberculosis affects middle class and lower class. In present study it affects 56.3% were from middle class while 43.7% were from Lower Middle Class and Lower Class. Unemployment, lower Educational Level, unhealthy living environment and overcrowding etc. may be reason for TB in lower class. In a study by M. Muniyandi shows that the 61.75% cases belong to Below Poverty Line (BPL) [10]. In our study, urban dwellers (69.6%) have higher incidence of TB and relapse in comparison with those who live in rural areas (30.4%). A cross sectional study on urban population in Guinea Bissau showed similar results and indicates that disease burden is higher in urban areas as compared to rural areas. Another study comparing incidence of TB in rural and urban settings in India has similar results showing incidence in high in urban area [11]. Due to high urban population with higher possibility of transmission of an air-borne pathogen in urban dwellers could be the reason of high incidence and relapse rates in urban settings.

A study in a developing country suggested that the main risk factor for TB was smoking. Furthermore, behavioral factors especially cigarette smoking and alcohol use have negative effect on TB treatment. Cigarette smoking is known to damage the lungs and suppress the individual adaptive immune responses affecting patient's response to TB treatment and alcohol suppresses the immune response and alcoholics are more likely to forget taking their treatment and hospital appointments leading to interruptions. Cigarette smoking and alcohol use had been shown to be associated with interruption with treatment similar to findings in Nigeria done by Luka

Mangveep Ibrahim *et al*. [12] although the mechanism is not well understood.

In our study 50.9% were pulmonary tuberculosis, 43.7% with extra pulmonary tuberculosis and 5.4% with pulmonary and extrapulmonary tuberculosis. This data differs from national figures which states that 85-90% of cases are pulmonary tuberculosis and 10-15% of cases are extrapulmonary tuberculosis [13] out of total new cases. In our study we found that pulmonary tuberculosis was more common than extra pulmonary tuberculosis we also found out that pulmonary was more common in men (54.4%) than in women (45.6%). Extrapulmonary tuberculosis predilection for women was (67.3%) and the same results were also observed in a study by K. Noertjojo *et al*. [14] Recent studies have suggested that the sites of extra-pulmonary tuberculosis (EPTB) may vary according to geographic location and population. It is well known that lymph node and pleural involvement in TB is a direct extension of the disease from lung parenchyma. The most common sites of the extrapulmonary tuberculosis involvement was the lymph nodes (38.2%) followed by the pleura (36.4%). Results of our study are comparable to studies from Nepal and South India conducted by Chandrashekhar T Sreeramareddy *et al.* [15] and Chennaveerappa PK respectively [16].

The signs and symptoms of pulmonary TB are typical and known (cough and sputum) whereas extra pulmonary TB is difficult to identify not only by the population but also by the clinicians themselves. 80% of patients had symptoms of weight loss which was also observed in similar study conducted by Gamil Qasem Othman *et al*. [6]

Conclusion

Our study conclude that females constituted the majority of the patients with extra pulmonary tuberculosis while pulmonary tuberculosis predominantly occurred in men majority within the economically productive age group ranged between 15-34 years. The most common site of involvement was the lymph nodes followed by pleura, spine and genitourinary. However, based on our results TB control programme might usefully target young and female populations for early diagnosis of EPTB to decrease TB morbidity and mortality.

Abbreviation

EPTB Extrapulmonary tuberculosis
HIV Human Immunodeficiency Virus
PTB Pulmonary tuberculosis
RNTCP Revised National Tuberculosis Control Programme
TB Tuberculosis

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