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Full Length Original Research Paper

The Assessment of Socio-Economic inequalities in Extra-Pulmonary Tuberculosis Patients undergoing DOTS Therapy in Chitradurga Region

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Abstract:
India is highest tuberculosis (TB) burden country globally, accounting for more than one-fifth of the global incidence. The impact of TB on individuals is often all encompassing, affecting not only physical health, but also social, economic, and psychological well-being. The aim of our study was to assess the socio-economic inequalities of the patients having Extra-pulmonary Tuberculosis (EPTB) in Chitradurga region. The ambispective analysis was carried out, by collecting the data of one year. Later they were contacted for getting them enrolled for the study. Among 179 patients, 149 patients agreed to get enrolled in the study. Among them, male patients were 79 (53.0%) with mean age of 34.91, Female patients were 70 (47.0%), with mean age of 35.7. It was notified that 68 (45.63%) patients have completed their school education. Also 59.0% patients are having their family monthly income of Rs.5001-Rs.10000, 80 patients are from rural age and 114 patients belong to family of 04-07 members under a single roof. Thus our study concluded that EPTB was found more in the average age people; also majorly in the rural area people. Hence their education, occupation, their surroundings etc. plays a major role in the illness behavior who are undergoing the treatment.

Keywords: Extra-pulmonary Tuberculosis, Socio-Economic Inequalities, Education, Occupation

Introduction:

Tuberculosis (TB) is a leading cause of mortality among infectious disease on the surface of the globe. Every minute eighteen people are affected with this disease and among them three die[1].As per the WHO Global TB Report 2011, there were an estimated 8.8 million incident cases of TB (range, 8.5 million-9.2 million) globally in 2010[2]. At world level, among the worst morbidity causing diseases, the rank of tuberculosis is seventh [1]. The pulmonary tuberculosis is the most common presentation; extra-pulmonary tuberculosis (EPTB) is also an important clinical problem. The term EPTB has been used to describe isolated occurrence of tuberculosis at body sites other than the lungs [3].

Besides the disease burden, TB also causes an enormous socio-economic burden to India. TB primarily affects people in their most productive years of life with important socio-economic consequences for the household and the disease is even more common among the poorest and marginalized sections of the community [2]. According to World Health Organization report (WHO) in 2005, roughly 95% of TB new cases occurred in (Low Monthly Income Category) LMICs [4]. The LMICs that attributed to high rates of population growth, the young adults suffer from considerable incidence rates of TB[5-6]. Almost 70% of TB patients are aged between the ages of 15 and 54 years of age [2], thus TB costing India 13000 crores a year. On an average a TB patient loses 3-4 months of wage equivalent to20 to 30% of annual house hold income, thereby making the poor poorer [7].Thus it is an important cause of morbidity and mortality in children worldwide, especially in resource poor countries. Children are

most likely to develop disease after infection and are significantly more likely to develop EPTB and severe disseminated disease than adults [8].Perception of illness has been found to vary with cultural, ethnicity, education, family structure and socioeconomic difference [7]. So, based on the above information, we have selected this study with the objective to assess the socio-economic status of the patients diagnosed with Extra-Pulmonary Tuberculosis.

METHODS:

An ambispective type of the study was carried out by obtaining the prior permission from Institutional Ethical Committee (SJMCP/IEC/677H/2013-14) and the District RNTCP centre, Government District Hospital, Chitradurga. After obtaining the patients' data, they were contacted for the getting them enrolled in the study, later the required information from the patients were collected.

Inclusion Criteria:

- The patients with EPTB
- The patients on RNTCP-DOTS therapy

Exclusion Criteria:

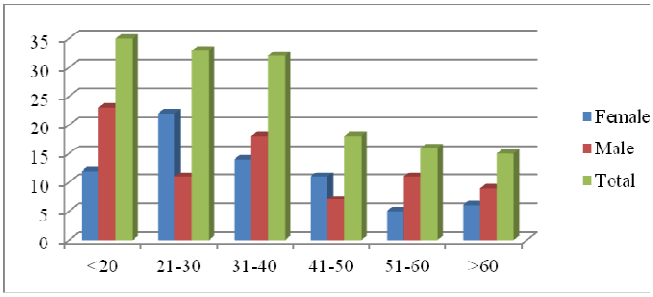
- The patients with Pulmonary TB
- Tuberculosis in pregnancy & lactation
- The patients who were not willing to participate in the study

Statistical Analysis: The data was entered in Microsoft Excel-2010 version and the results are analyzed using Statistical Package for Social Services (SPSS 19.0). Descriptive Methods and Chi-Square Test were applied to obtain the results.

RESULTS:

1. A total number of 179 cases are diagnosed with Extra-Pulmonary Tuberculosis during the study period, but 149 patients agreed to enroll in the study. Out of 149 patients, 79 were male and 70 were female. The mean age of the patients was found to be 35.54 (SD= 17.90).Among which highest patients are from the age group of <20years followed by decrease in patients at the age group of 21-30, 31-40, 41-50 years, which shows that, as the age increases the incidence of the patients suffering Extra-pulmonary tuberculosis is decreased. When we observe the distribution of the disease in male & female, the more male patients are found in age group of <20 years, but more female patients are found in age group of 21-30 years. The results are depicted in Figure 1.

Figure 1: DISTRIBUTION ACCORDING TO AGE AND GENDER IN STUDY SUBJECTS



2. Among the total of 149 patients, the distribution between gender and education of the study subjects, it was observed that, 28.85% patients has completed their graduation, then 45.62% patients had been to their school education, but 10.73% of the patients are illiterates. The results are non-significant and are shown in Table 1.

By observing the distribution of age and monthly income of family, 88(59.06%) patients are getting the monthly income in the range ofRs.5001-10000for age group of 31-40which is more and 6(4.02%) patients are having the monthly income of >Rs.20000 among which 3 patients belong to

age group of 41-50 years. The results are statistically significant and are shown in Table 1.

If we compare the relationship between the gender and monthly income,48(32.21%)male patients and 40(26.84) female patients are having the monthly income of Rs. 5001-10000, but 5(3.35%) female patients and 1(0.67%) male patient are getting the monthly income of greater than 20000Rs monthly income. Thus it can be observed that patient's size reduces as monthly income increases. The results are statistically non-significant and are shown in Table 1.

Table 1: Distribution according to age, gender and Education, Monthly Income in Study Subjects

		Age							Gender		
		<20 years	21-30 years	31-40 years	41-50 years	51-60 years	>60 years	Total	Male	Female	Total
EDUCATION	Illiterate	1	0	1	3	2	9	16	7	9	16
	Primary School	14	1	1	1	6	2	25	19	9	25
	Middle School	1	0	2	1	2	0	6	2	4	6
	High School	9	8	11	4	3	2	37	22	15	37
	Intermediate	4	5	7	5	1	0	22	13	9	22
	Graduation	6	19	10	4	2	2	43	19	24	43
	Total	35	33	32	18	16	15	149	70	79	149
MONTHLY INCOME	<5000 Rs	2	2	0	3	0	0	7	4	3	7
	Rs 5001-10000	23	14	23	8	10	10	88	48	40	88
	Rs 10001-15000	8	14	4	3	5	3	37	20	17	37
	Rs 15001-20000	2	2	3	1	1	2	11	6	5	11
	>Rs 20000	0	1	2	3	0	0	6	1	5	6
	Total	35	33	32	18	16	15	149	79	70	149

3. The results of crowding of family in house and their place is observed, which shows in40.26% patients from rural area and 36.24% patients from urban area, the crowding is04-07 members. The family with crowding <3 are found less in rural area than the urban area. This distribution shows that crowding is more observed in rural area rather than urban area. The results are statistically significant and depicted in Table 2.

The relationship between the occupation of the patient and the monthly income of the family shows that, 44(29.53%) patients are housewives in which 30(20.13%) patients are getting the income of Rs 5001-10000. It should also be noted that 3(2.01%) patients are unemployed. The results are statistically significant (p=0.001) and are shown in Table 2. This distribution implies that as the range of monthly income increases the occurrence of the disease is reduced.

When we observe the relationship between crowding of the people in a family and their monthly income, it was observed that a total 114(76.51%) patients are living in the family where 4-7 members are together, in which 69(46.30%) patients are having their monthly income of Rs.5001-Rs.10000. Also the 22(14.76%) patients are living in a family of less than 3members & in which 13(8.72%) patients are having the monthly income of Rs.5000-10000.The results are non-significant and are depicted in Table 2.

On assessing the relationship between monthly income and their place, among 149 patients, 35(23.48%) patients are from urban area & 53(35.57%) patients are from rural area are having the monthly income of Rs.5001-10000. This distribution denotes that rural patients have low monthly income. By applying the Chi-Square test, the p-value was 0.008 which shows they are statistically significant (p=0.001). The results are shown in table 2.

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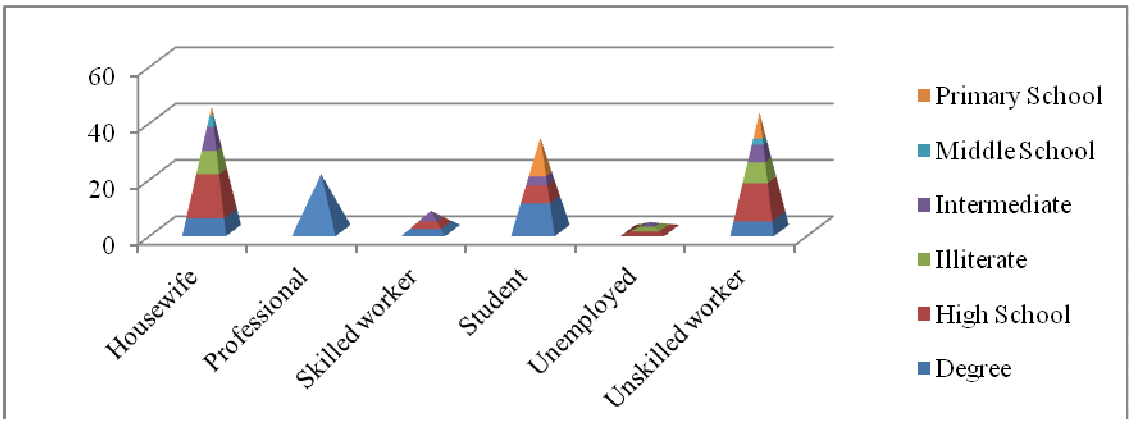
Table 2: Distribution according to Crowding, Occupation with monthly income, Place

		Monthly Income						Place		
		<5000Rs	Rs 5001-10000	Rs10001-15000	Rs15001-20000	> 20001Rs	Total	Rural	Urban	Total
Crowd	<3	2	13	4	2	1	22	7	15	22
	04-07	5	69	27	8	5	114	60	54	114
	08-10	0	6	6	0	0	12	12	0	12
	>11	0	0	0	1	0	1	1	0	0
	Total	7	88	37	11	6	149	80	69	149
Occupation	Student	1	18	11	2	1	33	11	22	33
	Housewife	3	30	9	2	0	44	35	9	44
	Unemployed	1	2	0	0	0	3	1	2	3
	Unskilled worker	1	33	8	0	0	42	29	13	42
	Skilled worker	1	2	3	1	0	7	2	5	7
	Professional	0	3	6	6	5	20	2	18	20
	Total	7	88	37	11	6	149	70	79	149

4. The distribution of occupation and education shows that 43(28.85%) patients has completed their graduation, among which 19(12.75%) patients were professionals, but none of them were unemployed, also 68 patients have completed their school education. It is identified that 3(2.01%) patients were unemployed and 16(10.73%) patients were illiterates, among which 8(5.36%) patients were housewives, 7(4.69%) patients were unskilled workers and 1(0.67%) patient was unemployed. The results are showed in Figure 2.The results are statistically significant (p=0.0001).

FIGURE 2: DISTRIBUTION ACCORDING TO OCCUPATION AND EDUCATION



Discussion:

In ambispective study carried out in RNTCP centre of Govt District Hospital, Chitradurga, among 179 cases diagnosed as Extra-pulmonary tuberculosis, only 149 patients agreed to participate in the study. In our study, more patients were found in <20years age group followed by 21-30 years, 31-40years & so on. But the study conducted by Muhammed Shafqaat *et al.*, "The distribution of tuberculosis patients and associated socio-economic risk factors for

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transmission of tuberculosis disease in Faisalabad city" shows that out of 165 patients, 138 patients are from the age group of 15-64 years, and their study showed the results that 41.2% patients are illiterates and 61.8% patients are on the monthly income of <5000[1]. Even a case-control study regarding the Socio-Economic status & medication adherence conducted by Mishra P *et al.,* reveals that 62.5% patients belongs to lower annual income, even the mean age of case patients was 42.9(SD=18.2)[9]. But in our study 10.73% patients are illiterates and 59.06% patients are getting their monthly income of Rs.5001-10000&also the mean age of the patients was found to be 35.54 (SD= 17.90).

A similar study conducted by Maria Nelliyanil*et al.*, shows the results that in 209 paediatric patients, 79 patients belong to the age group of 1-6 years & 153 nuclear families are found [8]. Also a cross-sectional study regarding Associated factors of Pulmonary Tuberculosis in Rajshahi city in Bangladesh by Md. Nazrul Islam Mondal *et al.*, shows that 85 (28.1%) patients suffering from EPTB are living in nuclear famiy [10].In another study, conducted by Ramya Anantha Krishnan *et al.,* signifies that 65% patients family size is ≤4[11]. But in our study only 35 patients are to be <20 years age group & 114 patients are staying in the house where 04-07 members are staying together.

Munsab A *et al.,* conducted a study on Associated socioeconomic status with illness behavior in tuberculosis patients undergoing DOTS therapy, in which their study results shows that out of 82 patients undergoing DOTS therapy, 67 patients has completed their school education, 3patients has completed their graduation but 4patients are illiterates. 30patients are unskilled worker, 8patients are clerk or farmer or shop owner, but 5patients are unemployed [7]. Goodarz Kolifarhood *et al.,* study shows that in EPTB patients39.7% patients are illiterates & only 4.8% patients has completed their graduation [4]. But in our study out of 149patients, 68patients has completed school education, 43 patients have completed their graduation and 16patients are illiterates. 55 patients are unskilled worker, 44 housewives and 33 students and 3 patients are unemployed.

Conclusion:

Thus our study concluded that, EPTB was mainly found in male patients than in female patients and in <20 years of age. Even it was found that the incidence of EPTB is decreased as the age is increased. 68 patients has completed their school education, 43 patients has completed graduation, but 16 patients are illiterates. 59.06% patients are having the family income of Rs.5001-10000. EPTB is more found in rural patients than urban patients. 114 patients are living under the roof where 04-07 members are living together. The occupation plays a major role in the illness behavior as the low occupation status triggers the occurrence of the disease rather than the high occupation status. The monthly income has great impact on the social status of the patients. Thus the socio-economic inequalities have a major role in the patients diagnosed with EPTB which not only causes the diseased burden but also causes the major socio-economic burden.

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