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Original Article

Socio-Economic Impact of Parental Tuberculosis on School Going Children: Study at State Medical College and Hospital, Punjab, India

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Abstract
Tuberculosis is haunting mankind since ages and still remains a panglobal phenomenon affecting people from every walk of life. The impact on children in the family was studied in respect of 1) social, economic and demographic characteristics of the parents (who were patients), 2) the child care functions of mothers who were patients and 3) effect on children's education.
In all. 575 children of 300 tuberculous parents were studied. The socio-economic and demographic characteristics revealed that majority of the patients suffering from tuberculosis were from economically productive age group of 31-40 years and that gender of the suffering parents had no significant impact on the child's discontinuity of education and school dropout rate. The child caring on the part of mothers fell significantly; children who dropped out of school were significantly higher in families with more than 4 members. The school dropout children were forced to do labour to support and feed their families – adding to the menace of child labour.
Keyword: *Parental tuberculosis, Socio-economic impact, Tuberculosis affecting child care, School dropout, Child labour.*

Introduction

The captain of diseases and the monster killer-Tuberculosis had forced WHO to declare it as a global emergency and still continues to be worldwide problem to be eradicated.[1] Robert Koch revealed the tubercle bacilli to the world on 24 March 1882 and was awarded noble prize for his contributions in the field of TB research later on.[2] TB is a chronic infectious disease that seriously affects human health and daily life worldwide.[3] Tuberculosis has remained as a major public health problem in India[4]. Every year in India, approximately 18 Lakh people develop tuberculosis and 4.17 Lakhs die from it. Over all, India accounts for the one-fifth of global incidence of tuberculosis and tops the list of 22 high tuberculosis burden countries. Besides, tuberculosis is a barrier to Socio-economic

development as the greatest burden of tuberculosis incidence and mortality in India is in adults who are the most productive members of society, so the resultant economic cost for the society is high.[5-8] Tuberculosis has plagued the humankind since the beginning of recorded history and is the world's 7th leading cause of death.[9] Despite the successful efforts of RNTCP, the burden of tuberculosis still remains the same. The disease has considerable impact on patients' households: children, health, education and nutrition, particularly, if the patient is a wage earner. Households face substantial immediate expenditure due to tuberculosis: costs of diagnosis and treatment, lost earnings and less or no household work done. The impact of tuberculosis is not confined to the patient alone; the illness of an adult can affect the quality of children's lives as well. When women are affected, they being the primary care givers in a household, the disease affects not only them but the whole family and, especially, the health and welfare of children.

Objective

The main objectives of this prospective study were: 1) to assess the impact of social, economic and demographic factors of tuberculosis patients on their children, 2) to assess the impact of tuberculous women on child care functions, and 3) to evaluate the impact of parental tuberculosis on children's education.

Material and Methods

Setting

In order to obtain a representative sample from rural and urban populations, the study was conducted among 300 tubercular patients attending Chest and TB Hospital, Government Medical College, Patiala, India. The study was approved by the Institutional Ethical Committee.

Tools

a) Focus Group Discussion: These were held as a preliminary step of the study. Each Focus Group consisted of 8 to 10 persons, who were patients taking treatment for tuberculosis, village elders, young men and women. The topics for discussion were (1) health-seeking pattern in general, (2) money spent on investigations and medicine, if any, and (3) impact of the illness on children.

b) Interview Schedule: A semi-structured pre-coded interview schedule was developed based on information collected during Focus Group discussions. The information to be collected through interview schedules comprised socio- economic and demographic factors, particulars of employment, income and the effect of the illness on health-seeking, expenses and care of children.

c) Study Population: Tuberculosis patients (both pulmonary and extra-pulmonary) who were on short course chemotherapy were enrolled in the study. The impact of parental illness of 300 such patients on 575 children below 16 years of age was evaluated.

Observations

Table – 1 shows the demographic, social and economic characteristics of 300 patients. Table -2 shows the impact of parental tuberculosis on discontinuity of education, school dropout and taking up of employment by children. Table -3 shows us the impact of parental tuberculosis on the hygiene of children. Table -4 shows the impact of parental tuberculosis on the overall care of children. The results from the study are compiled as follows:

Table – 1 Demographic, Social and Economic Characteristic of 300 Patients

Demographic and social characters		**No. of patients**	**No. of children (M+F)**	**Total**	**%**
Age	18-30	78	59+73	132	23.0
	31-40	150	162+141	303	52.7
	41-50	69	71+64	135	23.5
	>50	3	3+2	5	0.8
Sex	Male	183	182+178	360	62.6
	Female	117	113+102	215	37.4
Marital Status	Married	273	265+259	524	91.1
	Others (widowed or divorcee)	27	30+21	51	8.9
Family Type	Joint	142	163+155	318	55.3
	Nuclear	158	132+125	257	44.7
Family size	1-4	132	100+104	204	35.5
	5-6	168	195+176	371	64.5
Habitat	Urban	121	120+111	231	40.2
	Rural	179	175+169	344	59.8
Community	SC/ST	186	179+163	342	59.5
	Others	114	116+117	233	40.5
Education	Illiterate	111	108+93	201	35.0
	Below Middle school	98	87+99	186	32.3
	Middle school and above	91	100+88	188	32.7
Class	Upper	9	10+9	19	3.3
	Middle	64	68+59	127	22.1
	Lower	227	217+212	429	74.6
Employment	Employed	115	113+117	230	40.0
	Unemployed	185	182+163	345	60.0
Monthly Income (in Rupees)	≤ 10000	276	232+220	452	78.6
	10001-20000	19	34+40	74	12.9
	>20000	5	29+20	49	8.5
Overall Expenditure	≤ 10000	273	177+174	351	61.0
	10001-20000	22	102+99	201	35.0
	>20000	5	16+7	23	4.0

Table – 2 Impact of Parental Tuberculosis on Discontinuity of Schooling, Dropouts from School and Taking up of Employment Bby Children

Socio-economic Factors		**Discontinued schooling N=64 %age**	**Dropouts from school N=62 %age**	**Taking up employment N=43 %age**
Age	18-30 Years	11.5	6.4	35.9
	31-40 Years	19.3	13.3	19.3
	41-50 Years	33.3	24.6	10.1
	>50 Years	33.3	33.3	0
Sex	Male	24.0	16.9	19.7
	Female	15.4	10.3	23.9
Marital Status	Married	18.7	13.2	21.2
	Others (widowed or divorcee)	40.7	25.9	22.2
Family Size	≤4	15.2	9.1	15.9
	>4	25.0	18.5	25.6
Family Type	Joint	23.9	16.9	26.8
	Nuclear	17.7	12.0	16.5

Habitat	Urban Rural	15.2 25.0	14.9 14.0	22.3 20.7
Employment	Employed Unemployed	12.2 25.9	6.1 19.5	32.2 14.6
Community	SC/ST Others	24.7 14.0	17.2 9.6	19.4 24.6
Class	Upper Middle Lower	0 7.8 25.1	0 6.3 17.2	22.2 32.8 18.1
Education	Illiterate Below Middle School Middle School and above	27.9 16.3 16.5	20.7 10.2 11.0	8.1 26.5 31.9
Monthly Income (in Rupees)	≤10,000 10,001-20,000 >20,000	22.1 5.3 0	15.2 5.3 0	19.9 36.8 40.0
Overall Expenditure (in Rupees)	≤10,000 10,001-20,000 >20,000	20.1 31.8 0	14.3 18.2 0	21.6 13.6 40.0

Table – 3 Impact of Parental Tuberculosis on Hygiene of Children

Socio-economic Factors		**No of patients N=300**	**Hygiene**			**p value**
			Good	**Average**	**Poor**	
Age	18-30 Years 31-40 Years 41-50 Years >50 Years	78 150 69 3	21(26.9%) 49(32.7%) 13(18.8%) 1(33.3%)	50(64.1%) 90(60.0%) 52(75.4%) 2(66.7%)	7(9.0%) 11(7.3%) 4(5.8%) 0(0%)	0.451
Sex	Male Female	183 117	68(37.2%) 16(13.7%)	112(61.2%) 82 (70.1%)	3(1.6%) 19(16.2%)	0.000*
Marital Status	Married Others (widowed or divorcee)	273 27	78(28.6%) 6 (22.2%)	178(65.2%) 16 (59.3%)	17(6.2%) 5 (18.5%)	0.062
Family Size	≤4 >4	132 168	27(20.5%) 57(33.9%)	91(68.9%) 103(61.3%)	14(10.6%) 8(4.8%)	0.012*
Family Type	Joint Nuclear	142 158	46(32.4%) 38(24.1%)	88(62.0%) 106(67.1%)	8(5.6%) 14(8.9%)	0.199
Habitat	Urban Rural	121 179	43(35.5%) 41(22.9%)	70(57.9%) 124(69.3%)	8(6.6%) 14(7.8%)	0.057
Employment	Employed Unemployed	115 185	55(47.8%) 29(15.7%)	53(46.1%) 141(76.2%)	7(6.1%) 15(8.1%)	0.000*
Community	SC/ST Others	186 114	40(21.5%) 44(38.6%)	133(71.5%) 61(53.5%)	13(7.0%) 9(7.9%)	0.004*
Class	Upper Middle Lower	9 64 227	8(88.9%) 31(48.4%) 45(19.8%)	1(11.1%) 30(46.9%) 163(71.8%)	0(0%) 3(4.7%) 19(8.4%)	0.000*
Education	Illiterate Below middle Others	111 98 91	12(10.8%) 29(29.6%) 43(47.3%)	90(81.1%) 63(64.3%) 41(45.1%)	9(8.1%) 6(6.1%) 7(7.7%)	0.000*
Income (in Rupees)	≤10000 10001-20000 >20000	276 19 5	65(23.6%) 16(84.2%) 3(60.0%)	189(68.5%) 3(15.8%) 2(40.0%)	22(8.0%) 0(0%) 0(0%)	0.000*
Expenditure (in Rupees)	≤10000 10001-20000 >20000	273 22 5	73(26.7%) 7(31.8%) 4(80.0%)	178(65.2%) 15(68.2%) 1(20.0%)	22(8.1%) 0(0%) 0(0%)	0.064

Table - 4 Impact of Parental Tuberculosis on Overall Care of Children

Socio-economic Factors		No of patients N=300	Overall Care Of Children			p value
			Good	Average	Poor	
Age	18-30Years	78	25(32.1%)	46(49.0%)	7(9%)	0.222
	31-40 Years	150	58(38.7%)	80(53.3%)	12(8%)	
	41-50 Years	69	17(24.6%)	48(69.6%)	4(5.8%)	
	>50 Years	3	1(33.3%)	1(33.3%)	1(33.3%)	
Sex	Male	183	84(45.9%)	96(52.5%)	3(1.6%)	0.000*
	Female	117	17(14.5%)	79(67.5%)	21(17.9%)	
Marital Status	Married	273	96(35.2%)	158(57.9%)	19(7.0%)	0.044*
	Other (widowed or divorcee)	27	5(18.5%)	17(63.0%)	5(18.5%)	
Family Size	≤4	132	32(24.2%)	86(65.2%)	14(10.6%)	0.006*
	>4	168	69(41.1%)	89(53.0%)	10(6.0%)	
Family Type	Joint	142	57(40.1%)	76(53.5%)	9(6.3%)	0.069
	Nuclear	158	44(27.8%)	99(62.7%)	15(9.5%)	
Habitat	Urban	121	49(40.5%)	63(52.1%)	9(7.4%)	0.119
	Rural	179	52(29.1%)	122(62.6%)	15(8.4%)	
Employment	Employed	115	62(53.9%)	46(40.0%)	7(6.1%)	0.000*
	Unemployed	185	39(21.1%)	129(69.7%)	17(9.2%)	
Community	SC/ST	186	49(26.3%)	124(66.7%)	13(7.0%)	0.001*
	Others	114	52(45.6%)	51(44.7%)	11(9.6%)	
Class	Upper	9	8(88.9%)	1(11.1%)	0(0%)	0.000*
	Middle	64	34(53.1%)	26(40.6%)	4(6.3%)	
	Lower	227	59(26.0%)	148(65.2%)	20(8.8%)	
Education	Illiterate	111	16(14.4%)	84(75.7%)	11(9.9%)	0.000*
	Below middle	98	36(36.7%)	56(57.1%)	6(6.1%)	
	others	91	49(53.8%)	35(38.5%)	7(7.7%)	
Monthly Income (in Rupees)	≤10000	276	82(29.7%)	171(62.0%)	23(8.3%)	0.000*
	10001-20000	19	15(78.9%)	3(15.8%)	1(5.3%)	
	>20000	5	4(80.0%)	1(20.0%)	0(0%)	
Overall Expenditure (in Rupees)	≤10000	273	89(32.6%)	161(59.0%)	23(8.4%)	0.624
	10001-20000	22	9(40.9%)	12(54.5%)	1(4.5%)	
	>20000	5	3(60.0%)	2(40.0%)	0(0%)	

Discussion

In the present study, it was observed that majority of the children who discontinued schooling, dropped out from school and took up employment belonged to the patients who were young and belonged to the age group of 31 to 40 years which is economically the most productive age group (p value 0.001 for discontinuity of education, 0.011 for dropouts and 0.012 for taking up employment respectively). In aother studies done by Rajeswari et al (1999)[13] and Geetharamani et al (2001) [12] it was seen that patients registered with RNTCP belonged to the age group of 15-49 and 15- 54 years of age respectively ; with findings almost similar to our study.

In this study, it was found that gender of the patient had no significant impact on the discontinuity of education, dropout rate and taking up of employment by the children (p value 0.380, 0.071 and 0.107 respectively). In a study done by Geetharamani et al, it was seen that gender had no effect on discontinuity of education and dropout rate of children which is similar to our study. In a study done by Rajeswari et al and Muniyandi et al (2006)[10] it was seen that the dropout rate and taking up of employment by the children was more if the father had TB which is in contrast to our study.

In our study it was seen that majority of the children who discontinued schooling, dropped out of school and took up employment belonged to the family size of more than 4. The p value of these three was 0.042, 0.044 and 0.022 respectively which was found to be statistically significant. In a study done by Geetharamani et al it was found that dropout rate was more where the

family size was either of 5 members or more which conforms to our study.

In present study it was observed that 50 children of 38 patients living in joint family and 36 children of 26 patients living in nuclear family discontinued schooling. This was found to be statistically significant (p value 0.030). While joint families share tasks and obligations, more patients in these families perceived impact probably because of the larger number of dependant family members thus forcing the children to discontinue their education and take up employment to support the family. In a study done by Ananthkrishnan et al (2012)[11] it was seen that the economic impact was significantly perceived by more patients belonging to joint family (40.7%) (p value <0.005) as compared to patients belonging to nuclear family (26.2%) which is almost similar to our study This is in contrast to a study done by Geetharamani et al in which it was seen that family type had no significant impact on the schooling of children.

In our study we found that habitat had no significant impact on the discontinuity of school, dropout rate and taking up of employment by the children. This was found to be statistically insignificant (p value 0.733, 0.382 and 0.825 respectively). In a study done by Geetharamani et al it was found that 8% rural and 13% urban children dropped out of school as a result of parental illness which is in contrast to our study (p value <0.05).

This study revealed that the number of children who discontinued schooling, dropped out of school and took up employment was more in those patients who were unemployed rather than employed ones (p value 0.000, 0.004 and 0.001 respectively) which is statistically significant. This in contrast to a study done by Geetharamani et al who found that the employment status of patients had no significant effect on the schooling and dropout rate of children.

The present study results showed that 20.8% of children belonging to SC/ST category dropped out of school which is statistically significant (p value 0.028). We also found that 12.9%, 20.5% and 10.7% of children who discontinued schooling, dropped out of school and took up employment respectively belonged to the lower class (p value 0.039, 0.003 and 0.041 respectively) which is statistically significant.

Another observation from this study was that 15 children who discontinued schooling belonged to illiterate patients, 34 children who discontinued schooling belonged to patients whose education level was below middle school and 37 children who discontinued schooling belonged to patients whose education level was above middle school (p value 0.000). This may be due to the influence of other factors like marital status, family size, family type, employment and monthly income of the patient. In present study we found that although the number of children who discontinued schooling, dropped out of school and took up employment was more in the group of patients whose income was either Rs.10,000 per month or less, the p value was found to be statistically insignificant (p value 0.130, 0.111 and 0.318 respectively). This may be due to the unequal distribution of patients in these groups.

Another finding was that the number of children who discontinued schooling, dropped out of school and took up employment was more in the group of patients whose overall expenditure on treatment of tuberculosis was approximate Rs. 10,000 or less (p value 0.401, 0.221 and 0.576) statistically insignificant.

In our study we found that 16.2 % and 17.9% of female patients suffering from tuberculosis reported of poor hygiene and poor overall care of their children which was found to be statistically significant (p value 0.000 and 0.000 respectively). Similar findings were reported about fall in quality of child care by tubercular patient mothers by Rajeswari et al, Geetharamani et al and Muniyanandi et al in their respective studies.

Another finding from the present study was that patients who were widowed or divorcee (single parents) reported of poor overall care of their children (p value = 0.006). Patients who were

living in a family size of either 4 or less than 4 reported of poor hygiene and poor overall care of their children (p value 0.012 and 0.006 respectively). Also it was found that patients who were unemployed, of SC/ST category, of lower class, illiterate and patients with income of either Rs. 10,000 per month or less reported of poor hygiene and poor overall care of their children. These factors were found to be statistically significant.

Conclusion

This study revealed the socio-economic impact of parental tuberculosis on children especially their education, hygiene and overall care. The study emphasizes that family size of more than 4 had a significant impact on the education of children and that majority of the children who discontinued education were from the joint family. This was due to more number of dependant persons in an extended family. When the only bread - winner of the family falls ill due to the disease, the responsibility to feed the family is shifted to the next generation i.e. the children. As a result, children had to drop out of school and look for some kind of employment to support their family. The present study has clearly documented the fact that majority of the tubercular patients were from the economically productive age group of 31-40 years of age. These are the parents on whom survival and development of children depends. The study also depicts that tuberculosis in mothers affected the entire household due to the reduction in routine household activities, child care and inability to feed their children. The inherent lengthier treatment durations, tubercular disease sufferings of the patient impair their income generation for themselves and the family, thus forcing their children to dropout from school and search for labour – work or any kind of job so as to support the family. It not only affects children's education status rather forces them to adopt the ugly menace of child labour, hurting nation's commitment against this social evil. So to manage this disease with its deep-rooted socio-economic ramifications, health care providers and child care workers must work together in unison for the well-being of the patient, family and the nation ultimately.

Conflict of Interest: None

References

1. TB India 2008 RNTCP Status Report. Available from : https://tbcindia.gov.in/showfile.php?lid=2920
2. Mohan A, Sharma SK. History. In: Sharma SK, Mohan A (eds.) Tuberculosis. (2nd edn.) New Delhi: Jaypee Brothers Medical Publishers; 2009;7-15.
3. GLOBAL TUBERCULOSIS REPORT 2012 WHO Library Cataloguing-in-Publication Data Global tuberculosis report 2012. 2012. Available from: http://www.who.int/tb/publications/global_report/gtbr12_main.pdf
4. Park K. Park's Text book of Preventive and Social medicine (19th edn.) Jabalpur (India), Banarsidas Bhanot publications, 2007;149.
5. Managing the RNTCP in your area. Training models (1-4). Central TB Division DGHS, Mohfw, New Delhi 2005;1-3. Available from : https://tbcindia.gov.in/showfile.php?lid=2907
6. World Health Organisation, TB: a clinical manual for South East Asia. Background information on TB. WHO/TB/96-200 SEA, 1996. Available from : http://apps.who.int/iris/handle/10665/63310
7. Clark MD. Tuberculosis: Economic Factors and Social Challenges-The Case of India. World Bank 1996;254-60.
8. World Health Organisation Health Report 1995. Bridging the gaps. The State Of World Health. Geneva: WHO, 1995. Available from :

http://www.who.int/whr/1995/en/whr95_en.pdf

9. Tan Ee Lyn. One third of world's population has tuberculosis bacterium. Hong kong for Reuters Published : Jan 2010. Available at https://groups.google.com/forum/#!topic/bible-prophecy-news/Hnm09JZ_Dgc
10. Muniyandi M, Ramachandran R, Balasubramanian R, Narayanan PR. Socio-economic dimensions of tuberculosis control: review of studies over two decades from Tuberculosis Research Center. J Commun Dis. 2006;38(3):204-15.
11. Ananthakrishnan R, Jeyaraj A, Palani G, Sathiyasekaran BW. Socioeconomic impact of TB on patients registered within RNTCP and their families in the year 2007 in Chennai, India. Lung India. 2012;29(3):221-6.
12. Geetharamani S, Muniyandi M, Rajeswari R, Balasubramanian R, Theresa X, Venkatesan P. Socio-economic impact of parental tuberculosis on children. Indian Journal of Tuberculosis. 2001;48(2):91-6.
13. Rajeswari R, Balasubramanian R, Muniyandi M, Geetharamani S, Thresa X, Venkatesan P. Socio-economic impact of tuberculosis on patients and family in India. Int J Tuberc Lung Dis. 1999;3(10):869-77.