Socio Economic Aspect of Tuberculosis Infection in Urban and Rural Population of District Meerut

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ABSTARCT:Tuberculosis is one of the major public health problems in the developing countries. Because it affects adults, tuberculosis causes enormous, social and economic disruption. Adults are the most productive members of the society such as parents, workers and community leaders. The burden of tuberculosis is enormous but is hidden by stigma and poor diagnostic quality. This disease creates more orphan than any other disease. It is especially common among the undernourished people who live in dingy congested part of large city. Only among the economically forward Nation it has become a relatively minor problem. Growth in population and decline in living standard and nutritional status promotes and provides a suitable environment for growth of its bacteria. Tuberculosis is a dreadful disease and affects all human activities .The epidemiological survey of any disease is essential for prevention of epidemic of any disease in a particular area. The work of the investigator reveals that this type of survey has not been conducts in district Meerut. Thus, the present study was carried out with the aim to make a general survey of tuberculosis unit identify by TB control department with special reference to know the socio economic aspect of infection of Tuberculosis in urban and rural population.

Keywords: ***Meerut, Economic Impact Social Impact, Tuberculosis***

Introduction:

Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis and less commonly by other organism of the 'tuberculosis complex'. It is estimated that 3 million peoples die from tuberculosis each year, the majority of them in developing countries (Anonymous, 1999). The annual incidence of new case of tuberculosis is estimated to be about 8 million worldwide. Out of which 95% are from developing countries only. Many tuberculosis cases in developing countries remain undiscovered. Out of the discovered cases, less than half complete the treatment .Consequently, the estimated worldwide prevalence is 16-20 million, of whom about it 8- 10 million are positive and highly infectious.According to recent estimate of WHO, the number of person infected with the tuberculosis bacillus is estimated to be about 1.7 billion, out of which 1.3 billion live in developing countries (Anonymous, 2000). In India, more than 40% of adults are infected with TB and approximately 1.5 million cases are put on treatment every year but 38.5 million cases are left uncured due to poor diagnostic facilities and un awareness, and estimated 5 lakh death occur from TB every year in India alone. The greatest burden of tuberculosis incidence mortality in developing countries is in adults, aged 15 - 60 years. These include the most productive members of the society such as parents, workers and community leaders. While there has been tremendous decrease in tuberculosis cases in developing countries in last 40 years.Both rural and urban female patients faced rejection by their families (15%) 11% of school children discontinued their studies and 8% took up employment to support their family. The fear and stigma associated with TB seems to have a greater impact on women than on man, often placing them in an economically or socially precarious position. Because the health and welfare of children is closely linked to that of their mother, TB in women can have serious repercussions for families and households. Patients with TB often report issues such as loss of friends, lack of respect among colleagues, and social isolation at the workplace. The stigma associated with disease may be greater among women and inability to get married and divorce in developing countries.

Historical review:

The history of tuberculosis highlights men's struggle against a disease that dates from antiquity and is the story of failures and success of disaster and hope. The disease also had been referred to as "consumption" phthisis and white plague. It is also called captain of all these men of death by John Bunyan. It is described in ancient Chinese literature of a condition as leaping is consistent with Tuberculosis. The Italian physician Girolama Fracastoro (1483-1553 AD) earned the credit for understanding, describing, and emphasizing the "contagion" or infectious nature of the disease. The understanding of the pathological condition of the lungs in TB started with Moregagni (1682 -1771AD) who dissected bodies of conjunctions. In the latter half of the 19th century the observation of the infectious nature of tuberculosis set the stage for the monumental work of Robert coach (1843-1910). On 2nd March 1882, he announced to the world the discovery of Tuberculosis bacillus. To honor him, the bacillus is also referred to as 'Koch's Bacillus' and the disease is "Koch's disease".

Till date, the history is filled with the advancement and finding presented by workers around the globe leading various dimensions regarding TB. However, as far as the Indian scenario is concerned, a large number of workers contributed immensely in increasing the death rate of our understanding and treatment of TB such as epidemiology, pathology, diagnosis, and control of tuberculosis infection with the socio-economic aspect of tuberculosis patients in India and abroad.

Mc Grown (1995) observed nosocomial Tuberculosis infection of health Care workers and hospitalized patients and suggested the methods for their effective control and prevention of airborne transmission of tuberculosis in hospitals. Martinez et al.,(1995)

compared the microbiological, clinical and radiological findings of cerebral tuberculosis in four patients with HIV infection and in five patients without HIV infection. Mishra et al., (1995) analyzed and reported different aspect, *viz*; incident,, sex ratio, age ratio, socioeconomic group ratio etc., in case of tuberculosis meningitis in Allahabad (UP). Hegde (1996) observed that poverty, ignorance, overcrowding, bad sanitary surroundings, population migration, wars, families and pestilence, caused much of human Misery and reported that 70% of death in Sub Saharan Africa ware due to microbial disease. A study was hance conduct by Katiyar S.K.at al.,(2000) to evaluate the role of Ayurvedic drug as adjutants to the anti tuberculosis chemotherapy. Nair et al (2002) studied 20,000 people, both from rural as well as urban area of Mysore and Raichur districts were interviewed.

Material and methods:

For the control of TB, Meerut is divided into 6 tuberculosis units on the basis of population. The total population of district Meerut is 34.5 lakh. Each tuberculosis unit is situated in government or NGO hospitals. Investigator concerned the tuberculosis unit Bhawanpur for the record of rural population and for the Urban population, TB unit district Tuberculosis Centre Meerut (Pyarelal Sharma Hospital). The population of Tuberculosis Centre Pyarelal Sharma Hospital Meerut is 8.95 lacs. Tuberculosis unit Bhawanpur covers the population 4.96 lac. During the course of study the investigator develops collaboration with the tuberculosis unit.

TU Bhawanpur (rural) This TU is situated 12 km away from Meerut and the population is living in approximately 167 small villages. One third of this population moves toward Meerut city for daily employment, and the rest are agriculture workers.
TU- DTC Meerut (Urban) is situated at the centre of city in the district hospital (Pyarelal Sharma Hospital), with a covered population of 8.95 lacs. Most of the population of the city is engaged in small industry, office workers, and educational institutions, and lives in very dingy and congested areas.

Detailed present or past history of TB patients was reported on a separate Performa regarding the patient's economic condition together with the history of treatment and cure. Investigator watched every registered TB patient of both T U and visited the patients' home for observing the habit and habitat including socioeconomic classes.

Observation:

During the course of study which was done from 2005 to 2007, an attempt has been made to work out the epidemiology of Tuberculosis considering the following aspect-

1. *Income level. 2. Education level. 3. Crowding condition.*

During the study of socioeconomic aspects, the investigator concentrated on 250 subjects separately in rural and urban population, and the data recorded was given table Number 1 and 2.

Education Level		
Group	No.	%
Illiterate	134	53.6
Literate	116	46.4
Total	250	100

Income Level		
Group	No.	%
Lower	61	24.4
Middle	161	64.4
Higher	28	11.2
Total	250	100

Crowding Condition		
Group	No.	%
I	152	60.8
II	89	35.6
III	09	3.6
Total	250	100

Table 1. Showing Socio-economic Status (SES) of TB patient in Rural Population at TU Bhawanpur in 2005-2007.

Education Level		
Group	No.	%
Illiterate	94	37.6
Literate	156	62.4
Total	250	100

Income Level		
Group	No.	%
Lower	35	14
Middle	163	65.5
Higher	52	20.8
Total	250	100

Crowding Condition		
Group	No.	%
I	144	57.6
II	86	34.4
III	20	8.0
Total	250	100

Table 2. Showing Socio-economic Status (SES) of TB patient in Urban Population at TU Meerut in 2005-2007.

The data was analyzed on the basis of following variables:
1 Income level per person- it is calculated by dividing the total monthly income by the total number of members. it is categorized into 3 group
Lower Group < Rs 1000 per month
Middle group Rs 1000 – 2000 per month
Higher group Rs 2000 above per month
2 Crowding condition- it is expressed as the number of people of more than one year of age sharing a single room. It is then divided into 3 categories.

Group I 1-2 room per 5 persons
Group II 3-5 room per 5 persons
Group III 5 rooms per 5 persons
3 Level of education- it is divided into two categories.

Illiterate- no formal education. Literate- educated.
In the rural in population, it was found that lower income TB patients 24.4%, middle income group of TB patients were 64.4% and higher income group TB patients were 11.2%. However, in the urban population, lower income group TB patients were 14%, middle income group TB patients were 65.2% and higher income group TB patients were 20.8%. The middle income group TB patients were found in the same percentage as in rural and urban population but higher income group TB patients were just double in urban population as compared to rural population. In the population, the percentage of illiterate TB patients is 53.6% and literate TB patients are 46.4%. Whereas in Urban population literate TB patients are 37.6% and literate TB patient's percent are 62.4%. The percentage of illiterate TB patients is more in the rural population as compared to urban population.

In the rural population, 60.8% TB patients live in group I first crowding condition, 35.6% leave in group II crowding condition and only 3.6% leave in group III crowding condition. However, in the urban population, 57.6% TB patients live in group I crowding condition, 34.4% live in group II crowding condition and only 8.0% live in group III crowding condition. The crowding condition of both areas is approximately the same except the urban population slightly change, which live in group III crowding condition.

Discussion :
The infection of TB has been reported to be more in lower socioeconomic status groups as compared to higher socioeconomic status groups. Pamra and Mathur (1968) reported that the bacillary case rate among civil servant of Delhi was highest (0.88%)> in low income group (Peon, chowkidar, and sweepers) and lowest (0.18%) in high income group official i *e.*, a difference of four times while the rate has 0.23% in middle income group clerical staff.

Prasad et al.,(1960) reported that 45% of the families of tuberculosis patient were from lower classes, 32% from middle class, and 3.0% from upper class. According to Ghosh and Basu (1972), about 60% of TB cases originate in the slums in cities, but Krishna swami et al., (1978) did not found any change in the pattern of TB percentage among low and high income group at Madras .Ahmad (1981) found that 79% TB suspect among symptomatic were residing in overcrowded house. Ahmed (1981) also reported that 74.2% of T B cases were living in a Kaccha type of house and 25.8% were accommodated in a "Pakka" house. Ahmed (1981) reported that percentage of TB suspect was highest,70% in social class 5th, 57.9% in social class 4th, and 34.4% in social class third, 12.5% in social case classes second and none in social class l. Spence at al., (1993) has shown association between poverty and TB within the developed world, the highest rate of disease was seen in the poorest section of the community. Hegde (1996) said that poverty, ignorance ,overcrowding ,bad sanitary surrounding, population migration, wars, ware cause of the much of human Misery in Mangalore (Karnataka) .Chopra et al.,(1997) also reported maximum TB infection in lower class (65%) and minimum in upper class (13%) in TB suspect patients at BHEL Hardwar. Arora and Basu (1997) reported that prevalence of TB was high in overcrowded slums at Pondicherry, where low income groups of the population live.

Prabhakar (2000) observed that TB continues to be a major health problem in India and other developing countries with poor economic overcrowding, under-nourishment, unchecked population explosion compounded in recent years with dual infection, HIV and TB. Bakhle (2000) stated that tuberculosis is more common in poor and malnourished people. It spreads without regard for socio economic status. Khan at al,. (2000) had found in a study conducted in Pakistan on socio-cultural constraints in treatment that while both male and female TB patients face social and economic problems, female patients are more affected. Dhuria at el., (2008) studied 90 patients of TB aged 20-65 years, between March 2004 and May 2004. The observations of this study found that almost half (48%) of patients were illiterate. A possible reason for this significant difference is that the low income group patients generally cannot afford to consult a doctor for treatment at an early stage of infection. As a result of which, the infection continues to develop undisturbed in their body. Moreover, TB is considered to be a social taboo, so people generally hide the infection, which becomes worse with time. While in the case of the upper class, the people are more literate and aware, so they generally contact a doctor in the early stage of symptoms and take drug treatment and thus minimize the chance of infection.

Conclusion:
The present study indicates the existence of a socio economic status (SES) health gradient with respect to risk of Tuberculosis. Most public health efforts are focused on control of tuberculosis through treatment of patients. It is not surprising that cost-effective strategies such as directly observed therapy have emerged and to a large extent have been successful, even within populations of lower socio-economic status. But the current predominantly treatment-based approach to Tuberculosis control cannot be expected to lead to eradication of Tuberculosis unless matching and forceful efforts in prevention through improvement in socio-economic status are also initiated.

References:

1. Ahmed, S.1981. Retrospective study of the epidemiology of pulmonary tuberculosis in a rural community of Meerut District. A thesis for MD.
2. Anonymous, 1999 .Managing the Revised National tuberculosis Control Program in your area. Central TB division, Directorate General of Health Service, Ministry of Health and Family Welfare, New Delhi.
3. Anonymous, 2000. Revised National Tuberculosis Control Program, key facts and concepts, Central TB Division, Directorate General of Health service Ministry of Health and Family Welfare, New Delhi.
4. Arora, V.K. and Babu, V. 1997. Revised National Tuberculosis Control Program and role of general practitioners. J. Int. Med. Ind., 8:97-98.
5. Bakhle, D.S. 2000. Medical Menace of the millennium .J. Ind. Med. Assoc. 98:94- 95.
6. Chopra et. al,. A. K. 1997. Incidence of tuberculosis infection in patients of Bharat Heavy Electrical Limited and its adjoining area, Hardwar. Him. j. Env. Zool., 11:137-140
7. Dhuriya et al., 2008. Impact of tuberculosis on the quality of life. Indian Journal of community medicine, 33:58- 59.
8. Ghosh, T.N. and Basu,B.K. 1972. Clinical feature of TB patients seen in rural tuberculosis Centre New Delhi. Ind. J. Chest Dis., 14:22.
9. Hegde, B.M. 1996. Microbes and Human Diseases. j. Int. Med. Ind., 7:22.
10. Khan, et. al. 2000. TB in Pakistan, Socio Cultural constraints and opportunities in treatment. Soc. Sci. Med. 50:247-54.
11. Krishnaswami, et al., 1978. Prevalence of tuberculosis in certain pockets in the city of Madras. Ind. J. Tub., 25:95.
12. McGowan J.E. 1995. Nosocomial tuberculosis: New progress in control and prevention. Clin. Infect.Dis.,21:489-505.
13. Martinage et al., 1995. Cerebral tuberculosis- A comparative study in patients with and without HIV infection. Infection, 23:149-153.
14. Mishra et al. 1995. Roll of Physiotherapy in tuberculosis meningitis. The child today, 1:27-31.
15. Nair, et al. 2002. Behavior pattern of a person with chest symptoms in Karnataka State. Ind.J.Tub., 49:39-48.
16. Prabhakar, R. 2000. Tuberculosis control in India past, present, and future. J. Ind. Med. Assoc., 98:123-125.
17. Pamara. et al. 1970 Epidemiology of Haemoptysis. Ind. Tub., 17:11.
18. Prasad, et al. l 1960. A study of the social aspect of tuberculosis in some tuberculosis families in Lucknow city, Tuberculosis Association of India. Proceedings of the 16th tuberculosis workers conference Poona, New Delhi.
19. Spence, et al., 1993. Tuberculosis and poverty. B.M. J., 307: 759- 761.