

A Socio-Epidemiological Study of Tuberculosis in a Rural Area

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Abstract

Five thousand rural adults (aged 15 years and above) were studied to find out role of social variables in the occurrence of tuberculosis in seven villages of R.S.Pura tehsil of Jammu district. During this cross-sectional study, 25 tubercular cases were found in the adult rural population. Out of 25 cases, 16 were found in the age group of below 45 years and only 9 cases were above 45 years. Men were affected more than women. Smoking and overcrowding were found to be important social factors significantly related to the higher prevalence of disease. The other social variables like occupation, literacy, socio-economic status and family size were not found to be significantly related to the prevalence of tuberculosis in this study.

Key Words

Tuberculosis, Occupation, Literacy, Smoking, Overcrowding, Socio-economic status

Introduction

The World Health Organization (WHO) said that decades of national and international neglect of tuberculosis has led to the deaths of tens of millions of people from the disease which now kills 3 millions people a year globally, and infects 8 millions people worldwide (1). WHO declared tuberculosis as a global emergency in the year 1993, and warned that if it continues to be dismissed for a low priority for action, the number of persons infected with tubercle bacilli is likely to increase sharply from the present one third of the world's population. Tuberculosis is the world's most neglected health crisis and it will continue to be so if there is inadequate funding for national and international programme to combat

tuberculosis in the developing world where 95% of tubercular sufferers live.

Tuberculosis is a social disease which acts as a barometer of social welfare too. The social factors include a number of non-medical factors such as poor housing, overcrowding, large families, lack of education, malnutrition, smoking habits, poverty etc. All these factors do contribute to the occurrence and spread of tuberculosis. It is a well known fact that the advanced chemotherapy against tuberculosis is available freely to the patients in the country since last more than five decades; but the prevalence levels of the disease have not shown any decline so far, probably because of

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significant role played by the social factors in occurrence of the disease. These social factors are required to be deeply looked into and the social measures need to be undertaken if the disease prevalence has to be brought down.

A socio-epidemiological study was undertaken in the rural areas of Jammu region amongst the adult population (aged 15 years and above) to find out the role of social variables in the occurrence of tuberculosis.

Material & Methods

A cross-sectional epidemiological survey was conducted among the rural adults (aged 15 years and above) in R.S.Pura tehsil/taluka of Jammu district. Five thousand rural adults studied during the survey belonged to different villages of the R.S.Pura tehsil and these villages were chosen using systematic random sampling technique thus ensuring the total representation of the block in the sample size. 2691 men and 2309 women screened and studied in the population were from different age groups (Table I). All the surveyed people were contacted personally and were subjected to detailed socio-cultural history and medical examination to find out the tubercular suspects. Further these suspects were thoroughly investigated by sputum examinations and skiagram chest to confirm the presence of diseases in them. The socio-epidemiological variables studied included age, sex, occupation, literacy, family size, socio-economic status, smoking status and overcrowding.

Results

A total of 5000 adult rural population was covered in this cross-sectional study. During this study, twenty five tubercular cases were found which comprised 16 males and 9 females. A major group of people i.e. 3893 subjects were found in the younger and middle age groups (below 45 yrs) and 64% of the tubercular cases were found in this age group while only 36% tubercular cases were in the higher age group i.e. 45 years and above (Table I).

Sex wise distribution of the population surveyed showed 2691 males and 2309 females thus giving a sex ratio of 54:46. The total percentage of male tubercular cases was 64% and only 36% cases were found among the surveyed females. A prevalence rate of 6 per 1000 among males and 4 per 1000 among females was found in the current study.

Tab. I. Distribution of tubercular cases according to Age and Sex

Age in years	Total males in the age group	TB +ve males	Total females in the age group	TB +ve females
15-24	1096	4	918	2
25-34	657	2	492	3
35-44	370	4	360	1
45-54	375	4	345	1
55+	193	2	194	2
Total	2691	16	2309	9

$\chi^2 = N.S$

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Fifty percent cases amongst males were engaged in agriculture and the rest of them were engaged in non-agriculture activities. The non-agriculture activities included labourer class, service class, business and dependents (students, elders not doing any job). In the females, all the 9 cases were either housewives or dependents. Majority of women surveyed were found to be housewives with additional job of helping in agriculture and attending the livestock (Table II).

Tab. II. Occupation wise distribution of males and females.

Occupation of males	Those screened	TB +ve	Occupation of females	Those screened	TB +ve
Agriculture	1130	8	House Wives	1500	6
Non-Agriculture	1545	8	Others	800	3
Total	2675	16	Total	2300	9

$\chi^2 = N.S$

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* N.S. = Non Significant

In this study, a total of 300 smokers were found out of which 13 smokers turned out to be tubercular patients. The remaining surveyed population of 4700 was of non-smokers which comprised 12 tubercular cases. The prevalence of tuberculosis was significantly higher in the smoker group and was very low in the non-smoker group. A highly significant statistical association was found between the habit of smoking and outcome of tuberculosis ($p < 0.001$). The current study also revealed that 21 out of 25 TB cases were living in the houses where overcrowding (assessed as per the floor space available per person) was found to be present. A highly significant statistical association was found between overcrowding and the occurrence of tuberculosis ($p < 0.001$). Other socio-economic variables studied included socio-economic status, literacy status and family size. No significant statistical association was found between these variables and occurrence of tuberculosis. For socio-economic status, Uday-pareek scale was used. Twelve patients were found in lower class while rest were in the lower middle class (Table III).

A majority of population i.e. 2307 persons and more than 50% patients (13 out of 25) were found to be illiterate i.e. they could not read or write.

Table III Distribution of tubercular cases according to social variables

Variable	Persons Surveyed	Tubercular cases	Test of Significance
1. Smoking Status			
Smokers	287	13	$P < 0.001$
Non-Smokers	4688	12	
2. Overcrowding			
Present	1571	21	$P < 0.001$
Absent	3404	4	
3. Literacy			
Illiterates	2307	13	$P = N.S.$
Literates	2668	12	
4. Socio-economic status			
Lower class	1630	12	$P = N.S.$
Lower middle	3345	13	
5. Family Size			
Small family	1095	5	$P = N.S.$
Large family	3880	20	

Discussion

Despite remarkable advances, tuberculosis still remains one of the most common infectious diseases in our country. Among the various socio-epidemiological variables studied, age and sex being the biological variables are non-modifiable. In this study majority of the cases were in the male population (16 cases) and ten out of 25 cases were in the age group of 15 to 45 years. These findings are consistent with the study conducted by NTI (Banglore) during 1961-69 where it was found that the prevalence of the tuberculosis is more in the young and middle age groups (2). Even the mean age of tubercular patients in this study was below 45 years i.e. 39.08 years, while it was 40.56 years and 39.08 years respectively for males and females. Similar findings were also found in the survey conducted by ICMR in 1955-58 where more men suffered from tuberculosis than the women (3).

Among the other social variables which were studied, only smoking and overcrowding were found to be statistically significant in relation to the outcome of tuberculosis. Al Caide *et. al.* in a case control study established cigarette smoking to be a major factor contributing to tuberculosis in young adults in Barcelona (4). Even passive smoking was found to be risk factor for the development of active pulmonary tuberculosis following infection with mycobacterium tuberculosis by Altel *et. al.* in a case control study in Barcelona (5).

A significant association was found with overcrowding and outcome of tuberculosis in our study. Drucker *et. al.* in their study in Bronx (New York) confirmed the association of overcrowding with increased incidence of tuberculosis (6).

Most of the studied population had agriculture as their main occupation. No significant association was found between occupation and occurrence of tuberculosis in the current study Saiyed *et. al.* in a cross-sectional study found 44 (15.1%) of 292 pottery workers to be suffering

from silicosis and an equal number showed radiological evidence of tuberculosis (7). Krishna Swami *et. al.* (1979) reported prevalence of radiological cases to be 7.25% and bacillary cases 2% among Rickshaw men and Handcart pullers in Madras city (8).

Tuberculosis is usually considered a disease of poor and downtrodden but no association between socio-economic status and tuberculosis was found during this study. However, Chowdhary *et. al.* in their epidemiological investigation of pulmonary tuberculosis reported that people belonging to the lower socio-economic group were the worst sufferers (9). Similarly Tiwari *et. al.* in Mali village (Lucknow) found that those belonging to social class III. (Lower middle) class IV (poor) and class V (very poor) suffered maximum from the tuberculosis (10).

Literacy and family size were found to be statistically insignificant in the outcome of tuberculosis in this study. Rama *et. al.* found poverty, illiteracy etc. to be the major contributing factors for tuberculosis (11). Benner in his epidemiological study in Saudi Arabia found that education and occupation had no significant effect in tuberculosis causation (12). The families were divided into large and small depending upon number of family members. Small families constituted those families who had upto 5 members while large families had 6 or more family members. Majority of tubercular patients i.e. 20 were found in large families but it was not significant statistically.

Conclusion

The study has revealed that tuberculosis is a disease affecting mainly people in the age group <45 years and it is more prevalent among males. Smoking and overcrowding have shown a significant association in the occurrence of disease. The other social variables

though didn't show any strong association but their role cannot be undermined in the context of tuberculosis menace affecting the mankind. Ultimately the rise in socio-economic standards and quality of life will have to be attained to bring down the level of disease in the community as it has been shown to be so in the developed countries and communities.

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