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Original Article

Pattern of socio-economic and health aspects among TB patients and controls

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ABSTRACT

Background: Socio-economic and health-related factors have a significant impact on tuberculosis (TB) incidence among population residing in resource-scare settings.
Objective: To evaluate the pattern of socio-economic and health-related factors among TB patients and control in Delhi, India.
Methods: The present cross-sectional study was performed among 893 TB patients (or cases) and 333 healthy disease-free controls. The data for the present study was obtained from several district TB centres in north, west and south Delhi. The collected data was edited, coded and statistical analysed with the help of SPSS 20.0 version.
Results: Illiteracy and primary education were significant risk factors being associated with a TB. Rented housing condition had an odds ratio (OR) of 1.4 (95% confidence interval [CI]: 1.09–1.89) compared to owned housing condition. 3–5 individuals per room were 3 times more likely to be associated with a case of TB (95% CI: 2.49–4.41). Migrant individuals were 13 times more likely to be associated with a case of TB (95% CI: 8.77–19.78) in comparison to settled population. Daily consumption of non-vegetarian food also significantly contributed to case of TB with an OR of 3.4 (95% CI: 2.51–4.72). Loss of appetite and family TB served as significant health-related factors associated with TB risk.
Conclusion: Lower educational status, rented household, individuals per room (as a measure of overcrowding) and migratory status served as prominent risk factors for TB disease. Preference and frequency of non-vegetarian food being consumed, night sweating, weight loss, loss of appetite, earlier TB and family TB were principle health-related risk factors associated with TB disease.

1. Introduction

Tuberculosis (TB) is a major health problem and leading cause of mortality, primarily in countries characterised with poor socio-economic backgrounds[1] and resource scarcity. Though India is the second-most populous country in the world, one fourth of the global incident TB cases occur in India annually.[2]

Socio-economic determinants influence individuals' health behaviours, access to healthcare resources, degree of exposure

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to certain diseases and environmental factors.[3] Prevalence of TB is determined by individuals' income status, and has a negative impact on human and economic productivity.[4]

Rapid urbanisation gives birth to ideal conditions for TB epidemics to prosper, unless guarded by good urban planning, social reforms, environmental protection and a well-coordinated urban health care system.[5] TB incidence is generally higher in urban settings in comparison to rural areas.[6] Exposure to some TB risk factors such as smoking, alcohol abuse, unsafe sex and unhealthy diet may maximise when absolute poverty declines at the same time as rapid socio-cultural transitions lead to altered health behaviour patterns.[5] The potential increment in risk increase due to assemblage of TB risk factors is often further enhanced by fragmented health care systems in urban areas, and poor health care access among urban slum dwellers.[6]

The drivers of the epidemic and social determinants of TB need to be addressed to reduce TB incidence.[7] These comprise co-morbidities (such as human immunodeficiency virus [HIV] and diabetes), substance use (such as alcohol and tobacco) and the social and economic conditions that impel both the course of the TB epidemic and exposure to these risk factors.[7]

The aim of the present study was to evaluate the pattern of socio-economic and health-related factors among TB patients and control in Delhi, India.

2. Materials and methods

2.1. Study design and data collection

The present study was a cross-sectional study. It was conducted among adult TB patients (which included both pulmonary TB [PTB] and extra-pulmonary TB [EPTB] cases) and healthy disease-free control subjects from Delhi, India. Data of TB patients was obtained from 12 TB district centres and hospitals of north, west and south Delhi.

2.2. Participants

The study comprised of 983 adult TB patients (which included 632 PTB cases and 351 EPTB cases) and 333 healthy disease-free control subjects. The age of the subjects ranged from 15 to 80 years. Controls were healthy subjects devoid of the disease history. Controls were matched with cases for age. The TB cases selected were patients who had been taking TB medicine on regular basis as confirmed from doctors at their respective TB centres. The subjects were unrelated to each other. The present study was performed on heterogeneous population.

2.3. Selection criteria

Only those subjects who took their medicines on regular basis as confirmed by the doctors and/or health workers and also followed the dietary norms as advised by doctors were selected for the present study. Only new cases of PTB were taken. None of the HIV +ve patients were retained in the sample. Exclusion criteria for the controls were as follows: previous anti-TB treatment, any form of disease and HIV +ve as confirmed by the doctors.

2.4. Ethical consent

A well-informed written consent from the subjects for their willingness to participate in the present study was taken before the collection of data. The study was approved by the Institutional Ethics Committee of the Department of Anthropology, University of Delhi, India.

2.5. Variables

Socio-economic factors included marital status, age at marriage, educational status, profession, house ownership, number of individuals per room, family type, earning members in household, family income, personal income, mode of commuting (transportation) and migratory status. Health-related factors included food habits, frequency of non-vegetarian food, health status perception, health problems, type of medicine system preferred, smoking, alcohol consumption, Bacillus Calmette–Guérin (BCG) vaccination, night sweats, fever, weight loss, loss of appetite, earlier TB and family TB (family member suffering from TB).

2.6. Statistical analysis

The collected data was edited, coded and statistically analysed with the help of SPSS 20.0 version. Multinomial regression analysis was conducted to identify the significant risk factors associated with development of TB (through odds ratio [OR]).

3. Results

Out of 1316 subjects consulted, 983 were patients (or cases) and 333 were controls. The sex distribution among patients was 57% male and 43% females while among controls it was 52% males and 48% females.

Distribution of subjects according to socio-economic status and health-related factors and crude ORs between case and controls for socio-economic and health-related factors showing association with TB are listed in Tables 1 and 2 respectively.

Table 1 exhibits that majority of cases (23.7%) had received only primary education. Majority of controls (33.3%) were graduates or post-graduates. Most of TB patients (63%) had household ownership. Number of individuals per room is a crucial indicator of overcrowding. This parameter exhibits that most of TB cases (64.6%) resided with 3–5 individuals per room. Majority of controls (43.8%) lived with less than 3 individuals per room. Most of TB cases (83.9%) had less than 3 earning members in their household. Most of TB cases (53.4%) had family income Rs. 10,000 and above. Similarly, most of the healthy controls (40.5%) had family income Rs. 10,000 and above.

Marital status and age at marriage did not show association to development TB risk. Illiteracy and primary education were approximately 2 times (95% confidence interval [CI]: 1.65–3.41) and 4 times (95% CI: 8.77–19.78) respectively being associated with a TB. Government job and unemployment resulted in 68% (OR = 0.32, 95% CI: 0.17–0.60) and 59% (OR= 0.41, 95% CI: 8.77–19.78) less chances of developing TB risk in relation to reference category. Rented housing condition had an OR of