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Research Article

Assessment of Risk Factors among Pulmonary Tuberculosis Patients

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ABSTRACT

INTRODUCTION: *Tuberculosis is a chronic pulmonary disease causing high morbidity and mortality. It has multiple risk factors of which includes various host related and socio-demogrphic factors. HIV is considered the most powerful risk factor for the progression of TB infection to disease. The frequency of tuberculosis occurrence in patients of diabetes mellitus is reported to be 3-4 times than that in non-diabetics. Apart from these there are other underlying risk factors which compromise the immune status like malignanacies, end-stage renal disease, chronic lung disease, malnutrition, and alcoholism. Apart from host related factors, many environmental and social risk factors have been reported to be involved in increased susceptibility of infection and progression of the disease.*

OBJECTIVE: *To asses various demographic, socioeconomic and clinical risk factors for pulmonary tuberculosis (PTB) patients.*

MATERIAL AND METHODS: *Total 117 patients of pulmonary tuberculosis were included in our study. Data regarding socio-demographic risk factors and presence of any existing co morbities was collected.*

RESULTS: *Majority patients, were males (62%), from rural areas (59%), married (75%), in age group between 20-60 years (75%), below poverty line(61%), low educated, and labourers(37%). 7.6% were HIV infected, 10.2% patients had diabetes mellitus, 13.7% patients were using corticosteroids for treatment of other chronic illness, 26.4% patients were malnourished.*

CONCLUSION: *The present study reveals that various demographic, socioeconomic and clinical risk factors have a potential role in causation of pulmonary Tuberculosis, and hence prevention and timely management of these risk factors could be helpful to reduce the burden of disease.*

KEY WORDS - *Pulmonary Tuberculosis, Risk factors, co morbidities.*

INTRODUCTION

Tuberculosis (TB) is a chronic pulmonary disease causing high morbidity and mortality since ancient times. India is the second-most populous country in the world but unfortunately, one fourth of the global incident TB cases occur in India annually. As per WHO Global TB Report, 2015, out of the estimated global annual incidence of 9.6 million TB cases, 2.2 million were estimated to have occurred in India. As per WHO, In India

mortality due to tuberculosis is 17 per lakh in 2012. In absolute numbers, morality due to tuberculosis is 2.2 lakhs annually.[1] TB is the most common HIV-related opportunistic infection, and HIV is considered the most powerful risk factor for the progression of TB infection to disease as it weakens the cell-mediated immunity and macrophage function.[2,3]

Apart from HIV infection there are other underlying risk factors which compromise the immune status. The frequency of tuberculosis occurrence in patients of diabetes mellitus (DM) is reported to be 3-4 times than that in non-diabetics. Some of the studies conducted in the west have shown that relative risk of tuberculosis is 2.0-3.6 times more than those without diabetes.[4] Other disease states that increase the risk of developing tuberculosis are Hodgkin lymphoma, end-stage renal disease, chronic lung disease, malnutrition, and alcoholism.[5] Apart from host related factors, many environmental and social risk factors have been reported to be involved in the increased susceptibility of infection and progression of the disease. Environmental and social factors reported include proximity of contact, crowding, indoor pollution and use of biofuels (especially in rural areas), housing conditions, living style, ethnicity, education and socio-economic status.[6,7,8]

OBJECTIVE

To asses various demographic, socioeconomic and clinical risk factors for pulmonary tuberculosis (PTB) patients.

MATERIAL AND METHODS

This was a cross sectional study conducted in pulmonary medicine department SSMC Rewa. Total 117 patients of pulmonary tuberculosis diagnosed microbiologically or clinically were included in our study. Patient consent was taken and; data regarding socio-demographic risk factors like age, sex, residence, marital status, education, occupation, addiction and presence of any existing comorbities such as HIV infection, DM, malignancy, etc and other common

underlying risk factors like history of contact to a smear-positive PTB patient, chronic corticosteroid therapy, malnourishment, etc was collected. Data obtained was entered in Microsoft excel and frequency distribution tables were prepared.

Table-1 Socio-Demographic Factors In Study Patients

Socio-Demographic Factors	No. Of Patients	Frequency (%)
Age (in years)		
<20	05	04%
21–40	42	36%
41–60	46	39%
>60	24	21%
Sex		
Male	72	62%
Female	45	38%
Residence		
Rural	69	59%
Urban	48	41%
Education		
Illiterate	29	25%
Primary	53	46%
Secondary	18	15%
Tertiary	17	14%
Marital Status		
Married	88	75%
Unmarried	29	25%
Occupation		
Agricultural worker	16	14%
Labourer	43	37%
Drivers	05	04%
Businessmen	06	05%
Salaried service personnel	06	05%
Unemployed	41	35%
Income below poverty line	71	61%

Table-2 Clinical Risk Factors For Pulmonary TB In Study Patients

Co morbidities and other risk factors	No. of patients	Frequency (%)
HIV infection	09	7.6%
Diabetes mellitus	16	13.7%
Chronic use of corticosteroid	11	9.4%
Malignancy	02	1.7%
Chronic liver disease	04	3.4%
Chronic kidney disease	03	2.5%
History of contact with other pulmonary Tuberculosis patients	19	16.2%
Malnourished	31	26.4%
Addiction		
Smoking	32	27%
Alcoholism	24	20%

RESULTS

Socio-demographic factors (Table-1)

Out of total 117 study patients, 72 (62%) were males and 45 (38%) were females. Maximum number of pulmonary tuberculosis (PTB) patients were in age group between 40-60 years (n= 46) followed by age group between 20-40 years (n=42). Majority patients (n=69) were from rural

areas and were married (n=88). 29 patients were illiterate while 53 patients were only primary educated among literates. Majority of patients (n= 43) were labourer, followed by unemployed group (n= 41), 16 (14%) patients were agricultural workers, 05 patients were drivers by occupation. 71 (61%) patients were below poverty line.

Clinical risk factors (Table-2)

Among 117 PTB patients 9 (7.6%) were HIV infected, 12 (10.2%) patients had diabetes mellitus, 16(13.7%) patients were using corticosteroids for treatment of other chronic illness, 31 (26.4%) patients were malnourished, 19 (16.2%) PTB patients had history of contact with other pulmonary tuberculosis patients, 4 (3.4%) patients had chronic liver disease, (2.5%) patients had chronic kidney disease, and 2 (1.7%) patients had malignancy. 32 (73%) patients were smokers and 28 (85%) patients were alcoholics.

DISCUSSION

In our study, about 75% patients were in 20-60 years age group and PTB was found to be more common among male gender (62%), married individuals (75%), in rural areas (59%) from low socio-econonmic group (61%). Similar findings were reported in other studies as well. Bhatia et al[9] reported 76% male and 24% female patients in their study. Study conducted by Ali M et al[10] and Dubey et al[11] also showed that TB is most prevalent in rural area. Ali et al[10] also reported that Tuberculosis was found to be more among married patients (64.63%) belonging to low socioeconomic strata. Similar finding were found by Dubey[11] where 70% patient are married.

Majority of patients were labourer(37%), followed by unemployed group (35%), 14% patients were agricultural workers in our study while in study by Gupta S[12] found that PTB was significantly more common in blue-collar (44%) and white-collar (27.1%) workers than household workers (12.1%), students (10.6%) and retired / unemployed people (6.3%).

In our study, 7.6% patients were HIV infected similar to this, Hill et al[13] and Gupta S et al[12] showed HIV prevalence of 6.1% and 10.6% in TB patients respectively in their studies. In our study, 10.2% patients had diabetes mellitus whereas study by Srivatava AB et al[14] and Raghuraman s et al[15] reported the prevelance of diabetes in TB patients as 8.2% and 29% respectively. In our study, 26.4% patients were malnourished, while study by Dodor E[16] and Dargie B[17] found 51% 39.7 % TB patients were were malnourished. In our study, 13.7% patients were using corticosteroids for treatment of other chronic illness, 3.4% patients had chronic liver disease, 2.5% patients had chronic kidney disease, and 1.7% patients had malignancy. Study by Gupta S et al[12] found malignancy (5.8%), chronic liver diseases (3.9%), history of contact with TB (3.4%), chronic corticosteroid therapy (2.9%), chronic kidney diseases and malnourishment (1.5%) among TB patients. 73% patients were smokers and 28 85% patients were alcoholics. Study by Khaliq A et al[18] has also shown that TB was found to be significantly associated with male gender, married individuals, smoking, drinking, and illiteracy.

CONCLUSION

The present study reveals that various demographic, socioeconomic and clinical risk factors play a vital role in the etiology of pulmonary Tuberculosis. Most important factors found were young age group, male gender, low socioeconomic status, low education standard, exposure to TB infected patient, malnourishment, chronic use of corticosteroids, co-existing immuno-compromised diseases like HIV, DM, malignancy etc. Hence, this study provides useful information about the risk factors for Pulmonary TB that can be used to control the disease, by preventing these potential risk factors in population and timely diagnosing and providing treatment for pulmonary TB.

REFERENCES

1. Tb india 2016 revised national tb control programme annual status report. New delhi: central tb division, directorate general of health and family welfare, nirman bhavan; 2011. Available from: http://www.tbcindia.nic.in/showfile.php?lid=3180.

2. Decker CF & Lazarus A (2000) Tuberculosis and HIV infection. Postgraduate Medicine 108, 57–68.

3. Devi SB, Naorem S, Singh TJ, Singh KB, Prasad L & Devi TS (2005) HIV and TB coinfection. Journal of Indian Academy of Clinical Medicine 6, 220–3.

4. Singh SK; Pulmonary tuberculosis and Diabetes mellitus. In An update on Respiraroty Medicine. Eds. SK Samaria; JC Matah. 1997; 385-9.

5. Kumar V, Abbas AK, Fausto N, Mitchell RN (2007). Robbins Basic Pathology (8th ed.). Saunders Elsevier. pp. 516–522. ISBN 978-1-4160-2973-1.

6. Baker M, Das D, Venugopal K, Howden-Chapman P (2008) Tuberculosis associated with household crowding in a developed country. J Epidemiol Community Health 62: 715-21.

7. Schoeman JH, Westaway MS, Neethling A (1991) He relationship between socioeconomic factors and pulmonary tuberculosis. Int J Epidemiol 20: 435-40.

8. Lienhardt C, Fielding K, Sillah JS, Bah B, Gustafson P, et al. (2005) Investigation of the risk factors for tuberculosis: a case-control study in three countries in West Africa. Int J Epidemiol 34: 914-23.

9. Bhatia MS, Bhasin SK, and Dubey KK. Psychosocial dysfunction in tuberculosis patients. Indian J Med Sci. 2000;54:171-3.

10. Ali M, Imam F, Mallik S, Mehra RK, Kumar P, Garg A. Effect of Social Factors on Tuberculosis Patients: A Comprehensive Illness Behaviour Study. Indian Journal of Pharmacy Practice. 2013;6:61-4.

11. Dubey KK, Bhasin SK, Bhatia MS. (1999) Impact of Tuberculosis on sexual Relationship Amongst Hospitalized patients. The Indian Practitioner, 52, 680.

12. Gupta S, Shenoy VP, Mukhopadhyay C, Bairy I and Muralidharan S. Role of risk factors and socio-economic status in pulmonary tuberculosis: a search for the root cause in patients in a tertiary care hospital, South India. 2011;16:74–8.

13. Hill PC, Sillah DJ, Donkor SA, Out J, Adegbola RA and Christian Lienhardt C.Risk factors for pulmonary tuberculosis: a clinic-based case control study in The Gambia. BMC Public Health 2006;6:156.

14. Srivatava AB , Priyank Jain P , Jain S. Prevalence Of Diabetes Mellitus In Active Pulmonary Tuberculosis Patients And Clinico-Radiological Presentation Of Tubercular Diabetic Patients. Int J Res Med. 2016;5;79-83.

15. Raghuraman S, Vasudevan KP, Govindarajan S, Chinnakali P, and Panigrahi KC. Prevalence of Diabetes Mellitus among Tuberculosis Patients in Urban Puducherry. N Am J Med Sci. 2014;6:30–4.

16. Dodor E. Evaluation of Nutritional Status of New Tuberculosis Patients at the Effia-Nkwanta Regional Hospital. Ghana Medical Journal. 2008;42:22-8.