

Analysis of Prevalence of Diabetes Mellitus Among Tuberculosis Patients at a Tertiary Care Hospital

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ABSTRACT

Background: Tuberculosis is a major public health problem. It is one of the top ten causes of deaths worldwide. People with diabetes are three times at higher risk of getting infected with Tuberculosis compared to people without diabetes. The present study was conducted to assess prevalence of diabetes mellitus among tuberculosis patients.

Materials and Methods: This present cross-sectional study was conducted in Department of Community Medicine, Chennai Medical college Hospital & Research Centre, Irungalur, Tiruchirapalli, Trichy, Tamil Nadu, India. The study was conducted over a period of 6 months. The sample size for the study was 290 and was selected randomly. The data was collected using semi structured questionnaire consisting of socio-demographic parameters and clinical parameters of the study subjects. The recorded data was compiled, and data analysis was done using SPSS Version 22.0 (SPSS Inc., Chicago, Illinois, USA).

Results: In the present study a total of 290 TB were included out of which 56.89% were males and 43.10% were females. Maximum TB patients (37.24%) were of age group 41-50yrs. Out of 200 tuberculosis patients newly diagnosed Diabetes cases were 8.6% and previously known diabetics were 16.8%. The prevalence of DM among tuberculosis patients was found to be 25.5%.

Conclusion: The present study that out of 200 tuberculosis patients newly diagnosed Diabetes cases were 8.6% and previously known diabetics were 16.8%. The prevalence of DM among tuberculosis patients was found to be 25.5%.

KEYWORDS: Tuberculosis, Newly Diagnosed Diabetes, DOTS.

INTRODUCTION

The World Health Organization has called upon countries of the South-East Asia Region to gear up efforts for ending tuberculosis (TB) by the year 2030. India stands committed to meet this objective and is a signatory to the “End TB Strategy.” The “Revised National TB Control Program” of India has treated millions of patients, though the rate of decline in TB cases has been slow.¹ Among the numerous reasons which adversely impact TB control in India are the urbanization and accompanying lifestyle changes which have led to a rapid increase in noncommunicable diseases.^{2,3} About 95% of patients with tuberculosis (TB) and 70% of patients with diabetes mellitus (DM) live in

the low and middle income countries.^{4,5} The epidemic growth of DM has occurred in developing countries where TB is highly endemic. As a result, DM and TB are increasingly present together, and this calls for renewed interest in this topic.⁶ India is facing the dual problem of being the highest TB-burden country having a large number of people with diabetes posing a serious challenge for the health system.^{7,8} Diabetes and TB affect each other at many levels, among patients with TB; diabetes may adversely affect TB treatment outcomes. Screening for diabetes in patients with TB can help in early diagnosis and management of diabetes and will lead to better TB treatment outcome.^{9,10}

The World Health Organization and International Union against Tuberculosis and Lung Disease in collaboration with National Tuberculosis Control Program emphasize the routine implementation of bidirectional screening of two diseases in primary healthcare settings.¹¹ The present study was conducted to assess prevalence of diabetes mellitus among tuberculosis patients.

MATERIALS AND METHODS

This present cross-sectional study was conducted in Department of Community Medicine, Chennai Medical college Hospital & Research Centre, Irungalur, Tiruchirapalli, Trichy, Tamil Nadu, India. The study was conducted over a period of 6 months. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and written

consent was taken from the patient after explaining the study. Both males and females aged between 18-50 yrs, registered adult tuberculosis patients attending DOTS centre and on anti-tuberculosis treatment were included in the study. TB patients with other comorbidities like chronic liver diseases, chronic kidney diseases, and psychiatric illness; patients who did not give informed consent for participation in the study were excluded from the study. The sample size for the study was 290 and was selected randomly. The data was collected using semi structured questionnaire consisting of socio-demographic parameters and clinical parameters of the study subjects.

The recorded data was compiled, and data analysis was done using SPSS Version 22.0 (SPSS Inc., Chicago, Illinois, USA).

Table 1: Demographic data

Variable	N(%)
Gender	
Male	165(56.89%)
Female	125(43.10%)
Age group (yrs)	
18-30	84(28.96%)
31-40	98(33.79%)
41-50	108(37.24%)

Table 2: Prevalence of Diabetes Mellitus among TB patients

Diabetes	N(%)
Newly diagnosed	25(8.6%)
Previously known diabetics	49(16.8%)
Total diabetic patients	74(25.5%)

RESULTS

In the present study a total of 290 TB were included out of which 56.89% were males and 43.10% were females. Maximum TB patients (37.24%) were of age group 41-50yrs. Out of 200 tuberculosis patients newly diagnosed Diabetes cases were 8.6% and previously known diabetics were 16.8%. The prevalence of DM among tuberculosis patients was found to be 25.5%.

DISCUSSION

DM (diabetes mellitus) is defined as a cluster of metabolic disorders, characterized by hyperglycemia high enough to significantly increase the incidence of a specific and unique type of microangiopathy (retinopathy, nephropathy, and neuropathy).¹² An immunological study conducted by Yamashiro postulated that reduced production of Th1-related

cytokines and nitrous oxide in mice accounts for the hampered host defense against mycobacterium TB infection under diabetic conditions.¹³

In the present study a total of 290 TB were included out of which 56.89% were males and 43.10% were females. Maximum TB patients (37.24%) were of age group 41-50yrs. Out of 200 tuberculosis patients newly diagnosed Diabetes cases were 8.6% and previously known diabetics were 16.8%. The prevalence of DM among tuberculosis patients was found to be 25.5%.

The study from Tamil Nadu estimated a diabetes prevalence of 25% among TB patients which was higher when compared to the prevalence of diabetes of 10% in the general population.¹⁴

A study from India revealed a higher proportion of new DM (9.3%) among TB patients.¹⁵

The prevalence of diabetes among patients with TB were reported in earlier studies by Singla et al.,¹⁶ Khanna et al.,¹⁷ Kumar,¹⁸ and Zhang et al.,¹⁹ with 25%, 14.5%, 13%, and 44% 9.5%, prevalence of diabetes among patients with TB.

In study conducted in Kerala, India which indicates that much higher prevalence of DM (44%) among TB patients.²⁰

A study done in Nigeria by Oliyanka et al found the prevalence to be 5.7%.²¹

In another study conducted by Nair et al., it was inferred that age >50 years was independently associated with a higher prevalence of diabetes in TB patients.²²

CONCLUSION

The present study that out of 200 tuberculosis patients newly diagnosed Diabetes cases were 8.6% and previously known diabetics were 16.8%. The prevalence of DM among tuberculosis patients was found to be 25.5%.

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