



ORIGINAL RESEARCH PAPER

Community Medicine

ASSESSING THE PREVALENCE OF DIABETES MELLITUS (DM) AND HIV AMONG THE NOTIFIED TUBERCULOSIS (TB) IN A DISTRICT OF NORTH INDIA: A SECONDARY DATA ANALYSIS.

KEY WORDS: Notified TB cases, bi-directional screening, surveillance, epidemic, prevalence.

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ABSTRACT

Introduction: Tuberculosis (TB) is the largest infectious disease killer in the world. The double burden of TB and DM has recently emerged as an important public health problem in India highlighting the importance of screening TB patients for DM on a routine basis. The importance of HIV surveillance in TB patients is increasingly being realized as the HIV epidemic continues to fuel the global TB epidemic. This study was planned with the main objective of determining the prevalence of DM and HIV among TB patients. **Materials and methods:** It was an institutional based study with secondary data analysis of first quarter (January -March 2022) notified cases of Tuberculosis in District Kullu, Himachal Pradesh. Data collected was coded and then entered in Microsoft-excel spreadsheet and was analysed using SPSS version 24. **Results:** Prevalence of Diabetes Mellitus (DM) and HIV among the TB cases was found to be 3.4% and 0.3% respectively. Also, type of TB was not found to be significantly associated with any characteristic of the patients. **Conclusion:** The actual count may be much higher, so rigorous screening for DM and HIV among TB patients is need of every hour so that better treatment outcomes are achieved.

Introduction

Tuberculosis (TB) is the largest infectious disease killer in the world (1). The South Asian region which consists of eight low and middle-income nations, namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka alone shares for nearly 44% of the world TB cases and a high burden of TB mortality (681,975 deaths), 38% of the worldwide burden (2). Studies have established the bidirectional link between diabetes and TB. It is hypothesized that diabetes worsens the clinical course of TB treatment. Furthermore, in TB, the glycemetic control in diabetics is impaired (3,4). A plausible hypothesis of TB correlation is the impaired host defense in individuals in diabetics (5).

The double burden of TB and DM has recently emerged as an important public health problem in India highlighting the importance of screening TB patients for DM on a routine basis. The Central TB Division and the National non-communicable disease division jointly developed a framework called 'National Framework for joint TB-Diabetes collaborative activities' which recommends screening of all registered TB patients for diabetes and ensures comprehensive diabetes care and management among diagnosed TB cases (6).

The importance of HIV surveillance in TB patients is increasingly being realized as the HIV epidemic continues to fuel the global TB epidemic. In many regions, the HIV prevalence in TB patients is a sensitive indicator of the spread of HIV into the general population. Information about the HIV prevalence in TB patients is essential for responding with an increasing commitment to providing comprehensive HIV/AIDS care and support, including anti-retroviral therapy (ART), to HIV-positive TB patients (7).

There is paucity of evidence describing the burden of DM and HIV among TB patients, especially from North India. Hence, this study was planned with the main objective of determining the prevalence of DM and HIV among TB patients. The findings may help the government to devise effective strategies to augment early diagnosis, determine the appropriate treatment regime and enhance good treatment outcomes.

Materials and methods

It was an institutional based study with secondary data

analysis of first quarter (January -March 2022) notified cases of Tuberculosis in District Kullu, Himachal Pradesh. The data was accessed from office of Chief Medical Officer (CMO) Kullu after seeking prior permission. Data collected was coded and then entered in Microsoft-excel spreadsheet and was analysed using SPSS version 24. Various characteristics of patients diagnosed with TB like area of diagnosis, age, gender, site and type of TB were analysed. The distribution of patients based on detection of Diabetes and HIV was analysed and presented using frequencies and percentages for assessing prevalence of Diabetes Mellitus (DM) and HIV among TB cases. In addition to this, association between type of TB detected and various characteristics of patients was also assessed using Chi square test and p value less than 0.05 was considered statistically significant .

The whole procedure was performed in accordance with the ethical standards and the Helsinki declaration of 1975 and a permission was sought from the head of the institution prior to the commencement of the study.

Results

Table 1: Characteristics of patients diagnosed with Tuberculosis. (n=292)

Area of diagnosis	N(%)
Shimla	49(16.8)
Kullu	209(71.6)
Mandi	20(6.8)
Kangra	1(0.3)
Solan	7(2.4)
Hamirpur	1(0.3)
Outside H.P.	5(1.7)
Age(in years)	
Upto 30	112(38.4)
31-45	81(27.7)
46-60	61(20.9)
61 and above	38(13.0)
Gender	
Male	177(60.6)
Female	115(39.4)

Out of 292 notified TB patients 209(71.6%) were diagnosed in various Public Health Institutions (PHIs) of Kullu District, 112(38.4%) were of less than 30 years of age and 177(60.6%) were male (Table 1). Most of the cases (67.5%) were diagnosed with pulmonary Tuberculosis (Figure 1) and 97.6% had Drug Sensitive Tuberculosis (DSTB) (Figure 2).

Figure 1: Distribution of patients based on site of Tuberculosis.

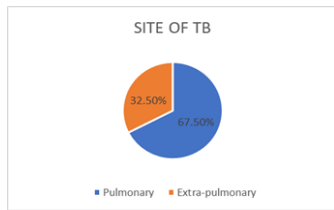


Figure 2: Distribution of patients based on type of Tuberculosis.

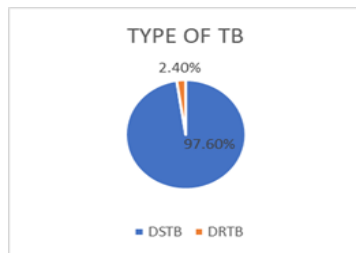


Table 2: Distribution of patients based on detection of HIV and Diabetes.

Characteristic	N(%)
Diabetes detected	10(3.4)
Diabetes not detected	282(96.6)
HIV reactive	1(0.3)
HIV non-reactive	291(99.7)

Prevalence of Diabetes Mellitus (DM) and HIV among the TB cases was found to be 3.4% and 0.3% respectively (Table 2). Also, type of TB was not found to be significantly associated with any characteristic of the patients (Table 3).

Table 3: Association between type of TB detected and various characteristics of patients.

Characteristic	Type of TB		X ² (p value)
	DSTB	DRTB	
Gender: Male	171(58.5)	6(2.1)	1.89(0.17)
Female	114(39.1)	1(0.3)	
Age(in yrs): upto 30	109(37.3)	3(1.1)	1.17(0.75)
31-45	79(27.1)	2(0.6)	
46-60	59(20.2)	2(0.6)	
61 and above	38(13.1)	0(0.0)	
Site of TB:Pulmonary	190(65.1)	7(2.4)	3.45(0.06)
Extra-pulmonary	95(32.5)	0(0.0)	

Discussion

In our study, prevalence of Diabetes Mellitus (DM) was found to be 3.4% among the notified cases of Tuberculosis in District Kullu of Himachal Pradesh. A study by Rajaa S et al⁽⁶⁾ conducted in South India showed a prevalence of DM as 39% among TB patients (95% CI: 36.2% to 41.8%). Studies conducted around the world show wide variations in the burden of DM among TB patients ranging from 1.9% to 45%⁽⁶⁾. More recent studies estimate that approximately 15% of new TB cases could be attributed to DM⁽⁹⁻¹²⁾.

Various studies conducted in South India (Puducherry: 29%;

Tamil Nadu: 25.3%; Andhra Pradesh: 31%; Kerala: 32%; Karnataka: 35%) and neighbouring countries (Pakistan: 39%; China: 30%) showed findings many times higher as compared to our study⁽¹³⁻¹⁸⁾. Reason for such higher burden may be the differences in lifestyle factors like increased consumption of rice as their staple diet, a higher proportion of elderly population and a higher burden of obesity/overweight in south India⁽⁶⁾. In a study by Sharma D et al⁽⁹⁾ the prevalence of diabetes among TB patients was found to be 13.1% (known diabetics –9.1% and new diabetics –4.0%).

Such a low prevalence (3.4%) found in our study may be due to data analysis of the cases just reported in first quarter of the year which may not be representative of entire TB cases of the area.

In our study prevalence of HIV was found to be 0.3% among the notified TB cases. In a study by Manjareekia M et al the prevalence of HIV infection among tuberculosis patients in Eastern India was found to be 12.3%. Such a high disparity between the results of the two studies may be due to the huge difference between the prevalence of HIV in Northern and Eastern India.

Our study is a novel study which had not been conducted in the past under similar settings. Since this was a secondary data analysis of just first quarter of TB notified cases, it may not be representing the actual picture of the prevalence of DM and HIV among TB patients in the area. Some another study design with adequate sample size should be carried out in future for the reliable estimates.

Conclusion

Prevalence of Diabetes Mellitus (DM) and HIV among the TB cases was found to be 3.4% and 0.3% respectively. The actual count may be much higher, so rigorous screening for DM and HIV among TB patients is need of every hour so that better treatment outcomes are achieved.

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