

ORIGINAL RESEARCH

Evaluation of prevalence of Pulmonary Tuberculosis among Adults in a known population

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Abstract

Background: The present study was conducted for assessing the prevalence of Pulmonary Tuberculosis among Adults in a known population.

Materials & methods: It was possible to find a list of both urban and rural municipal wards. The study's survey locations were selected at random from a list of all the villages and municipal wards. The sputum collection team and the enumerator team, who worked concurrently in the same area, made up the bulk of the field survey staff. In the event of contamination or a lack of growth after eight weeks, the cultures were thrown away. SPSS software was used to record and interpret each outcome. Analysis of univariate regression was utilised to determine the level of significance.

Results: Overall, TB was confirmed in 18.5 percent of the cases. Majority proportion of TB patients belonged to the age group of 41 to 50 years (60 percent). 63.78 percent of the patients were males while the remaining were females. 58.92 percent of the patients belonged to rural residence.

Conclusion: Low prevalence of TB in our study might be attributed to better health infrastructure at the study location.

Key words: Tuberculosis, Prevalence

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Introduction

Tuberculosis (TB) is a communicable disease caused by *Mycobacterium tuberculosis* and is a major health problem. It is one of the top 10 causes of death worldwide and the leading cause of death due to a single infectious agent, contributing to 1.4 million deaths in 2019. The South East Asia (SEA) region accounts for 44% of the global burden of TB. India is among the eight high-burden countries with TB which contributes to 2/3 of the world's TB cases. An estimated 10 million people were diagnosed with TB and children less than 15 years account for 12% of this number in 2019. Northeast states in India are among the high-burden states with TB in the country.¹⁻³ Despite the isolation and identification of the causative agent, *Mycobacterium tuberculosis*, since 1882 and the use of specific chemotherapy from the early twentieth century, the disease remains a

major public health problem, especially in developing countries. The deterioration of the socio-economic situation with increase in poverty, overcrowding, and marginalized populations; scarce access to health services harming the finding of new cases of the disease, migration, elder population, the growing of AIDS cases and the emergence of multi-resistant germs are factors that make this aggravation far from being eliminated. Pulmonary disease is the most common clinical presentation of the disease regardless of age, and the smear-positive one is responsible for the transmissibility of the disease. The spread of disease is associated with the living conditions of the population. A large human concentration, poor urban infrastructure, hunger, poverty and the lack of access to health care providers are facilitating factors for the dissemination of the disease. Some conditions which weaken the immune system, such as HIV infection,

diabetes, use of immunosuppressive drugs, malnutrition, chronic kidney disease, can contribute to the disease installation. Prevention, early diagnosis and the correct treatment of patients are some measures to control tuberculosis.⁴⁻⁷ Hence; the present study was conducted for assessing the prevalence of Pulmonary Tuberculosis among Adults in a known population.

Materials & methods

The present study was conducted for assessing the prevalence of Pulmonary Tuberculosis among Adults in a known population. It was possible to find a list of both urban and rural municipal wards. The study's survey locations were selected at random from a list of all the villages and municipal wards. The sputum collection team and the enumerator team, who worked concurrently in the same area, made up the bulk of the field survey staff. Every respondent was given a special research identification number. Any respondent who met the following criteria was eligible for a sputum examination: (a) persistent cough for two weeks or longer; (b) fever for one month or longer; (c) chest pain for one month or longer; (d) hemoptysis within the previous six months; or (e) history of prior TB therapy. The sputum collection crew collected sputum samples in accordance with a standard technique. All field employees received centralised training before the survey began. The questionnaire's questions were asked in exact accordance with their listed order. Even after a brief explanation, if there was any question about whether to answer "Yes" or "No" to a specific question, the response was recorded

as "No". On the same day as the main interview, the sputum collection crew took a spot sputum sample from each eligible responder and placed it in sterile plastic containers. All sputum samples were transported to the laboratory on the same day after being neatly tagged with the respondent's identifying number and the timing of the sample (spot or early morning). Both concentrated samples and fresh sputum specimens were used to create smears. Standard morphologic characteristics and biochemical processes were used to certify the identity of the culture growth as *Mycobacterium tuberculosis*. In the event of contamination or a lack of growth after eight weeks, the cultures were thrown away. SPSS software was used to record and interpret each outcome. Analysis of univariate regression was utilised to determine the level of significance.

Results

A total of 1000 subjects were surveyed. 56.1 percent of the subjects belonged to the age group of 30 to 40 years. 43.9 percent of the subjects belonged to the age group of 41 to 50 years. 52.7 percent of the subjects were males while the remaining were females. 62.7 percent of the subjects were rural residence while the remaining were of urban residence. Overall, TB was confirmed in 18.5 percent of the cases. Majority proportion of TB patients belonged to the age group of 41 to 50 years (60 percent). 63.78 percent of the patients were males while the remaining were females. 58.92 percent of the patients belonged to rural residence.

Table 1: Demographic data of total subjects surveyed

Variable		Number	Percentage
Age group (years)	30 to 40	561	56.1
	41 to 50	439	43.9
Gender	Males	527	52.7
	Females	473	47.3
Residence	Rural	627	62.7
	Urban	373	37.3

Table 2: Prevalence of TB

Tuberculosis	Number	Percentage
Present	185	18.5
Absent	815	81.5
Total	1000	100

Table 3: Demographic data of TB subjects

Variable		Number	Percentage
Age group (years)	30 to 40	74	40
	41 to 50	111	60
Gender	Males	118	63.78
	Females	67	36.22
Residence	Rural	109	58.92
	Urban	76	41.08

Discussion

An estimated 1.3 million people died due to tuberculosis (TB) in 2017, making TB one of the leading causes of death due to an infectious agent worldwide. The World Health Organization's (WHO) End TB target is a 95% reduction in the number of deaths due to active TB between 2015 and 2035.⁶⁻⁹ Hence; the present study was conducted for assessing the prevalence of Pulmonary Tuberculosis among Adults in a known population. A total of 1000 subjects were surveyed. 56.1 percent of the subjects belonged to the age group of 30 to 40 years. 43.9 percent of the subjects belonged to the age group of 41 to 50 years. 52.7 percent of the subjects were males while the remaining were females. 62.7 percent of the subjects were rural residence while the remaining were of urban residence. Overall, TB was confirmed in 18.5 percent of the cases. Min Jet al described the clinical and laboratory findings of subclinical disease among pulmonary TB patients and compared treatment outcomes for subclinical and active diseases. They enrolled adult patients aged ≥ 19 years with pulmonary TB between 2016 and 2018. Among 420 enrolled patients, 81 (19.3%) had subclinical TB. Multivariable analysis showed that age < 65 years was the only variable significantly associated with subclinical disease. Subclinical disease had a significantly lower proportion of acid-fast bacilli smear and culture positivity and multiple lobe involvement compared to active disease. The white blood cell counts, platelet counts, and C-reactive protein levels were significantly higher among patients with active disease than among those with subclinical disease. Among 319 patients with treatment success in the drug-susceptible cohort, six (1.9%) recurrent cases were identified, and all were active disease. Patients with subclinical disease had a higher proportion of favourable outcomes; however, its odds ratio was insignificant.¹⁰ In the present study, Majority proportion of TB patients belonged to the age group of 41 to 50 years (60 percent). 63.78 percent of the patients were males while the remaining were females. 58.92 percent of the patients belonged to rural residence. Chadha, V. Ket al estimated point prevalence of bacteriologically positive pulmonary TB (PTB) in a rural area in South India, implementing TB program DOTS strategy since 2002. Of 71,874 residents ≥ 15 years of age, 63,362 (88.2%) were screened for symptoms and ATT. Of them, 5120 (8.1%) - 4681 (7.4%) with symptoms and an additional 439 (0.7%) with ATT were eligible for sputum examination. Spot specimen were collected from 4850 (94.7%) and early morning sputum specimens from 4719 (92.2%). Using symptom screening alone, prevalence of smear, culture and bacteriologically positive PTB in persons ≥ 15 years of age was 83 (CI: 57-109), 152 (CI: 108-197) and 196 (CI :145-246) per 100,000 population respectively. Prevalence corrected for non-screening

by X-ray was 108 (CI: 82-134), 198 (CI: 153-243) and 254 (CI: 204-301) respectively.¹¹

Conclusion

Low prevalence of TB in our study might be attributed to better health infrastructure at the study location.

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