

## Assessment of Tuberculosis Prevalence in a Known Area: An Institutional Based Study

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### Article History

Received: 19 Feb 2016

Revised: 07 Mar 2016

Accepted: 31 Mar 2016

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### ABSTRACT

**Background:** Tuberculosis (TB) continues to be a major public health problem in India, making it the highest TB burden country in the world. The present study was conducted to assess prevalence of tuberculosis in a known area.

**Materials and Methods:** The present cross-sectional study was conducted among 400 adults of aged 18 to 60 years. Adults were evaluated for symptoms of possible TB. Direct smears were made from both sputum specimens. All bacteriologically positive cases were referred to the concerned health authorities for anti-TB treatment. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

**Results:** In the present study a total 400 subjects were selected for the study in which 72.5% were males and 27.5% were females. 7.93% males were TB positive, and 13.63% females were TB positive. Total prevalence of TB in individuals was 9.5%. In age group 18-30 yrs 3.59% individuals were TB positive, in age group 31-40yrs 5.88% individuals were TB positive. 10% individuals were TB positive in age group 41-50yrs and 31.03% individuals were TB positive in age group 51-60yrs.

**Conclusion:** The present study concluded that 7.93% males were TB positive, and 13.63% females were TB positive. Total prevalence of TB in individuals was 9.5%. Maximum TB patients were of age group 51-60yrs.

**KEYWORDS:** Tuberculosis, DOTS, *M. tuberculosis*.

### INTRODUCTION

Tuberculosis (TB) has been declared a global health emergency by the World Health Organization (WHO).<sup>1</sup> In India, there are almost 62.4 million people with type 2 diabetes (T2DM) and 77 million people with prediabetes, and these numbers are projected to increase to 101 million by the year 2030.<sup>2</sup> The Global Task Force on TB Impact Measurement is hosted by the World Health Organization (WHO) with a mandate to ensure the best-possible assessment of whether 2015 global targets for reductions in TB disease burden are achieved.<sup>3</sup> The developed countries regard tuberculosis as a disease of the past due to the implementation of effective control strategies with social and economic development. For many low- and middle-income countries, the “end” of tuberculosis as a major public

health problem is still a reality to achieve. India accounts for 27% of all estimated incident cases worldwide. India under its Revised National Tuberculosis Control Program (RNTCP) adopted the World Health Organization-endorsed Directly Observed Treatment, Short-Course (DOTS) in 1997.<sup>4,5</sup> In spite of newer modalities for diagnosis and treatment of TB, unfortunately, millions of people are still suffering and dying from this disease. TB is one of the top three infectious killing diseases in the world: HIV/AIDS kills 3 million people each year, TB kills 2 million and malaria kills 1 million.<sup>6</sup> Even though tubercle bacilli was identified nearly 130 years ago, a definitive understanding of pathogenesis of this disease is still deficient.<sup>7,8</sup> The present study was conducted to assess prevalence of tuberculosis in a known area.

## MATERIALS AND METHODS

The present cross-sectional study was conducted in Department of Community Medicine, Chennai Medical college Hospital & Research Centre, Irungalur, Tiruchirapalli, Trichy, Tamil Nadu (India) among 400 adults of aged 18 to 60 years. 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. Persons below 18 were excluded from the study. Adults were evaluated for symptoms of possible TB, defined as one or more of the following: cough for 2 weeks, weight loss for 2 weeks, fever for 2 weeks, night sweats for 2 weeks, or hemoptysis and exposure to TB, defined as living in a household where a person had been diagnosed with TB. Two sputum samples (of  $\geq 2$  ml each)—one spot and one overnight—were collected from all eligible individuals in sterilized McCartney's bottles. Direct smears were

made from both sputum specimens. The smears were stained by the Ziehl–Neelsen (ZN) method and were examined for acid fast bacilli.<sup>9</sup> All the specimens were also processed for culture by modified Petroff's method and were examined for growth of *Mycobacterium tuberculosis* once a week for 8 weeks. Niacin test and growth on para-nitrobenzoic acid was done to confirm the growth of *M. tuberculosis*.<sup>10</sup> A PTB case was defined as an individual whose sputum was positive for acid fast bacilli by ZN microscopy and/or growth of *M. tuberculosis* by culture examination.<sup>11</sup> All bacteriologically positive cases were referred to the concerned health authorities for anti-TB treatment under the RNTCP using standardized DOTS regimens.<sup>12</sup> The recorded data was compiled and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

**Table 1: Prevalence of TB according to gender**

Gender	Total number examined	Total positive individuals
Male	290(72.5%)	23(7.93%)
Female	110(27.5%)	15(13.63%)
Total	400(100%)	38(9.5%)

**Table 2: Age-wise prevalence of TB**

Age group (yrs)	Total number examined	Total positive individuals
18-30	167(41.75%)	6(3.59%)
31-40	85(21.25%)	5(5.88%)
41-50	90(22.5%)	9(10%)
51-60	58(14.5%)	18(31.03%)

## RESULTS

In the present study a total 400 subjects were selected for the study in which 72.5% were males and 27.5% were females. 7.93% males were TB positive, and 13.63% females were TB positive. Total prevalence of TB in individuals was 9.5%. In age group 18-30 yrs 3.59% individuals were TB positive, in age group 31-40yrs 5.88% individuals were TB positive. 10% individuals were TB positive in age group 41-50yrs and 31.03% individuals were TB positive in age group 51-60yrs.

## DISCUSSION

In the present study a total 400 subjects were selected for the study in which 72.5% were males and 27.5% were females. 7.93% males were TB positive, and 13.63% females were TB positive. Total prevalence of TB in individuals was 9.5%. In age group 18-30 yrs 3.59% individuals were TB positive, in age group 31-40yrs

5.88% individuals were TB positive. 10% individuals were TB positive in age group 41-50yrs and 31.03% individuals were TB positive in age group 51-60yrs.

In a longitudinal analysis of the national tuberculosis survey data of China from 1990 to 2010 by Wang *et al.*, it was found that the prevalence of smear-positive pulmonary tuberculosis decreased from 170/100,000 population to 59/100,000 population. The prevalence was higher among male population and in rural areas than among female population and urban areas. In this period of 20 years, China managed to halve its tuberculosis prevalence.<sup>13</sup>

A national policy to coordinate common activities for HIV/AIDS and TB has been formulated by the National AIDS Control Organization and the Central TB Division. TB and TB/HIV interventions are reciprocally included in the national policies of both programs.<sup>14</sup>

Among the 1.5 million TB cases reported under the national program in 2008, an estimated 73,720 cases were HIV-infected. Implementation of the revised “national framework of joint TB/HIV collaborative activities” began in early 2008, and interventions now cover the entire country. An “intensified TB/HIV package” initiated in 2008 is now being implemented in 11 states and in districts of other states with high HIV prevalence, covering a total population of over 400 million. Indian government plans to cover the entire country with the intensified package by 2012.<sup>15</sup>

The prevalence of bacteriologically positive pulmonary tuberculosis was 293/100,000 population. The prevalence was higher among male population and in rural areas. The estimated incidence of tuberculosis was much less than that of the survey-reported prevalence.<sup>16</sup>

A population-based national tuberculosis prevalence survey among adults aged 15 years and above by Qadeer *et al.* in Pakistan found that the prevalence of bacteriologically positive pulmonary tuberculosis was 398/100,000 population.<sup>17</sup>

## CONCLUSION

The present study concluded that 7.93% males were TB positive, and 13.63% females were TB positive. Total prevalence of TB in individuals was 9.5%. Maximum TB patients were of age group 51-60yrs.

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**Source of Support:** Nil.

**Conflict of Interest:** None Declared.

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**Cite this article as:** Ramesh Yeshwant Wagh, Sanjay N. Murudkar. Assessment of Tuberculosis Prevalence in a Known Area: An Institutional Based Study. *Int J Med Res Prof*. 2016, 2(2); 409-11.