## ABSTRACT

### 1. Prevalence of Pulmonary Tuberculosis among Adults in a Rural Sub-District of South India

**Background**: We conducted a survey to estimate point prevalence of bacteriologically positive pulmonary TB (PTB) in a rural area in South India, implementing TB program DOTS strategy since 2002.

**Methods**: Survey was conducted among persons $15 years of age in fifteen clusters selected by simple random sampling; each consisting of 5–12 villages. Persons having symptoms suggestive of PTB or history of anti-TB treatment (ATT) were eligible for sputum examination by smear microscopy for Acid Fast Bacilli and culture for Mycobacterium tuberculosis; two sputum samples were collected from each eligible person. Persons with one or both sputum specimen positive on microscopy and/or culture were labeled suffering from PTB. Prevalence was estimated after imputing missing values to correct for bias introduced by incompleteness of data. In six clusters, registered persons were also screened by X-ray chest. Persons with any abnormal shadow on X-ray were eligible for sputum examination in addition to those with symptoms and ATT. Multiplication factor calculated as ratio of prevalence while using both screening tools to prevalence using symptoms screening alone was applied to entire study population to estimate prevalence corrected for non-screening by X-ray.

**Results**: 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.

**Conclusion:** Observed prevalence suggests further strengthening of TB control program.



Chadha, V. K. and Kumar, P. and Anjinappa, Sharada M. and Sanjay Singh, and Somashekar Narasimhaiah, and Joshi , M. V. and Gupta, J. andLakshminarayana, and Jitendra, R. and Magesh, V. and Suganthi, P. and Suseendra Babu, and Hemalatha Krishna, (2012) ***Prevalence of Pulmonary Tuberculosis among Adults in a Rural Sub-District of South India*** PLoS ONE, 7 (8). e42625.

## 2. Trends in the annual risk of tuberculous infection in India

**SETTING**: Twenty-four districts in India.

**OBJECTIVES:** To evaluate trends in annual risk of tuberculous infection (ARTI) in each of four geographically defined zones in the country.

**STUDY DESIGN:** Two rounds of house-based tuberculin surveys were conducted 8-9 years apart among children aged 1-9 years in statistically selected clusters during 2000-2003 and 2009-2010 (Surveys I and II). Altogether, 184,992 children were tested with 1 tuberculin unit (TU) of purified protein derivative (PPD) RT23 with Tween 80 in Survey I and 69,496 children with 2TU dose of PPD in Survey II. The maximum transverse diameter of induration was measured about 72 h after test administration. ARTI was computed from the prevalence of infection estimated using the mirror-image method.

**RESULTS**: Estimated ARTI rates in different zones varied between 1.1% and 1.9% in Survey I and 0.6% and 1.2% in Survey II. The ARTI declined by respectively 6.1% and 11.7% per year in the north and west zones; no decline was observed in the south and east zones. National level estimates were respectively 1.5% and 1.0%, with a decline of 4.5% per year in the intervening period.

**CONCLUSION**: Although a decline in ARTI was observed in two of the four zones and at national level, the current ARTI of about 1% in three zones suggests that further intensification of TB control activities is required.

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## 3. Annual risk of tuberculous infection in a rural population of south India and its relationship with prevalence of smear positive pulmonary tuberculosis

**Background**: We conducted a tuberculin survey to estimate the annual risk of tuberculous infection (ARTI) among children in a sub-division of rural Bangalore district. A TB disease survey was conducted in the same area around the same time and has already been published. DOTS strategy is being implemented in the study area since 2002.

**Methods**: The tuberculin survey was conducted during 2010-2011 among 3838, 5-9-year-old children attending 147 schools selected by simple random sampling. Children were tuberculin tested with 2TU PPD RT23 with Tween 80 and maximum diameter of induration was measured between 48-96 hours. ARTI was computed from prevalence of infection estimated by mirror-image technique. Prevalence of smear positive pulmonary TB estimated during the disease prevalence survey in 2008-10 was used to find out its relationship with ARTI.

**Results**: Using the observed mode of tuberculin reaction sizes at 19 mm, among surveyed children, prevalence of infection was estimated at 7.3% (CI: 6.5-8.1); ARTI was computed at 1.05%. Considering the mean age of children, estimated ARTI most closely approximated to the year 2008. Every one per cent ARTI was found to correspond to a prevalence of 103 sputum smear positive patients of PTB, which was similar to the ratio of 106 found in the same study area during 1960s.

**Conclusion:** There has been no change in the relationship between ARTI and prevalence of smear positive pulmonary TB from the pre-DOTS era and thus in the number of children infected by each adult point prevalent case of smear positive pulmonary TB each year suggesting the need for early case detection and treatment.

Chadha, V. K. and Sharada, M. A. and Gowda, U. and Srivastava, R. and Ahmed, J. and Kumar, P. (2013) ***Annual risk of tuberculous infection in a rural population of south India and its relationship with prevalence of smear positive pulmonary tuberculosis*** Indian J Tuberc, 60 (4). pp. 227-232