

Background document 6

The First Ethiopian National Population-based TB Prevalence Survey

Amha Kebede¹, Zeleke Alebachew^{1,2,*}, Fasil Tsegaye¹, Eshetu Lemma¹, Ikushi Onozaki³, Charalambos Sismanidis³, Almaz Abebe¹, Mulualem Agonafir¹, Daniel Demisse¹, Abebaw Kebede¹, Feven Girmachew¹, Zelalem Yaregal¹, Feleke Dana¹, Muluwork Getahun¹, Yetnebersh Feseha¹, Abyot Maza¹, Natenael Dires¹.

Background: In Ethiopia in 2009 more than 149, 508 TB patients were diagnosed and put on treatment (188 per 100,000 populations). With the existing epidemiological estimation, the country achieved 50% case detection rate for the year 2009. However, there was uncertainty of the estimation of the burden of disease in the country as a result of lack of base line data or basic information for modeling the burden.

Objective: To determine the nationwide prevalence of pulmonary TB among the adult (15 years and above) general population in 2010/11.

Methods: A nationwide, clustered-sampled, stratified (urban/rural/pastoralist), cross-sectional survey, was conducted between October 2010 to June 2011 in 85 selected clusters across Ethiopia. All consenting participants were screened for TB using: (i) chest X-ray (CXR) examination with portable radiography units and a full-sized film, and (ii) an interview for symptoms consistent with TB disease. Individuals identified with an abnormal CXR of the lung or TB symptoms were eligible for sputum examination and were requested to submit both a morning and a spot sputum specimen. All collected sputum specimens were sent to the National TB Referral Laboratory of the Ethiopian Health and Nutrition Research Institute for Microscopic and Culture Examination. Case definitions for a prevalent survey TB case, as well as statistical analyses, were based on WHO recommendations.

¹Ethiopian Health and Nutrition Research Institute, P.O. Box: 1242 Addis Ababa, Ethiopia

²Federal Ministry of Health of Ethiopia, P.O. Box 1234 Addis Ababa, Ethiopia

³World Health Organization 20 Avenue Appia CH_1211 Geneva 27, Switzerland

*Correspondence to Zeleke Alebachew: Zalebachew@gmail.com

Results: Among 51,667 eligible individuals, 46,697 (90%) participated in the survey and completed at least the screening interview. CXR screening was performed in 46,548 (99.7%) participants. A total of 6,080 (13%) participants were eligible for sputum examination. 47 smear positive and 110 bacteriologically-confirmed TB cases were detected. From the survey, it was estimated that among the national population of Ethiopia of people 15 years and above the prevalence of (i) smear positive TB was 108 per 100,000 (95% C.I. 73-143) and (ii) bacteriologically-confirmed TB was 277 per 100,000 (95% C.I. 208-347). Adjusting for the prevalence among children (which account for 45% of the total population), using routinely-reported national surveillance data, we extrapolated that the prevalence of smear positive TB among the total population was 63 per 100,000 (95 C.I. 44-82). The male to female ratio of smear positive prevalence rate was estimated at 1.4 compared with a respective value of 1.3 based on surveillance data. Young adults aged between 15 to 24 years accounted for 32% of the total prevalent cases found, compared with a 26% respective share of the same group among the total number of notified cases.

Discussion: The survey estimated significantly lower smear positive TB prevalence, 64 per 100,000, compared with the previous estimation of 284 per 100,000. During 2011, the calendar year most of the field operations for the survey were completed, routine surveillance notified 61 per 100,000 smear positive TB cases. The HIV prevalence rate among reported TB cases for 2011 was estimated 8.0%. The rather low prevalence identified by the survey suggests better program performance, and possibly a higher case detection rate than previously thought. On the other hand, the fact that most patients are young reveals a lively TB epidemic.

Conclusion: This survey found lower TB burden than previously thought and suggests better program performance and case detection rate. The survey results revealed similar pattern of age and sex distribution of pulmonary TB with the routine report. Despite lower prevalence of HIV (8%) among TB cases, the high proportion of TB among young suggests TB is circulating in the community and there is a need of more effort to limit the spread of TB disease in the community.