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Extended Abstract

Prevalence and associated risk factors of latent tuberculosis infection (LTBI) in East Wollega Zonal prison, Western Oromia, Ethiopia

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Introduction:

TB is caused by Mycobacterium tuberculosis complex (MTBC) and is spread from person to person via air by droplet nuclei produced when a person with TB coughs, sneezes, talks, or sings therefore causing TB or LTBI. In 2018, there were more than 1.2 million TB deaths worldwide and an additional 251,000 deaths of TB-HIV co-infection. New TB cases reached 10 million and about 3.4% of new TB cases and 18% of previously treated cases had multi-drug resistant TB (MDR-TB) or rifampicin-resistant TB (RR-TB).

LTBI causes persistent immune responses to mycobacterial antigens without evidence of the manifestation of clinical symptoms. It is estimated that approximately two to three billion people living in high TB burden countries are infected with MTBC bacteria. Of those, roughly 1.3 million will create dynamic TB during their lifetime. The vast majority of these patients create dynamic TB inside the initial 5 years except if they are determined and rewarded to have anti-infection drugs .WHO target of elimination of TB by 2050 and End TB Strategy by 2035 (4) could be possible only if the probability of progression LTBI to active TB e is radically decreased beneath the current lifetime danger of 5–15% .In some low-burden countries, reactivation accounts for about 80% of new cases of disease. Hence, in order to reduce the number of new TB cases, WHO adapted from the "End TB Strategy" that states, systematic screening and treatment of LTBI in at-risk populations is a critical component in the elimination of TB. One of the recommended settings to manage LTBI through screening programs is the prison environment.

This is because that globally, prison represents a major institutional amplifier for TB particularly in low-and middle-income countries (LMICs). As such, prisons serve as reservoirs that facilitate TB transmission to the general community through released inmates, visitor and prison staff. A systematic review indicated that TB exposure in prisons was attributable to 8.5% and 6.3% of all TB cases in community settings in a high income countries and LMICs, respectively. Additionally, TB contributes significantly to prison related mortality in LMICs.

Although, there are global evidences that indicate higher occurrence of TB in prisons as compared to the occurrence of TB in the general population, there are no studies performed on the epidemiology of LTBI in prions in Ethiopia yet and a few studies have been conducted on the epidemiology of TB in prions in Ethiopia. These two studies were conducted in the southern and eastern parts of Ethiopia. These studies are not sufficient to represent the epidemiology of TB in prisons in Ethiopia, a country with hundreds of prisons in different regions. Hence, additional studies are needed in order to have national data on the epidemiology of TB in prisons. Particularly, in western Ethiopia, the numbers of prisons and prisoners has rising from time to time since two decades primarily because of political reasons and each prison have been congested with a large number of prisoners. Such situation would favour the transmission of TB leading to high prevalence in the prisons of western Ethiopia. This study was conducted to estimate the prevalence LTBI in prisons in western Ethiopia.

Background:

Tuberculosis (TB) remains a major global public health issue and WHO has also set the ambitious target of a 90% reduction in the incidence of new TB cases by 2035. However, LTBI is a major obstacle to eliminate TB because of different risk factors. Hence, in order to reduce the number of new TB cases, WHO adapted from End TB strategy that states screening and treating of LTBI; particularly, in prison environment. This is because that globally, prisons represent a major institutional amplifier for TB. The aim of the present study was to investigate the prevalence and associated risk factors of LTBI in East Wollega Zonal prison, Nekemte town, Western Oromia, Ethiopia.

Methods:

A cross-sectional study design and systematic sampling technique was used to select a sample of 352 from a total of 2620 prisoners aged ≥18 years during one month (May–June, 2019) in East Wolllega prison, Western Oromia, Ethiopia. The selected inmates were interviewed using a structured pre-tested questionnaire; blood samples were collected from the study participants and screened for LTBI using interferon-gamma release assay (IGRA). The Data were analysed using SPSS version 25 and logistic regression was used to model the likelihood of LTBI occurrence and to identify risk factors associated with LTBI.

Results:

Overall prevalence of LTBI among prisoners was 51.17 % (95% CI: 46.45-57%) and with high prevalence in men, rather than women (53.0% vs. 43.5%, respectively), although no significant difference was highlighted. Using multiple logistic regressions, a prisoner's age (age ≥45 years; AOR=2.48[1.04-5.9]), khat chewers (AOR=2.27[1.27-4.19]), staying >12 month in current incarceration (AOR=1.81[1.04-3.18]) and overcrowding (>100 individuals per cell; AOR=1.91[1.002-

3.65]) were found to be statistically significant (P < 0.05) predictors of LTBI.

Conclusions:

The high prevalence of LTBI among the prisoners requires immediate steps be taken to identify and treat LTBI and counsel those found to be positive in this setting. Routine screening of prisoners for both TB and LTBI up on entry was highly recommended intervention to halt TB transmission in prisons. Similarly, reduction of overcrowding per cells, educating not to chew khat in overcrowded, unhygienic and unventilated area and intensive monitoring of those stayed longer in prison may help reduce the TB transmission in this setting and in the community at large.

Biography:

Basha is currently a 4th year PhD student at Aklilu Lemma Institute of pathobiology, Addis Ababa University, Ethiopia. He is a young researcher and has 2 publications.