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Infection Prevention 2020: Prevalence and associated risk factors of latent tuberculosis infection (LTBI) in East Wollega Zonal prison, Western Oromia, Ethiopia - Basha Chekesa - Addis Ababa University

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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. Concealed tuberculosis infection is the major source of active TB and is an obstacle to the strategy of World Health Organization to end TB by 2035. In Ethiopia, there are hundreds of gaols and they are conducive surroundings for the transmission of TB and could serve as the sources of infection to the general public. Though, there is little data on the epidemiology of TB in prisons in Ethiopia. The impartial of the contemporary study was to evaluation the prevalence of LTBI and evaluates associated risk factors in prisons in East Wollega Zone in western Ethiopia. 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.

Ethical Clearance: Ethical approval for the study was obtained from the Addis Ababa University, Aklilu Lemma Institute of Pathobiology Institutional Review Board (ALIPB/IRB/011/2017/2018). Written consent was obtained from each study participant after a clear explanation of the study objectives. Blood samples collection was undertaken after consent was obtained from each participant. Individuals who had LTBI were advised to consult nearby health facilities regarding the development of symptoms of active TB.

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 Wollega 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.

Discussions: Globally, prisons represent major reservoirs for fuelling TB epidemics, particularly in low and middle income countries. The magnitude of LTBI within the Ethiopian prison was remaining unknown yet. Thus, this cross-sectional study was to estimate IGRA based prevalence of LTBI and the possible associated risk factors in East Wollega Zonal prisoners. The prevalence observed in this study (51.7%) was different from the prevalence of LTI among the general population as noted by the WHO, which estimates it around 30%, as well as by a study carried out in the general Ethiopia population which estimates it around 46% and congruent with pastoral communities in Southern part of Ethiopia (50.5%)

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. LTBI in is associated to an older age, chewing, staying long period in prison and overcrowdings, chewing was the variable most strongly associated. Hence, an interventions program, screening and treating inmates with TB infection and disease upon entry into prison should start in Ethiopia prisoners. Number of individuals per cell need to be reduced, prisoners should be counselled and further studies are urgently needed to investigate the prevalence LTBI and associated risk factors in different prisons of Ethiopia. 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 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.

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