

Contribution of incarceration to tuberculosis incidence the male-female disparity in tuberculosis burden: A global analysis

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Background: Tuberculosis burden is higher among males than females. Incarceration may contribute to this disparity because males are more often incarcerated than females. The extent to which incarceration contributes to overall tuberculosis incidence, and the sex disparity in tuberculosis disease burden, remains unclear.

Methods: We collected data from the World Health Organization on tuberculosis notifications, incarceration rates from World Prison Brief, population data from the United Nations Development Program, and published estimates on tuberculosis incidence in prisons from 2013-2019. We calculated the relative risk (RR) and population attributable fraction (PAF) of incarceration on tuberculosis, adjusted for and stratified by sex, at the global-, regional-, and country-level.

Results: Of 199 countries, we calculated estimates for 187 (94.0%) countries. In 2019, globally individuals incarcerated had 8.3 times the risk of tuberculosis compared non-incarcerated individuals (95% confidence interval (CI): 5.0-12.3) and the proportion of tuberculosis cases attributable to incarceration was 1.0% (95% CI: 0.6-1.6). When stratified by sex, the RRs and PAFs were higher for males than females. The share of tuberculosis cases among males attributable to incarceration ranged from 4.0% (95% CI: 0.3-6.8) in 2013 to 2.4% (95% CI: 0.4-4.3) in 2019. Among females, the PAF remained stable from 2013-2019 at 0.1%. The greatest risk and highest share of tuberculosis cases attributable to incarceration were observed in the Americas (RR: 32.6, 95% CI: 28.7-46.7; PAF: 5.9%, 95% CI: 5.1-8.2) and Europe (RR: 67.8, 95% CI: 46.8-92.6; PAF: 12.1%, 95% CI: 8.6-15.9). Southeast Asia had the lowest risk (6.4; 95% CI: 2.8-10.8) and PAF (0.3%; 95% CI: 0.1-0.6). El

Salvador had the highest PAF among males (31.7%; 95% CI: 24.0-50.0) and females (2.7%; 95% CI: 2.2-4.4), followed by Russia and Brazil.

Conclusion: Our results highlight incarceration as an important contributor to tuberculosis burden, with a greater proportion of cases attributable among males than females.

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