

PA-41: Sex differences in *Mycobacterium tuberculosis* immunoreactivity risk in Blantyre, Malawi: a community-based prevalence survey

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Sex differences in *Mycobacterium tuberculosis* (Mtb) infection risk influence differences in tuberculosis (TB) disease and could inform targeted strategies to prevent infection and/or progression to disease. We investigated sex-specific Mtb immunoreactivity risk in Blantyre, Malawi, where TB disease prevalence is rapidly declining. Consenting household members aged 10-40 years in three peri-urban townships in Blantyre completed a questionnaire and provided a 5mL venous blood sample for QuantiFERON-TB Gold Plus (QFT-Plus) interferon gamma-release assay (IGRA) testing. We used Bayesian regression modelling to estimate age- and sex-specific IGRA positivity risk. Between 17/01/2023 and 23/03/2024, we recruited and obtained valid QFT-plus results for 2,656 participants (40.0% male; 60.0% adolescents), excluding 58 (2.1%) participants with indeterminate results. Overall, 458/2656 (17.3%) were IGRA-positive. The posterior mean probability of IGRA-positivity was 17.3% (95% credible interval (CrI): 16.0-18.8%). The posterior probability of IGRA positivity was high among adults compared to adolescents: 9.3% (95% CrI: 7.5-11.3%) vs 21.1% (95% CrI: 19.2-23.2%). Among adults, men had higher risk of IGRA positivity compared to women: 23.7% (95% CrI: 20.6-26.9) vs. 19.6% (95% CrI: 17.5-21.9%), men vs women. Among adults, the posterior mean male-to-female (M:F) risk ratio was 1.21 (95% CrI: 1.05-1.38). Among adolescents, the posterior mean M:F risk ratio was 1.18 (95% CrI: 0.82-1.65). In this community-based survey, we found a high prevalence of Mtb immunoreactivity overall, with divergence in sex-specific trends among adults, consistent with men having a greater cumulative prevalence. Possible reasons include sex differences in TB natural history, contact patterns, and exposure to TB risk factors. These data informed site selection and preparations for Malawi sites for the ongoing M72/AS01E-4 vaccine phase 3 trial and could inform similar future trials.

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Conflicts of Interest

None