‘Every breath you take’ – New findings from the physiology lab

S132  ‘RACE-NEUTRAL’ AND ‘GLOBAL’? IMPACT OF REFERENCE STANDARDS ON INTERPRETATION OF SPIROMETRY AMONG SOCIO-ECONOMICALLY DEPRIVED, SOUTHERN AFRICAN ADOLESCENTS AND ADULTS

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Background There has been recent interest in the impact of race-specific Global Lung Initiative (GLI) reference standards for underdiagnosis of chronic respiratory diseases among people of non-white ethnicities, and a ‘race-neutral’ GLI equation has been proposed, however data from southern Africa were not included in its development. As part of a TB household contact screening study, we performed spirometry on household contacts (age ≥10 years) of people with pulmonary TB in three southern African countries (Mozambique, Tanzania, and Zimbabwe). We sought to describe the prevalence of lung impairment among a healthy, socio-economically deprived African population, and examine the fit of different reference standards for lung function.

Methods Pre- and post- bronchodilation spirometry was performed; participants who were smokers or had a history of previous TB or respiratory disease were excluded. Forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and FEV1/FVC z-scores were calculated using different Global Lung Initiative (GLI) reference equations. Prevalence of obstructive and restrictive impairments were calculated according to American Thoracic Society/European Respiratory Society guidelines and associations between GLI Z scores and age, sex and anthropometric indices examined, across different reference standards.

Results Between April 2021 and March 2023, 1009 HHCs underwent spirometry with 147 in Mozambique, 440 in Tanzania, and 422 in Zimbabwe. Median age of participants was 26 years (IQR 16–40 years), 40% were men, and 15% were living with HIV. Figure 1 shows the distribution of post-bronchodilator z-scores by site and GLI reference standards. The ‘African American’ reference standard fit the data best. Using this standard, 13% participants had impaired post-bronchodilator spirometry (9% restrictive, 3% obstructive pattern, 0.6% mixed).

Conclusion Lung function interpretation, in particular restrictive patterns of spirometry, are sensitive to the reference standard used. Among a healthy, socio-economically deprived population, spirometry using the ‘African American’ reference standard is recommended.