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TB screening tools may miss cases among people with diabetes, UCT study finds

A new study by researchers from the University of Cape Town (UCT) and University College London (UCL) found that commonly used tuberculosis (TB) screening methods may miss a substantial proportion of TB cases among people with diabetes, highlighting the need for more effective screening strategies.

Titled "Sensitivity and specificity of tuberculosis screening tools in people with diabetes", the study was published in *PLOS Global Public Health*. It was conducted as part of BALANCEprep, a preparatory study for the ongoing UCT-sponsored BALANCE trial, which investigates approaches to improving TB prevention among people with diabetes.

People with diabetes have about two to three times the risk of developing TB compared with those without diabetes. The World Health Organization recommends systematic TB screening for people with diabetes in high TB-burden settings, including South Africa. However, much of the evidence supporting these recommendations comes from studies of the general population or other high-risk groups, rather than from studies of people with diabetes.

Key findings

The researchers enrolled 673 adults receiving routine diabetes care at Site B Community Health Centre in Khayelitsha. All participants underwent TB symptom screening and chest X-rays. Importantly, sputum samples were collected for molecular TB testing regardless of symptoms or chest X-ray findings, enabling the researchers to assess how many TB cases conventional screening might miss.

Among 661 participants with valid molecular test results, nine (1.4%) tested positive for TB.

The researchers found that:

- Symptom screening identified only 22% of TB cases, even when cough, fever, night sweats and weight loss were considered together.
- Chest X-rays detected 56% of TB cases, performing better than symptom screening but still missing a substantial proportion.
- Chest X-rays were less specific among people with a history of TB, potentially leading to unnecessary further investigations.

"These findings suggest that existing screening approaches may be insufficient for people with diabetes, particularly when relying on symptoms alone," said the study's senior author Professor Molebogeng Rangaka, a professor in UCT's Division of Epidemiology & Biostatistics, and the Institute for Global Health at UCL.

Implications for TB screening

Professor Rangaka said the study highlights the need to develop and evaluate more accurate TB screening strategies for people with diabetes. She added that these strategies could include additional screening tools or molecular testing approaches that do not rely on symptoms or chest X-ray abnormalities.

However, only nine participants were diagnosed with TB, which introduces uncertainty about the sensitivity estimates. Dr Yohhei Hamada, the study's first author and clinical research fellow at UCL's Institute for Global Health, noted that larger studies are needed to confirm the findings and identify screening approaches that are both effective and feasible in routine healthcare settings.

"As diabetes becomes increasingly common in South Africa, improving TB detection in this high-risk population will be important for strengthening TB prevention and control efforts," said Hamada.

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