

Abstract: Are we missing people with diabetes? Diagnostic accuracy of HbA1c vs. the oral glucose tolerance test in Africa.

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Diabetes is a growing global health problem and a leading cause of death, with prevalence rising most rapidly in Africa, where nearly half of affected individuals remain undiagnosed, increasing the risk of silent complications. The oral glucose tolerance test (OGTT) is widely used for diagnosis but is time-consuming and resource-intensive. Although the World Health Organization recommends OGTT, fasting plasma glucose, and haemoglobin A1c (HbA1c) for diagnosing diabetes, the diagnostic accuracy of HbA1c relative to OGTT in African populations remains uncertain, particularly in regions with a high prevalence of haemoglobinopathies. We conducted a systematic review and meta-analysis of cross-sectional studies comparing HbA1c with OGTT for diagnosing type 2 diabetes mellitus (T2DM) in African adults. PubMed, CINAHL, EBSCO, EMBASE, and Cochrane Central were searched from inception to July 7, 2025. Studies involving participants with a prior T2DM diagnosis were excluded. Data were extracted to construct 2×2 contingency tables, and pooled sensitivity, specificity, diagnostic odds ratios (DOR), and summary receiver operating characteristic (SROC) curves were estimated using random-effects models. Methodological quality was assessed using QUADAS-2, and heterogeneity and risk of bias were evaluated. Seven studies met inclusion criteria out of 1,358 records identified. While most studies demonstrated low overall risk of bias, none reported blinding, and methodological variability contributed to substantial heterogeneity. At the 6.5% (48 mmol/mol) HbA1c cut-off, pooled sensitivity was 58.1% (95% CI: 50.8–65.1), indicating considerable under-detection compared with OGTT, while pooled specificity was 93.8% (95% CI: 86.9–97.2). The pooled DOR was 19.8 (95% CI: 8.9–44.2), and the area under the SROC curve was 0.741, indicating fair diagnostic performance. HbA1c demonstrates high specificity but limited sensitivity in African populations, limiting its utility as a stand-alone screening test and underscoring the need for standardized diagnostic approaches.

