# Reliability of Gingival Crevicular Blood for Measuring Blood Glucose and HbA1c Levels in Dental Settings: A Systematic Review and Meta-Analysis

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**Objective**: Gingival crevicular blood (GCB), obtained during routine periodontal probing in patients with gingivitis, may offer a non-invasive, cost-effective alternative for diabetes screening using glucometers. This systematic review and meta-analysis aimed to determine whether glucose and HbA1c levels measured from GCB differ from those obtained via finger-prick capillary blood (CB).

**Materials and Methods**: A systematic search was conducted across six databases using standardized MeSH terms. Only human clinical studies were included, without restrictions on publication year. Data extraction followed standardized collection protocols, and the risk of bias was assessed using QUADAS-2 and QUADAS-C. Meta-analyses were performed using a random-effects model to evaluate the correlation and mean differences between GCB and CB glucose readings, with 95% confidence intervals.

**Results**: The database and manual search yielded 268 articles, from which the selection procedure provided 36 articles for full-text screening, and the final pool of eligible articles composed of 23 studies with 1680 patients. Meta-analysis results on glycemic levels showed differences between the GCB and CB procedures in patients with and without diabetes with values of -6.80 [-17.35; 3.76] and − 4.36 [-9.89; 1.18], respectively. Statistically significant correlations were found ($p = 0.001$) between GCB and CB measurements in patients with (0.97 [0.927; 0.987]) and without diabetes (0.927 [0.873; 0.958]).

**Conclusion:** Gingival blood could prove to be useful to identify patients with undiagnosed diabetes when the necessary amount of uncontaminated blood is present. However, this technique is limited by the possibility of contamination, prandial status and inaccuracies, so it is unsuited to address the patient's glycemic control accurately.

**Key words:** Diabetes mellitus, Diagnostic Screening Programs, Gingival crevicular blood