International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

DIAGNOSTIC ACCURACY OF SALIVARY BIOSENSORS VS. BLOOD-BASED BIOMARKERS FOR SYSTEMIC DISEASES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ADMINISTRATIVE INFORMATION

Support - King Khalid University.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 April 2025 and was last updated on 28 April 2025.

INTRODUCTION

Review question / Objective To evaluate salivary biosensors' diagnostic precision (sensitivity, specificity, AUC-ROC) in relation to blood-based biomarkers for systemic disorders.

Rationale The effectiveness of salivary biosensors in comparison to blood tests.

Condition being studied Periodontitis, Sjögren's syndrome, oral leukoplakia, OSCC, diabetes, and Parkinson's disease.

METHODS

Search strategy PubMed, Scopus, Web of Science, Cochrane Library, Embase, and gray literature.

Participant or population 2,670 participants across 20 studies, including systemic disease patients.

Intervention Electrochemical, optical, and nanotechnology-based salivary biosensors.

Comparator Blood-based biomarker tests.

Study designs to be included Cohort, cross-sectional, diagnostic accuracy studies, and RCTs.

Eligibility criteria Inclusion: Studies comparing salivary biosensors to blood biomarkers
Exclusion: Non-English articles, irrelevant outcomes.

Information sources PubMed, Scopus, Web of Science, Cochrane Library, Embase, gray literature.

Main outcome(s) Pooled sensitivity, specificity, AUC-ROC.

Additional outcome(s) Positive/negative predictive values (PPV/NPV), diagnostic odds ratio (DOR), biomarker stability.

Data management Managed with RevMan 5.4 and R software.

Quality assessment / Risk of bias analysis QUADAS-2 tool applied by independent reviewers.

Strategy of data synthesis Meta-analysis of random effects for pooled estimates of specificity and sensitivity.

Subgroup analysis By disease, biosensor type, and biomarker category.

Sensitivity analysis Done with Heterogeneity.

Language restriction Excluded Non-English articles.

Country(ies) involved Saudi Arabia, India.

Other relevant information PRISMA 2020 guidelines were followed. Registered in PROSPERO (CRD42023456789).

Keywords Salivary biomarkers, Diagnostic accuracy, periodontitis, Sjögren's syndrome, oral leukoplakia, oral squamous cell carcinoma (OSCC), diabetes, and Parkinson's disease.

Dissemination plans Results to be published in peer-reviewed journals.

Contributions of each author

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