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Hematological Parameters as Predictors of Oral Cancer Prognosis: 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.

INPLASY registration number: INPLASY202570122

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 July 2025 and was last updated on 31 July 2025.

INTRODUCTION

Review question / Objective To evaluate the prognostic significance of pre-treatment hematological parameters (NLR, PLR, MPV) in patients with oral squamous cell carcinoma (OSCC).

Rationale Systemic inflammation indices such as NLR, PLR, and MPV may reflect tumour biology and predict OSCC outcomes more accurately than anatomical staging alone.

Condition being studied Oral squamous cell carcinoma (OSCC), excluding oropharyngeal/laryngeal subsites.

METHODS

Search strategy PubMed, Embase, Scopus, Web of Science, ScienceDirect, and Google Scholar were searched (2000–2025) using combined MeSH terms and keywords for OSCC and hematologic markers.

Participant or population Patients with histologically confirmed OSCC of all clinical stages and treatment modalities.

Intervention Not applicable.

Comparator Patients with low values of NLR, PLR, or MPV compared to groups with elevated values, as defined by each study.

Study designs to be included Observational studies; RCTs excluded unless reporting prognostic biomarker data.

Eligibility criteria Inclusion: English-language studies (2000–2025) on OSCC with prognostic data on NLR, PLR, MPV; Exclusion: Case series, RCTs without baseline data, non-OSCC populations.

Information sources Electronic databases like Web of Science, Scopus, etc. and reference lists of included studies.

Main outcome(s) Overall survival (OS) and disease-free survival (DFS).

Additional outcome(s) Disease-specific survival (DSS), recurrence rates, nodal metastasis, and associations with tumour stage.

Data management Data were extracted using standardized forms, cross-checked by two reviewers; discrepancies were resolved via consensus or third reviewer arbitration.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale (NOS) was used to assess methodological quality; sensitivity analyses excluded low-quality studies.

Strategy of data synthesis Meta-analyses were performed using random-effects models.

Subgroup analysis Conducted for geography, sample size, cut-off values, and treatment modality.

Sensitivity analysis Excluded low-quality studies, studies without multivariate adjustment and used leave-one-out methods.

Language restriction Included only English-language publications.

Country(ies) involved Saudi Arabia, United States of America.

Keywords Oral squamous cell carcinoma (OSCC), neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), mean platelet volume (MPV), prognosis, systemic inflammation, survival, biomarker.

Dissemination plans Findings will guide future clinical use of hematological biomarkers.

Contributions of each author

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