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Pretreatment HALP Score and Prognosis in Advanced Prostate Cancer: A Meta-analysis

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ADMINISTRATIVE INFORMATION

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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 9 June 2026 and was last updated on 9 June 2026.

INTRODUCTION

Review question / Objective This meta-analysis aimed to evaluate whether a low pretreatment hemoglobin, albumin, lymphocyte, and platelet score is associated with progression-free survival and overall survival in patients with advanced prostate cancer.

Condition being studied Advanced prostate cancer, including metastatic castration-resistant prostate cancer, metastatic hormone-sensitive prostate cancer, and other metastatic or advanced prostate cancer populations. This review evaluated the prognostic value of pretreatment HALP for survival outcomes in these patients.

METHODS

Participant or population Patients with pathologically confirmed prostate cancer were included. Eligible studies involved patients with advanced prostate cancer, including metastatic castration-resistant prostate cancer, metastatic hormone-sensitive prostate cancer, and other metastatic or advanced prostate cancer populations.

Intervention Low pretreatment HALP score.

Comparator High pretreatment HALP score.

Study designs to be included Retrospective observational studies reporting the prognostic value of pretreatment HALP in patients with prostate cancer.

Eligibility criteria Studies were considered eligible if they met the following criteria: (1) original research conducted on human participants; (2) patients with pathologically confirmed prostate cancer; (3) evaluation of the prognostic value of the HALP score; and (4) reporting of hazard ratios with 95% confidence intervals for survival outcomes, or

provision of sufficient data to enable their calculation. Studies were excluded if they were duplicate publications, commentaries, letters, case reports, expert opinions, or studies for which relevant data were inaccessible or unavailable.

Information sources PubMed, Web of Science, Embase, China National Knowledge Infrastructure, and the Wanfang Database were searched from database inception to December 1, 2025. Only studies published in English or Chinese were considered for inclusion. Google Scholar was also searched using combinations of "prostate cancer" and "HALP score," and the reference lists of selected articles were manually screened to identify additional eligible studies.

Main outcome(s) The main outcome was progression-free survival, expressed as hazard ratios with corresponding 95% confidence intervals.

Additional outcome(s) The additional outcome was overall survival, expressed as hazard ratios with corresponding 95% confidence intervals.

Quality assessment / Risk of bias analysis The methodological quality of the included studies was assessed using the Newcastle–Ottawa Scale, which evaluates selection, comparability, and outcome assessment. Scores of 7 to 9 were considered high quality, scores of 4 to 6 were considered moderate quality, and scores of 0 to 3 were considered low quality. The quality assessments were performed independently by two reviewers, and discrepancies were resolved through consensus discussion. In addition, the certainty of evidence for each outcome was assessed using the Grading of Recommendations Assessment, Development and Evaluation framework.

Strategy of data synthesis All statistical analyses were performed using Stata version 14.0. The association between HALP and survival outcomes was evaluated using hazard ratios with corresponding 95% confidence intervals. When necessary, hazard ratios were logarithmically transformed and the corresponding standard errors were calculated before pooling. The choice of effect model was based on the level of clinical and methodological heterogeneity among studies. A random-effects model was applied in the presence of significant heterogeneity. Heterogeneity was assessed using Cochran's Q test and the I^2 statistic, with significant heterogeneity defined as a p-value 50%.

Subgroup analysis Subgroup analyses stratified by disease status were conducted to explore potential sources of heterogeneity. Patients were divided into mCRPC and non-mCRPC groups when sufficient data were available.

Sensitivity analysis The robustness of the pooled results was evaluated using a leave-one-out sensitivity analysis. Each included study was sequentially excluded, and the pooled hazard ratios were recalculated to determine whether any individual study substantially influenced the overall results.

Country(ies) involved China.

Keywords HALP score; Prostate cancer; Prognostic biomarker; Progression-free survival; Meta-analysis.

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