INPLASY

Prognostic nutritional index and cancer prognostic outcomes: an umbrella review of systematic reviews and meta-analyses of observational studies

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2025110096

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 November 2025 and was last updated on 29 November 2025.

INTRODUCTION

Review question / Objective (1) Participants: People with cancer; (2) Exposure and Comparison: Different group of the PNI; (3) Outcomes: Any cancer prognostic outcomes, including overall survival (OS), disease-free survival, recurrence-free survival, and progression-free survival (PFS); and (4) Study design: Systematic reviews and meta-analyses of observational studies, encompassing cohort, case-control, and cross-sectional designs.

Condition being studied People with cancer.

METHODS

Search strategy 1. PubMed
#1 (PNI) OR (prognostic nutritional index)
#2 (((meta-analysis) OR (systematic review)) OR (systematic overview)) OR (meta-analyses)
#3 (((((cancer) OR (carcinoma)) OR (tumour)) OR (neoplasm)) OR (tumor)) OR (neoplasms)
#4 (((((survival) OR (recurrence)) OR (prognosis)) OR (progress)) OR (outcome)) OR (predict)
#5 #1 AND #2 AND #3 AND #4
2. Web of Science
#1 (TS=(PNI)) OR TS=(prognostic nutritional index)
#2 (((TS=(meta-analysis) OR TS=(systematic review)) OR TS=(systematic overview)) OR TS=(meta-analyses)
#3 (((((TS=(cancer) OR TS=(carcinoma)) OR TS=(tumour)) OR TS=(neoplasm)) OR TS=(tumor)) OR TS=(neoplasms)
#4 (((((TS=(survival) OR TS=(recurrence)) OR TS=(prognosis)) OR TS=(progress)) OR TS=(outcome)) OR TS=(predict)
#5 #1 AND #2 AND #3 AND #4
3. Embase
#1 'PNI'
#2 'prognostic nutritional index'
#3 #1 OR #2
#4 'meta-analysis'
#5 'systematic review'
#6 'systematic overview'
#7 'meta-analyses'

#8 #4 OR #5 OR #6 OR #7
#9 'cancer'
#10 'carcinoma'
#11 'tumour'
#12 'neoplasm'
#13 'tumor'
#14 'neoplasms'
#15 #9 OR #10 OR #11 OR #12 OR #13 OR #14
#16 'survival'
#17 'recurrence'
#18 'prognosis'
#19 'progress'
#20 'outcome'
#21 'predict'
#22 #16 OR #17 OR #18 OR #19 OR #20 OR #21
#23 #3 AND #8 AND #15 AND #22
4. Cochrane Database of Systematic Review
#1 (PNI) OR (prognostic nutritional index)
#2 (meta-analysis) OR (systematic review) OR (systematic overview) OR (meta-analyses)
#3 (cancer) OR (carcinoma) OR (tumour) OR (neoplasm) AND (tumor)
#4 (neoplasms)
#5 #3 OR #4
#6 (survival) OR (recurrence) OR (prognosis) OR (progress) OR (outcome)
#7 (predict)
#8 #6 OR #7
#9 #1 AND #2 AND #5 AND #8.

Participant or population People with cancer.

Intervention Different group of the PNI.

Comparator Different group of the PNI.

Study designs to be included Systematic reviews and meta-analyses of observational studies, encompassing cohort, case-control, and cross-sectional designs.

Eligibility criteria Studies were included in accordance with the PECOS (Participants, Exposure, Comparison, Outcome, Study design) framework:
(1) Participants: People with cancer;
(2) Exposure and Comparison: Different group of the PNI;
(3) Outcomes: Any cancer prognostic outcomes, including overall survival (OS), disease-free survival, recurrence-free survival, and progression-free survival (PFS);
and (4) Study design: Systematic reviews and meta-analyses of observational studies, encompassing cohort, case-control, and cross-sectional designs.
Studies were excluded based on the following criteria:

(1) Narrative reviews or systematic reviews lacking quantitative synthesis;
(2) Systematic reviews and meta-analyses incorporating fewer than three studies;22
(3) Studies with insufficient data for quantitative synthesis;
(4) Studies not reporting relevant outcome measures;
or (5) Studies focused on laboratory studies.

Information sources PubMed, Embase, Web of Science, and the Cochrane Database of Systematic Reviews.

Main outcome(s) Any cancer prognostic outcomes, including overall survival (OS), disease-free survival, recurrence-free survival, and progression-free survival (PFS).

Quality assessment / Risk of bias analysis The methodological quality of the included studies was evaluated using A Measurement Tool to Assess Systematic Reviews (AMSTAR).
Newcastle-Ottawa Scale tool was the primary tool for assessing the risk of bias in the included studies.

Strategy of data synthesis For each meta-analyses identified in eligible studies, we extracted data from the primary studies and recalculated the summary effect sizes along with their 95% CI using random-effects models.

Subgroup analysis None.

Sensitivity analysis Sensitivity analysis was performed to verify the robustness of our findings, by excluding primary studies with small samples (< 25th percentile) or high risk of bias.

Language restriction We will conduct the study without language restrictions.

Country(ies) involved China.

Keywords Cancer prognosis, Observational study, Prognostic nutritional index, Umbrella review.

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