

# INPLASY PROTOCOL

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None declared.

## INTRODUCTION

**Review question / Objective:** Previous studies have investigated the prognostic value of prognostic nutritional index (PNI) in patients with gastrointestinal stromal tumors (GISTs). However, the results were not consistent. We performed the current

## Prognostic and clinicopathological significance of the Prognostic Nutritional Index (PNI) in patients with gastrointestinal stromal tumors (GISTs): a meta-analysis

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**Review question / Objective:** Previous studies have investigated the prognostic value of prognostic nutritional index (PNI) in patients with gastrointestinal stromal tumors (GISTs). However, the results were not consistent. We performed the current meta-analysis to quantitatively the prognostic and clinicopathological significance of PNI in GISTs.

**Condition being studied:** Previous studies have investigated the prognostic role of PNI in patients with GISTs; however, the results are inconsistent. Some studies reported that a low PNI was a significantly associated with poor survival in GISTs, whereas other researchers could not identify these associations. Therefore, we carried out the current meta-analysis to explore the prognostic role of pretreatment PNI in GISTs.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 August 2022 and was last updated on 25 August 2022 (registration number INPLASY202280099).

meta-analysis to quantitatively the prognostic and clinicopathological significance of PNI in GISTs.

**Rationale:** Recently, the nutritional and immune status of the host has been found to affect the survival outcomes of patients with cancer. Many indices derived from blood tests, such as platelet-to-lymphocyte

ratio and neutrophil-to-lymphocyte ratio, were associated with prognosis in GISTs. The prognostic nutritional index (PNI) was calculated using the serum albumin levels and total lymphocyte count in peripheral blood as follows:  $PNI = 10 \times \text{albumin (g/dl)} + 0.005 \times \text{total number of lymphocytes}$ . PNI is useful for gastrointestinal (GI) surgery to evaluate the immune nutritional status. In recent studies, PNI was reported as an effective prognostic factor for various cancer, including gastric, oesophageal, nasopharyngeal, and colorectal cancers.

**Condition being studied:** Previous studies have investigated the prognostic role of PNI in patients with GISTs; however, the results are inconsistent. Some studies reported that a low PNI was a significantly associated with poor survival in GISTs, whereas other researchers could not identify these associations. Therefore, we carried out the current meta-analysis to explore the prognostic role of pretreatment PNI in GISTs.

## METHODS

**Search strategy:** The search terms used were: “prognostic nutritional index”, “PNI”, “gastrointestinal stromal tumors”, “GISTs”, “survival”, “prognostic”, “prognosis”, and “recurrence”. Relevant references were manually searched and retrieved from the eligible articles.

**Participant or population:** Patients with GISTs were histologically or pathologically diagnosed.

**Intervention:** Pretreatment PNI was measured in patients with GISTs.

**Comparator:** Low versus high PNI of patients with GISTs.

**Study designs to be included:** Prospective or retrospective cohort studies and randomized controlled studies.

**Eligibility criteria:** The inclusion criteria were as follows: (1) patients with GISTs were histologically or pathologically diagnosed; (2) studies reported the

prognostic value of PNI for survival outcomes of GISTs; (3) hazard ratios (HRs) and 95% confidence intervals (CIs) were reported in the text or can be calculated from the data; (4) the cut-off value of PNI could be extracted from studies; and (5) studies published in English language. The exclusion criteria were as follows: (1) reviews, case reports, conference abstracts, letters, and comments; (2) studies that were insufficient for meta-analysis; and (3) duplicate studies.

**Information sources:** The electronic databases of PubMed, Web of Science, Embase, and Cochrane Library were thoroughly searched from inception up to December 2021.

**Main outcome(s):** The primary outcomes were the hazard ratio (HR) and 95% confidence interval (CI).

**Additional outcome(s):** Combined odds ratios (ORs) and corresponding 95% CIs were used to evaluate the association between PNI and the clinicopathological characteristics of GISTs.

**Quality assessment / Risk of bias analysis:** Two independent investigators evaluated the quality of each selected study using the Newcastle–Ottawa Scale (NOS). The NOS scale has three main contents: selection (0–4 stars), group comparability (0–2 stars), and clinical outcome (0–3 stars). Studies with NOS scores of  $\geq 6$  have been identified as high-quality research. Publication bias was assessed using Begg’s funnel plots and Egger’s test.

**Strategy of data synthesis:** All statistical analyses were performed using Stata statistical software (version 12.0; STATA, College Station, TX, USA). Statistical significance was set at a two-tailed  $p < 0.05$ . The pooled HRs and 95% CIs were calculated to estimate the prognostic value of PNI in patients with GISTs.

**Subgroup analysis:** To detect the source of heterogeneity, subgroup analysis stratified by country, sample size, treatment, cut-off

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value, cut-off determination, and survival analysis types was done.

**Sensitivity analysis:** We conducted a sensitivity analysis to determine whether any single study affected the combined HRs.

**Language restriction:** Studies published in English language.

**Country(ies) involved:** China.

**Keywords:** Prognostic Nutritional Index; GISTs; meta-analysis; prognosis; survival.

**Contributions of each author:**

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