INPLASY

The Epidemiology and Risk Factors of Malnutrition in Patients with Nasopharyngeal Carcinoma Undergoing Chemoradiotherapy: A Systematic Review and Meta-Analysis

INPLASY202590015
doi: 10.37766/inplasy2025.9.0015
Received: 5 September 2025
Published: 5 September 2025

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ADMINISTRATIVE INFORMATION

Support - This research was supported by Youth Science Foundation of Guangxi Medical University.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590015

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 5 September 2025 and was last updated on 5 September 2025.

INTRODUCTION

Review question / Objective Primary Objectives The primary aims of this systematic review and meta-analysis are to:
1. Quantitatively synthesize and establish a pooled prevalence estimate of malnutrition in patients with nasopharyngeal carcinoma (NPC) undergoing chemoradiotherapy (CRT).
2. Identify and quantify the association of key demographic, clinical, and treatment-related factors with the risk of developing malnutrition in this patient population.
Secondary Objectives
The secondary aims are to:
3. Explore heterogeneity in prevalence and risk factor estimates through pre-specified subgroup analyses (e.g., based on geographical region, assessment tools for malnutrition [PG-SGA vs. NRS-2002], tumor stage, and radiation techniques).
4. Assess the temporal trend of malnutrition prevalence over different publication periods, if sufficient data are available.
5. Evaluate the methodological quality (risk of bias) and the overall certainty of the evidence for the identified risk factors.

Rationale Malnutrition is a highly prevalent and debilitating complication among patients with nasopharyngeal carcinoma (NPC) undergoing chemoradiotherapy (CRT). Consequently, a significant proportion of patients experience rapid weight loss, muscle wasting, and a decline in functional status. This malnutrition is not merely a supportive care issue; it is strongly and independently associated with detrimental clinical outcomes, including increased treatment toxicity, unplanned treatment interruptions, reduced tolerance to therapy, higher rates of postoperative complications, prolonged hospital stays, and ultimately, poorer overall survival and quality of life. Addressing malnutrition is therefore critical for

optimizing the comprehensive management of NPC patients.

While the high prevalence of malnutrition in NPC patients is frequently acknowledged in clinical practice and numerous primary studies have investigated its risk factors, the existing evidence remains fragmented and inconsistent. The reported prevalence rates vary widely across studies due to differences in sample sizes, assessment tools (e.g., PG-SGA, NRS-2002), and patient populations. Furthermore, the identification of key risk factors—which could be patient-related (e.g., advanced age, low BMI at diagnosis), disease-related (e.g., tumor stage), or treatment-related (e.g., radiation dose to specific organs-at-risk)—lacks a robust, synthesized conclusion. There is currently no comprehensive systematic review and meta-analysis that quantitatively synthesizes the epidemiological data on malnutrition prevalence and definitively pools the effect sizes of potential risk factors in this specific patient population undergoing CRT. This gap hinders clinicians' ability to accurately identify high-risk patients and implement targeted preventive nutritional interventions promptly.

Condition being studied

Clinical Oncology / Head and Neck Oncology
Clinical Nutrition.

METHODS

Search strategy The search for this systematic review will adhere to the PRISMA guidelines. China National Knowledge Internet(CNKI), Wanfang Database, Chinese BioMedical Literature Database(CBM), PubMed (MEDLINE), EMBASE and Web of Science will be searched in a systematic fashion from inception to 2025.The languagewas restricted to English and Chinese.

Participant or population The review will include studies involving human subjects who meet all of the following criteria:

Diagnosis: Adults (≥18 years) with histologically confirmed nasopharyngeal carcinoma (NPC), regardless of tumor stage (from early I to advanced IV stage).

Treatment Status: Undergoing or having completed a primary course of curatively-intended chemoradiotherapy (concurrent, induction, or adjuvant chemotherapy regimens are all eligible).

Nutritional Status Assessment: The study must include an assessment of nutritional status using a defined method (e.g., PG-SGA, NRS-2002, BMI ≤18.5 kg/m², or other validated tool/metrics).

Intervention This is a systematic review of The Epidemiology and Risk Factors of Malnutrition in Patients with Nasopharyngeal Carcinoma Undergoing Chemoradiotherapy, hence no inventions.

Comparator Meta-analysis will be completed using the control group of participants from the cohorts studies who did not go on to develop Malnutrition.

Study designs to be included Retrospective cohort studies and prospective cohort studies.

Eligibility criteria

1. Inclusion Criteria

Studies must meet all of the following criteria to be included:

• Population (P): Adult patients (aged ≥ 18 years) with histologically confirmed nasopharyngeal carcinoma (NPC), regardless of tumor stage, who are undergoing or have completed a primary course of curatively-intented concurrent chemoradiotherapy (CRT).

• Intervention/Exposure (I): Not applicable for intervention. The exposure of interest is the receipt of curative-intent chemoradiotherapy.

• Comparison (C): Not required. For risk factor analysis, studies must provide comparative data between exposed and non-exposed groups (e.g., malnourished vs. well-nourished).

• Outcomes (O): Studies must report at least one of the following outcomes:

• Epidemiological Data: The prevalence or incidence of malnutrition.

• Risk Factor Data: Risk factors associated with the occurrence of malnutrition, accompanied by their effect measures (e.g., odds ratio [OR], hazard ratio [HR], risk ratio [RR]) with 95% confidence intervals, or raw data from which these statistics can be calculated.

• Study Design (S): Observational studies, including but not limited to:

• Cross-sectional studies
• Cohort studies (prospective or retrospective)
• Case-control studies

2. Exclusion Criteria

Studies will be excluded if they meet any of the following conditions:

• Published in languages other than English or Chinese (due to limitations in the research team's language capabilities).

• Full text is unavailable (e.g., abstract only).

• The study type is: case report, case series, editorial, narrative review, conference abstract without sufficient data, or animal/in vitro studies.

• The study population consists exclusively of children or adolescents (age < 18 years) or patients

with recurrent or metastatic NPC (without curative treatment intent).
• Patients received radiotherapy alone or chemotherapy alone, not concurrent chemoradiotherapy.
• The study does not use a defined tool or standard to assess nutritional status (e.g., only subjective descriptions like "weight loss").
• Data cannot be extracted or used for meta-analysis (e.g., data presented only in figures without access to raw numbers).

Information sources
1. Electronic Bibliographic Databases:
PubMed/MEDLINE
Embase (via Ovid)
Web of Science Core Collection
CINAHL (Cumulative Index to Nursing and Allied Health Literature)
Chinese BioMedical Literature Database(CBM)
Chinese National Knowledge Infrastructure (CNKI)
Wanfang Data
2. Grey Literature Sources:
To minimize publication bias, the following grey literature sources will be searched:

ProQuest Dissertations & Theses Global (for unpublished doctoral theses and master's dissertations).
ClinicalTrials.gov (www.clinicaltrials.gov)
World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) (apps.who.int/trialsearch/)
3. Additional Sources:

The reference lists of all included studies and relevant systematic reviews will be manually screened to identify any additional eligible records. Where necessary, corresponding authors of included studies or potentially relevant abstracts will be contacted to request missing data or full-text articles.

Main outcome(s) None.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale was used to assess the risk of bias by determining the quality of the selected
cohort studies independently.For Cohort and Case-Control Studies:
The Newcastle-Ottawa Scale (NOS) will be used. This tool assesses studies across three domains:
Selection (4 stars max): Representativeness of the exposed cohort, selection of the non-exposed cohort, ascertainment of exposure, demonstration that the outcome was not present at start.
Comparability (2 stars max): Control for confounding and design-based adjustments for important factors (e.g., age, tumor stage).
Outcome (3 stars max for cohort studies) / Exposure (3 stars max for case-control): Assessment of outcome, follow-up long enough for outcomes to occur, adequacy of follow-up.
Studies are judged on a star system, with a higher number of stars indicating higher quality. A common threshold is ≥7 stars for high quality.

Strategy of data synthesis STATA 18.0(StataCorp LP, College Stauon, Texas). Odds ratio (OR) with 95% confidence interval (CI)were Statistical analyses were performed with Review Manager 5.3 (Cochrane Collaboration, Oxford, UK)and used to compare binary variables. For all meta-analyses, the Cochrane Q p value and I^2 statistic were applied to check heterogeneity. When p value0.05 or $I^2$50%, there was a significant heterogeneity, a random-effect model was used to merge the results. Otherwise, a fixed-effect model was used. A p value less than 0.05 was considered statistically significant. We performed egger's test to assess publication bias (only for outcomes including ten or more studies).

Subgroup analysis None.

Sensitivity analysis A leave-one-out sensitivity analysis was conducted by iteratively removing each individual study.

Language restriction Chinese and English.

Country(ies) involved China.

Keywords Nasopharyngeal carcinoma;Malnutrition ;Epidemiology;A systematic review and meta-analysis.

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