

Incidence and influencing factors of preoperative frailty in patients with head and neck cancer: a systematic review and Meta-analysis protocol

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ADMINISTRATIVE INFORMATION**Support** - No source of financial support.**Review Stage at time of this submission** - Data extraction.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2023120065**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 December 2023 and was last updated on 15 December 2023.**INTRODUCTION**

Review question / Objective The aim of this systematic review is to systematically evaluate the incidence and influencing factors of preoperative frailty in patients with head and neck cancer, and to provide scientific basis for its prevention and early intervention. To this end, the proposed systematic review will address the following question: What is the incidence of preoperative frailty in patients with head and neck cancer? What are the influencing factors of preoperative frailty?

Rationale The importance of preoperative frailty in HNC patients should be strengthened. Currently, studies on preoperative frailty in HNC patients have been conducted both at home and abroad; however, different studies have reached different conclusions about the incidence of preoperative frailty and the factors affecting it. Therefore, this systematic review and Meta-analysis aimed to identify all the studies on the incidence of

preoperative frailty in patients with head and neck cancer surgery, to clarify the prevalence of preoperative debility in patients with head and neck cancer surgery, and to review the influencing factors, so as to provide evidence support for caregivers to do a good job in the early screening and intervention of frailty, to improve the prognosis of patients with head and neck cancer surgery, and to improve the quality of life of these patients.

Condition being studied Head and neck cancer (HNC) refers to malignant tumors occurring below the base of the skull and above the chest, including oral cavity cancer, nasopharyngeal cancer, hypopharyngeal cancer, and laryngeal cancer, etc. It is currently the seventh most common malignant tumor worldwide. According to statistics, in 2020, there were about 930,000 new cases of HNC and 470,000 new deaths worldwide. Surgical resection is the main treatment for HNC. Frailty is a dynamically evolving and reversible multidimensional syndrome due to the loss of physiologic functions of the body, which leads to a

decrease in the patient's physiologic reserve and an increase in stress susceptibility. Frailty appears to be more prevalent in HNC patients compared to other solid malignancies, and recognition that frail patients have unique vulnerabilities and challenges is increasing in HNC surgery. Preoperative frailty is associated with poorer postoperative outcomes and puts patients at higher risk of morbidity, postoperative complication rates, delayed discharge, and death.

METHODS

Search strategy PubMed, Embase, CINAHL, Cochrane Library, Web of Science, CNKI, SinoMed, Wan fang Data and VIP were searched by computer and manual search methods from inception to November 30th, 2023, aiming to collect studies on the Incidence and influencing factors of preoperative frailty in patients with head and neck cancer.

Initial English keywords to be used will be head and neck neoplasms, otorhinolaryngologic neoplasms, laryngeal neoplasms, mouth neoplasms, nasopharyngeal carcinoma, tongue neoplasms, nose neoplasms, hypopharyngeal neoplasms, oropharyngeal neoplasms, pharyngeal neoplasms, head and neck neoplasms, frailty and asthenia. And initial Chinese keywords to be used will be 头颈癌, 头颈部肿瘤, 头颈部癌, 耳鼻咽喉肿瘤, 喉癌, 口腔癌, 鼻咽癌, 舌癌, 舌肿瘤, 鼻腔肿瘤, 鼻肿瘤, 鼻癌, 鼻部癌, 下咽癌, 下咽肿瘤, 口咽癌, 口咽部癌, 咽肿瘤, 咽癌, 衰弱 and 衰弱综合征. A provisional full search strategy (to be confirmed following the initial search) is presented in Appendix I.

Specific search strategies are as follows (take PubMed and Embase for instance)

PubMed

ID Search Hits

3 ("Head and Neck Neoplasms"[MeSH Terms] OR "Otorhinolaryngologic Neoplasms"[MeSH Terms] OR "Laryngeal Neoplasms"[MeSH Terms] OR "Mouth Neoplasms"[MeSH Terms] OR "Nasopharyngeal Carcinoma"[MeSH Terms] OR "Tongue Neoplasms"[MeSH Terms] OR "Nose Neoplasms"[MeSH Terms] OR "Hypopharyngeal Neoplasms"[MeSH Terms] OR "Oropharyngeal Neoplasms"[MeSH Terms] OR "Pharyngeal Neoplasms"[MeSH Terms] OR ("Head and Neck Neoplasms"[MeSH Terms] OR ("head"[All Fields] AND "neck"[All Fields] AND "neoplasms"[All Fields])) 1010

2 "Frailty"[MeSH Terms] OR "Asthenia"[MeSH Terms] OR ("infirm"[All Fields] OR "infirmity"[All Fields] OR "infirmities"[All Fields] OR "infirmity"[All Fields] OR "Frailty"[MeSH Terms] OR "Frailty"[All

Fields] OR "debility"[All Fields] OR ("Frailty"[MeSH Terms] OR "Frailty"[All Fields] OR "frailties"[All Fields] OR ("Asthenia"[MeSH Terms] OR "Asthenia"[All Fields] OR "asthenias"[All Fields] OR ("Frailty"[MeSH Terms] OR "Frailty"[All Fields] OR "frailties"[All Fields] OR ("frail"[All Fields] OR "frails"[All Fields] OR "Frailty"[MeSH Terms] OR "Frailty"[All Fields]) 74220

Embase

No. Query Results Results Date

#3. #1 AND #2 1,450 28 Nov 2023

#2. 'frailty'/exp OR 'asthenia'/exp OR 86,310 28 Nov 2023

infirmity:ti,ab,kw OR frailty:ti,ab,kw OR asthenia:ti,ab,kw OR frailties:ti,ab,kw OR frailness:ti,ab,kw OR debility:ti,ab,kw OR debilities:ti,ab,kw OR 'frailty syndrome':ti,ab,kw

#1. 'head and neck tumor'/exp OR 'head and neck 449,346 28 Nov 2023

cancer'/exp OR 'larynx tumor'/exp OR 'mouth tumor'/exp OR 'nasopharynx carcinoma'/exp OR 'tongue tumor'/exp OR 'nose tumor'/exp OR 'hypopharynx tumor'/exp OR 'oropharynx tumor'/exp

OR 'pharynx cancer'/exp OR (head:ti,ab,kw AND 'neck neoplasms':ti,ab,kw) OR (head:ti,ab,kw AND 'neck cancer':ti,ab,kw) OR 'head neoplasms':ti,ab,kw OR 'neck neoplasms':ti,ab,kw OR 'head cancers':ti,ab,kw OR 'neck cancers':ti,ab,kw OR 'otorhinolaryngologic neoplasms':ti,ab,kw OR 'otorhinolaryngeal neoplasms':ti,ab,kw OR 'otorhinolaryngeal cancers':ti,ab,kw OR 'otorhinolaryngological neoplasms':ti,ab,kw OR 'laryngeal neoplasms':ti,ab,kw OR 'larynx neoplasms':ti,ab,kw OR 'larynx cancers':ti,ab,kw OR 'laryngeal cancers':ti,ab,kw OR 'mouth neoplasms':ti,ab,kw OR 'oral neoplasms':ti,ab,kw OR 'mouth cancers':ti,ab,kw OR 'oral cancers':ti,ab,kw OR 'nasopharyngeal carcinoma':ti,ab,kw OR 'tongue neoplasms':ti,ab,kw OR 'tongue cancers':ti,ab,kw OR 'nose neoplasms':ti,ab,kw OR 'nasal neoplasms':ti,ab,kw OR 'nose cancers':ti,ab,kw OR

'hypopharyngeal neoplasms':ti,ab,kw OR 'hypopharyngeal cancers':ti,ab,kw OR 'oropharyngeal neoplasms':ti,ab,kw OR 'oropharynx neoplasms':ti,ab,kw OR 'oropharynx cancers':ti,ab,kw OR 'oropharyngeal cancers':ti,ab,kw OR 'pharyngeal neoplasms':ti,ab,kw OR 'pharynx neoplasms':ti,ab,kw OR 'pharynx cancers':ti,ab,kw OR 'pharyngeal cancers':ti,ab,kw OR hnc:ti,ab,kw OR (head:ti,ab,kw AND 'neck tumor':ti,ab,kw) OR 'larynx tumor':ti,ab,kw OR 'mouth tumor':ti,ab,kw

OR 'nasopharynx carcinoma':ti,ab,kw OR 'tongue tumor':ti,ab,kw OR 'nose tumor':ti,ab,kw OR 'hypopharynx tumor':ti,ab,kw OR 'oropharynx tumor':ti,ab,kw

Participant or population This review will consider studies that include if the participants are ≥ 18 years of age, are going to undergo non-emergency inpatient head and neck cancer surgery, frailty are measured before surgery, and relevant outcomes are reported. Participants will be excluded if they with non-head and neck cancers (e.g., thyroid cancer) or have a combination of other cancers.

Intervention The CoCoPop model was used to construct the incidence and epidemic trend evaluation questions, which included Condition, Context and Population. "Condition" refers to preoperative frailty. Where frailty status was dichotomized, we will capture the proportion of patients with frailty. Where frailty was categorized in 2 levels, we will combine frailty and moderate frailty into frailty and capture the proportion of frailty. "Context" refers to the world "Population" refers to patients who are going to undergo non-emergency inpatient head and neck cancer surgery. This review will consider studies that include if the participants are ≥ 18 years of age, are going to undergo non-emergency inpatient head and neck cancer surgery, frailty are measured before surgery, and relevant outcomes are reported. Participants will be excluded if they with non-head and neck cancers (e.g., thyroid cancer) or have a combination of other cancers.

Comparator The CoCoPop model was used to construct the incidence and epidemic trend evaluation questions, which included Condition, Context and Population. "Condition" refers to preoperative frailty. Where frailty status was dichotomized, we will capture the proportion of patients with frailty. Where frailty was categorized in 2 levels, we will combine frailty and moderate frailty into frailty and capture the proportion of frailty. "Context" refers to the world "Population" refers to patients who are going to undergo non-emergency inpatient head and neck cancer surgery. This review will consider studies that include if the participants are ≥ 18 years of age, are going to undergo non-emergency inpatient head and neck cancer surgery, frailty are measured before surgery, and relevant outcomes are reported. Participants will be excluded if they with non-head and neck cancers (e.g., thyroid cancer) or have a combination of other cancers.

Study designs to be included This review will only consider prospective and retrospective cohort and cross-sectional studies. Case reports, case series, conference proceedings, scientific meeting abstracts, editorials, and letters to the editor that did not provide original data will be excluded.

Eligibility criteria Inclusion criteria: 1) number of reported frail or non-frail patients; 2) hospital environment (inpatients); 3) published in Chinese or English; 4) Full text available; 5) non-duplicate publication. Exclusion criteria: 1) The number of frail or non-frail patients was not reported; 2) non-hospital Settings (e.g., community); 3) published in non-Chinese or English; 4) Full text is unavailable or only abstracts are available; 5) Repeat publication. Studies without specific proportion of frailty were excluded.

Information sources The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of Chinese and English databases and grey literature, such as PubMed, Embase, CNKI, SinoMed and Google scholar will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe the relevant articles. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies. Studies in English and Chinese language, published since database inception will be considered for inclusion in this review.

Main outcome(s) Incidence and influencing factors of preoperative frailty. Where frailty status was dichotomized, we will capture the proportion of patients with frailty. Where frailty was categorized in 2 levels, we will combine frailty and moderate frailty into frailty and capture the proportion of frailty. All the mentioned influencing factors will be extracted.

Data management Data will be extracted from papers included in the review using the data extraction tool which were designed using Microsoft Excel (Appendix III). The data extracted will include specific details about the authors, publish year, countries, research types, types, sample size of tumor, preoperative incidence, frailty assessment tools and bias risk score. Data will be extracted from the included studies by one reviewer and independently checked for accuracy by another reviewer. Disagreement will be resolved through discussion, or with a third reviewer.

Quality assessment / Risk of bias analysis

Papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using the Hoy et al. risk of bias tool for prevalence studies (Appendix II). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

Strategy of data synthesis All results will be subject to double data entry. Effect sizes expressed as proportion and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed using the I² statistic, and we will prespecify the use of random-effects metaanalysis due to the anticipated heterogeneity in our data. Egger's test (where at least ten studies are available) will be constructed to evaluate publication bias. Where data are inadequate to support metaanalysis, we will use narrative synthesis. A two-tailed, 5% significance level will be used for all analyses.

Subgroup analysis Where possible, subgroup analyses will also be conducted based on publish time, regions, cancer types, study types, sample size and frailty assessment tools.

Sensitivity analysis A sensitivity analysis was conducted to evaluate the stability of the results using the one-by-one exclusion method.

Language restriction Articles published in Chinese and English will be considered for inclusion.

Country(ies) involved China.

Keywords head and neck cancer surgery; preoperative frailty; influencing factors; systematic review; Meta-analysis.

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