

INPLASY PROTOCOL

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Conflicts of interest:
None.

Nutrition screening tools for risk of malnutrition among hospitalized patients: a protocol for a systematic review and meta-analysis

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Review question / Objective: The questions of interest for this systematic review are: 1. Which nutritional screening tool is most valid to identify malnutritional risk in hospitalized adult patients? 2. What are the estimates for sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and likelihood ratios?

Condition being studied: Malnutrition is a condition characterized by a negative balance of energy and/or proteins that leads to altered body composition as a consequence of the decrease in muscle and/or fat mass. Such status leads to diminished physical and mental function and impaired clinical outcomes from disease. Although a universally accepted definition of malnutrition is still lacking, the European Society for Clinical Nutrition and Metabolism (ESPEN) defined malnutrition by the presence of one of the following criteria: 1) body mass index (BMI) <18.5 kg/m²; 2) unintentional weight loss and reduced BMI (age dependent cut-offs) or 3) unintentional weight loss and reduced gender dependent fat free mass index. On the other hand, the American Society for Parenteral and Enteral Nutrition (ASPEN) establishes that at least two of the following six criteria should be fulfilled to meet the diagnostic criteria of malnutrition: low energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, fluid accumulation, and diminished hand grip strength. Malnutrition is a clinical problem of high prevalence, affecting between 30-50% of hospitalized patients, depending on age, the screening tool used and the hospital setting. Furthermore, malnutrition is associated with increased morbidity and mortality and length of hospital stay.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 September 2020 and was last updated on 07 September 2020 (registration number INPLASY202090028).

INTRODUCTION

Review question / Objective: The questions of interest for this systematic review are: 1.

Which nutritional screening tool is most valid to identify malnutritional risk in hospitalized adult patients? 2. What are the

estimates for sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and likelihood ratios?

Rationale: Malnutrition is a clinical problem with a high prevalence in hospitalized adult patients. Many nutritional screening tools have been developed but there is no consensus on which one is more useful. The purpose of this review protocol is to provide an overview of which nutritional screening tool is most valid to identify malnutritional risk in hospitalized adult patients and to analyse the sensitivity and specificity of the different tools.

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METHODS

Search strategy: We will search the following databases: PubMed, EMBASE, CINAHL (via the EBSCO), Web of Science and the Cochrane database. Peer-reviewed studies published in English, Portuguese or Spanish language will be selected. Search terms will include controlled terms from MeSH in PubMed, Emtree in EMBASE and CINAHL headings in CINAHL as well as free text terms. The key search terms that will be combined include "nutrition assessment", "nutritional screening tool", "malnutrition screening", "malnutrition", "adult", and "hospital". Reference lists will also be verified for relevant citations. The search strategy will be performed in cooperation with a research librarian and it is presented in online supplementary additional file.

Participant or population: Adult hospitalized patients aged 18 to 85 years old.

Intervention: Nutrition screening tools.

Comparator: None.

Study designs to be included: Validation studies of nutritional screening tools developed to identify malnutrition or risk of malnutrition.

Eligibility criteria: The inclusion criteria will be the following: 1) validation studies of nutritional screening tools developed to identify malnutrition or risk of malnutrition; 2) studies focused on hospitalized adults (18 to 85 years old).

Information sources: Unpublished literature will be identified through the Information System on Gray Literature in Europe (Open Gray), Conference Proceedings of the Web of Science and ProQuest Dissertations and Theses Global. If necessary, the authors will be contacted to obtain a full report of the findings, if available. Data from conference proceedings will not be included in the review due to the limited information available to carry out the methodological quality assessment.

Main outcome(s): Primary outcomes of concurrent validity and sensitivity and specificity.

Additional outcome(s): Likelihood ratios of different tools.

Data management: The characteristics of the studies and study data will be managed using Microsoft Excel 2019 (Microsoft Corp, Redmond, WA, <http://www.microsoft.com>) and Review Manager software (RevMan version 5.3, Copenhagen, Denmark: The Nordic Cochrane Centre, the Cochrane Collaboration 2014), respectively. Three reviewers (RC, SF and JDP) will separately collect data including eligible studies characteristics.

Quality assessment / Risk of bias analysis: Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) checklist (<http://www.bris.ac.uk/quadas>).

Strategy of data synthesis: Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines will be used. Review will provide a narrative and quantitative synthesis of the findings. Meta-analysis of sensitivity, specificity and likelihood ratios will be performed for each nutrition screening tool.

Subgroup analysis: No subgroup analyses will be performed.

Sensibility analysis: Assessment of homogeneity; forest plots to graphically represent sensitivities, specificities, PPV, NPV and LHs with 95% confidence intervals (CIs); sensitivity analysis to assess the influence of each study on the overall effect by removing one of the studies in each round and publication bias across studies will be evaluated using funnel plots and Egger's test.

Language: English, Spanish and Portuguese.

Country(ies) involved: Spain and UK.

Keywords: Malnutrition, Nutrition assessment, Screening, Hospitalization, Systematic review, Meta-analysis.

Dissemination plans: The results will also be communicated to patients and patient representatives in suitable language via popular science publications and on institutional websites.

Contributions of each author:

Author 1 - Regina Cortes - Data curation, Visualization, Writing-original draft.

Author 2 - Miquel Bennasar-Veny - Conceptualization, Investigation, Methodology, Validation, Writing-original draft.

Author 3 - Enrique Castro-Sanchez - Investigation, Validation, Writing-review & editing.

Author 4 - Sergio Fresneda - Data curation, Writing-review & editing.

Author 5 - Joan De Pedro-Gomez - Supervision, Writing-review & editing.

Author 6 - Aina Yañez - Conceptualization, Investigation, Writing-review & editing.