INPLASY PROTOCOL

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Accuracy of the GLIM criteria for diagnosing malnutrition: a systematic review and meta-analysis

Huo, Z[1]; Chong, F[2]; Yin, L[3]; Lu, Z[4]; Liu, J[5]; Xu, H[6].

Review question / Objective: **Although malnutrition remains a global public health concern, and has proved to be a major contributor to death and illness, there has been a foundational lack of a gold standard for diagnostic testing for clinical application. The Global Leadership Initiative on Malnutrition (GLIM) criteria were established to normalize the diagnosis of malnutrition, but their use remains controversial. Therefore, we conducted this study in order to explore the true accuracy of the GLIM criteria for diagnosing malnutrition.**
Eligibility criteria: **Publications were eliminated if any of the following conditions were noted: 1) the researchers did not make an assessment of the diagnostic accuracy of the GLIM criteria; 2) reports were conference summaries or reviews; 3) experiments were not performed using the GLIM criteria; 4) research was not related to malnutrition; 5) repeat study by the same author or research group; 6) data were not valid for calculating the quantitative true positive (TP), false positive (FP), false negative (FN), and true negative (TN) rates; 7) studies were performed in HIV patients; 8) Studies were not reported in English.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 February 2022 and was last updated on 16 February 2022 (registration number INPLASY202220061).

INTRODUCTION

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remains controversial. Therefore, we conducted this study in order to explore the true accuracy of the GLIM criteria for diagnosing malnutrition.

Condition being studied: A limited number of previous studies have reported the accuracy of the GLIM criteria for diagnosing malnutrition based on one or more of these above tools, with highly variable sensitivity (ranging from 51% to 92%) and specificity (ranging from 70% to 98%) among previous studies. There has been a foundational lack of global acceptance for GLIM in clinical practice.

METHODS

Search strategy: We adopted the following terms to acquire relevant data resources: ("malnutrition" OR "nutrition disorders" OR "protein energy malnutrition" OR "marasmus" OR "malnutrition, protein-energy" OR "nutrition disorder" OR "nutritional deficiency" OR "protein-energy malnutrition" OR "malnutrition, protein-energy" OR "malnourishment" OR "nutritional deficiencies" OR "protein calorie malnutrition" OR "malnutrition, protein-calorie" OR "protein-calorie malnutrition" OR "undernutrition") AND ("GLIM" OR "GLIM criteria" OR "Scored-GLIM" OR "Global Leadership Initiative on Malnutrition") AND ("diagnostic test" OR "diagnostic accuracy" OR "diagnosis" OR "diagnose" OR "diagnoses" OR "ROC" OR "sensitivity" OR "specificity").

Participant or population: All patients who accepted nutrition assessment.

Intervention: This is a diagnostic meta-analysis, the intervention is not needed.

Comparator: This is a diagnostic meta-analysis, the intervention is not needed.

Study designs to be included: Two researchers separately filtered the research results for papers that were potentially appropriate based on the title and abstract. Only observational literature that explored the accuracy of the GLIM criteria in diagnosing malnutrition were included.

Eligibility criteria: Publications were eliminated if any of the following conditions were noted: 1) the researchers did not make an assessment of the diagnostic accuracy of the GLIM criteria; 2) reports were conference summaries or reviews; 3) experiments were not performed using the GLIM criteria; 4) research was not related to malnutrition; 5) repeat study by the same author or research group; 6) data were not valid for calculating the quantitative true positive (TP), false positive (FP), false negative (FN), and true negative (TN) rates; 7) studies were performed in HIV patients; 8) Studies were not reported in English.

Information sources: The CENTRAL, EMBASE, and MEDLINE databases.

Main outcome(s): The amalgamated sensitivity, specificity, positive likelihood ratio (PLR), negative likelihood ratio (NLR), diagnostic odds ratio (DOR), and AUC with 95%CI for the GLIM criteria.

Data management: The quality evaluation of all included articles based on the QUADAS-2 tool. Our group appraised the publication bias of the included studies by applying Deeks' funnel plot.

Quality assessment / Risk of bias analysis: The quality evaluation of all included articles based on the QUADAS-2 tool. Our group appraised the publication bias of the included studies by applying Deeks' funnel plot.

Strategy of data synthesis: We used Stata/MP 15.1 (Stata Corporation, College Station, USA) and RevMan 5.3 (The Cochrane Co-operation, Oxford, UK) to perform the amalgamative sensitivity, specificity, positive likelihood ratio (PLR), negative likelihood ratio (NLR), diagnostic odds ratio (DOR), and area under curve (AUC) with 95% confidence intervals (95%CI) calculations.

Subgroup analysis: We carried out a subgroup analysis based on the on region (East Asia or others), year of publication (2021 or before 2021), study size (>200 or <200 patients), population (cancer patients

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or others), and reference standard (PG-SGA, SGA, or others).

Sensitivity analysis: To explore the combined effects of measurement differences after removing each single study, a sensitivity analysis was performed.

Country(ies) involved: China.

Keywords: malnutrition, diagnostic accuracy, GLIM criteria, meta-analysis.

Contributions of each author:

Author 1 - Zhenyu Huo - Conceived and designed the experiments, analyzed the data, performed the experiments, and wrote the paper.
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Conflicts of interest: All authors declare that they have no competing interests. No competing interests exist in this study due to commercial or other associations (e.g., pharmaceutical stock ownership, consultancy, advisory board membership, relevant patents, or research funding).

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