INPLASY

The impact of nutritional support therapy combined with conventional treatment models on symptom improvement and long-term prognosis in stroke patients: A systematic review and meta-analysis

INPLASY202550067

doi: 10.37766/inplasy2025.5.0067

Received: 22 May 2025

Published: 22 May 2025

Zhang, M; Li, M; Ding, Y; Zhang, L; Zhang, Y; Peng, XP.

Corresponding author:
Xiapei Peng

pengxiapei@163.com

Author Affiliation:
Department of Neurology, The Central Hospital of Wuhan, Tongji Medical College, Huazhong University of Science and Technology.

ADMINISTRATIVE INFORMATION

Support - No.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202550067

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 May 2025 and was last updated on 22 May 2025.

INTRODUCTION

Review question / Objective To methodically assess the effectiveness of nutritional support therapy combined with conventional treatment on symptom improvement and long-term prognosis in stroke patients.

Condition being studied Existing studies show heterogeneity in terms of the types of nutritional support, the timing of intervention and evaluation indicators. For instance, some studies have strongly adjusted the short-term metabolic advantages of protein-based enteral nutrition agents, while others recommend sequential enteral nutrition to reduce the risk of infection. Based on the above background, this article seeks to systematically evaluate the effect of nutritional support therapy applied to stroke patients through evidence-based methods, aiming to provide a reference basis for clinicians to formulate more scientific and reasonable diagnosis and treatment measures.

METHODS

Participant or population Patients receiving nutritional support therapy, including enteral nutrition, nasogastric nutritional management, and related interventions.

Intervention Patients requiring palliative care, those with acute coronary syndrome, transient ischemic attack, subarachnoid hemorrhage, progressive neurological diseases, heart failure, respiratory failure, or those with pre-existing disability prior to stroke were not included.

Comparator Safety Endpoint: Incidence of infectious complications. Efficacy Endpoints: Neurological function: Assessed using the National Institutes of Health Stroke Scale (NIHSS), that falls between 0 and 42 points Higher scores show more serious neurological impairments, with 0–1 indicating normal or mild deficits and ≥21 indicating severe impairment. Level of consciousness: Evaluated using the Glasgow Coma Scale (GCS), with a total score of 15. Lower

scores indicate deeper levels of coma. Nutritional status: Assessed via serum prealbumin (PA), albumin (Alb), total lymphocyte count (TLC), and hemoglobin (Hb). Immune function: Measured by serum levels of immunoglobulins (IgA, IgM, IgG). Inflammatory markers: Including tumor necrosis factor-alpha (TNF-α), interleukin-2 (IL-2), and interleukin-6 (IL-6).

Study designs to be included (1) Research not involving randomized controlled trials. (2) Studies with incomplete or non-usable data. (3) Duplicate publications (only the most recent version was retained).(4) Studies lacking clearly defined outcomes. (5) Review articles, meta-analyses, or theoretical literature. (6) Case reports or clinical case series.

Eligibility criteria Risk of bias assessment: The Cochrane Collaboration's "Risk of Bias" assessment technique, described in the Cochrane Handbook for Systematic Reviews of Interventions, version 5.3, was used to assess the risk of bias in the included studies.

Information sources Literature screening and data extraction: The literature was separately examined, pertinent data was retrieved, and the quality of the study was evaluated by two reviewers. Any disagreements were settled by discussion or, if required, by a third reviewer. NoteExpress and Microsoft Excel were used for reference management and data extraction. Attempts were made to get in touch with the original writers for clarification or further information in situations where crucial material was unclear or missing. The information that was retrieved contained: (1) basic study information: first author, year of publication, and sample size; (2) Intervention details: Nutritional support therapy (e.g., enteral nutrition, nasogastric feeding) and conventional treatment (standard nutritional care); (3) Outcome measures: Neurological function (NIHSS score), level of consciousness (GCS score), nutritional status markers (prealbumin, albumin, hemoglobin, total lymphocyte count), immune function (IgA, IgM, IgG), inflammatory biomarkers (IL-2, IL-6, TNF-α), and incidence of infectious complications.

Main outcome(s) Neurological function (NIHSS score), level of consciousness (GCS score), nutritional status markers (prealbumin, albumin, hemoglobin, total lymphocyte count), immune function (IgA, IgM, IgG), inflammatory biomarkers (IL-2, IL-6, TNF-α), and incidence of infectious complications.

Quality assessment / Risk of bias analysis The included studies were deemed homogenous if P>0.1 and I2<50%, and the adjusted influence models could be gathered for meta-analysis. When evaluating the homogeneity of the included studies, the random effects model was chosen if P 50% and a combined effect was required. When P is less than 0.1 and the source of heterogeneity cannot be identified, descriptive analysis is used instead of meta-analysis. To further examine the publication bias of the included literature, an inverted funnel plot was created. Since the number of literatures included in this study was less than 10, funnel plot drawing was not conducted.

Strategy of data synthesis The included studies were deemed homogenous if P>0.1 and I2<50%, and the adjusted influence models could be gathered for meta-analysis. When evaluating the homogeneity of the included studies, the random effects model was chosen if P 50% and a combined effect was required. When P is less than 0.1 and the source of heterogeneity cannot be identified, descriptive analysis is used instead of meta-analysis. To further examine the publication bias of the included literature, an inverted funnel plot was created. Since the number of literatures included in this study was less than 10, funnel plot drawing was not conducted.

Subgroup analysis The included studies were deemed homogenous if P>0.1 and I2<50%, and the adjusted influence models could be gathered for meta-analysis. When evaluating the homogeneity of the included studies, the random effects model was chosen if P 50% and a combined effect was required. When P is less than 0.1 and the source of heterogeneity cannot be identified, descriptive analysis is used instead of meta-analysis. To further examine the publication bias of the included literature, an inverted funnel plot was created. Since the number of literatures included in this study was less than 10, funnel plot drawing was not conducted.

Sensitivity analysis The included studies were deemed homogenous if P>0.1 and I2<50%, and the adjusted influence models could be gathered for meta-analysis. When evaluating the homogeneity of the included studies, the random effects model was chosen if P 50% and a combined effect was required. When P is less than 0.1 and the source of heterogeneity cannot be identified, descriptive analysis is used instead of meta-analysis. To further examine the publication bias of the included literature, an inverted funnel plot was created. Since the number of literatures

included in this study was less than 10, funnel plot drawing was not conducted.

Country(ies) involved China.

Keywords Nutritional support therapy; Conventional treatment; Stroke; Long-term prognosis.

Contributions of each author
Author 1 - Meng Zhang.
Author 2 - Meng Li.
Author 3 - Ying Ding.
Author 4 - Li Zhang.
Author 5 - Yi Zhang.
Author 6 - Xiapei Peng.