INPLASY

Diverse diets, resilient aging: a systematic review and meta analysis on the protective role of dietary diversity against frailty in older adults

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ADMINISTRATIVE INFORMATION

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

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 May 2024 and was last updated on 20 May 2024.

INTRODUCTION

Review question / Objective P: participants must be aged 60 years or older; I: High dietary diversity; The studies must evaluate dietary diversity using measures such as Food Variety Scores (FVS), Dietary Diversity Scores (DDS), Dietary Variety Scores (DVS), or Food frequency score (FFS); C: Low dietary diversity; O: The studies must document the relationship between dietary diversity and frailty risk; S: Included studies were required to utilize a longitudinal observational design, either prospective or retrospective. Excluded from consideration were reviews, editorials, commentaries, case reports, treatment consensus documents, and guidelines. Furthermore, only studies with available full-text access were considered for inclusion to ensure a comprehensive evaluation of the data and methodologies employed.

Condition being studied In community-dwelling older adults, whether low dietary diversity is associated with the occurrence of frailty.

METHODS

Participant or population Participants must be community-dwelling residents aged 60 years or older.

Intervention High dietary diversity; The studies must evaluate dietary diversity using measures such as Food Variety Scores (FVS), Dietary Diversity Scores (DDS), Dietary Variety Scores (DVS), or Food frequency score (FFS).

Comparator Low dietary diversity.

Study designs to be included Included studies were required to utilize a longitudinal observational design, either prospective or retrospective. Excluded from consideration were reviews, editorials, commentaries, case reports, treatment consensus documents, and guidelines. Furthermore, only studies with available full-text access were considered for inclusion to ensure a comprehensive evaluation of the data and methodologies employed.

Eligibility criteria Our inclusion criteria for the studies were as follows: (1) participants must be aged 60 years or older; (2) The studies must evaluate dietary diversity using measures such as Food Variety Scores (FVS), Dietary Diversity Scores (DDS), Dietary Variety Scores (DVS), or Food frequency score (FFS); (3) the studies must document the relationship between dietary diversity and frailty risk; (4) Included studies were required to utilize a longitudinal observational design, either prospective or retrospective. Excluded from consideration were reviews, editorials, commentaries, case reports, treatment consensus documents, and guidelines. Furthermore, only studies with available full-text access were considered for inclusion to ensure a comprehensive evaluation of the data and methodologies employed.

Information sources We conducted a systematic review and meta-analysis, examining research published up to February 17, 2024, sourced from major databases including PubMed, Embase, Web of Science, and Cochrane. Our search strategy combined free-text and structured queries, utilizing relevant Medical Subject Headings (MeSH) and Emtree terms to ensure comprehensive coverage of the literature.

Main outcome(s) Frailty in older adults with low and high dietary diversity.

Quality assessment / Risk of bias analysis The methodological quality of the included studies was independently evaluated by two researchers, S-E.W. and H-Y.L. This dual-reviewer approach ensured an unbiased and thorough assessment, adhering to predefined quality criteria. The methodological quality of cohort studies included in our analysis was rigorously evaluated using the Newcastle-Ottawa Scale (NOS). Studies were classified based on their performance across three domains: selection, comparability, and outcome/exposure. Studies earning 3 or 4 stars in the selection domain, 1 or 2 stars in the comparability domain, and 2 or 3 stars in the outcome/exposure domain were rated as "good quality." Those with 2 stars in the selection domain, 1 or 2 stars in the comparability domain, and 2 or 3 stars in the outcome/exposure domain were considered "moderate quality." Studies awarded 0 or 1 star in the selection domain, 0 stars in the comparability domain, or 0 or 1 star in the outcome/exposure domain were categorized as "low quality."
For cross-sectional studies, we employed a modified version of the NOS tailored to these study types. The quality of these studies was determined based on their total scores, with the following classifications: "Very Good" for scores of 9-10 points, "Good" for 7-8 points, "Satisfactory" for 5-6 points, and "Unsatisfactory" for scores ranging from 0 to 4 points.
In instances of disagreement regarding the quality assessment, the matter was resolved by consulting an additional researcher, I-T.C., to ensure a consensus was reached.

Strategy of data synthesis The prevalence of low dietary diversity among older adults in the included studies was quantified and reported as a number (n) and percentage (%). To assess differences in frailty between groups characterized by low and high dietary diversity, odds ratios (OR) were calculated and subsequently analyzed through meta-analysis using random-effects models. Beta coefficients were also gathered and analyzed in a similar manner, with pooled results visually represented in Forest plots.
Statistical heterogeneity among the included studies was assessed using Cochran's Q test, accompanied by a corresponding P-value, and the I^2 test to quantify the degree of variability.

Subgroup analysis Subgroup analyses were conducted based on criteria derived from gender, risk factors (multiple combined risk factors and dietary diversity as a primary risk factor) and study design.

Sensitivity analysis Exclusion of Studies with High Risk of Bias: Reanalyze the data after excluding studies that have been identified as having a high risk of bias. This helps to see if the overall findings are influenced by the inclusion of lower-quality studies.
Variation in Dietary Diversity Assessment: Evaluate the impact of different methods used to assess

dietary diversity across studies. For instance, compare studies using dietary diversity scores versus those using food frequency questionnaires to determine if the method of assessment affects the results.
Geographic Differences: Examine whether the association between dietary diversity and frailty holds consistent across different geographic regions or cultural settings, which might have varying dietary patterns and definitions of dietary diversity.
Variation in frailty Assessment: Evaluate the impact of different methods used to assess frailty across studies.

Country(ies) involved Taiwan.

Keywords older adults, aged, geriatric, dietary diversity, food variety, dietary variety, frailty.

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