INPLASY PROTOCOL

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Review Stage at time of this submission: Preliminary searches.

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None declared.

Mediterranean-Dietary Approaches to Stop Hypertension (MIND) diet and risk of dementia: Meta-analysis of cohort studies

Chen, H[1]; Huang, Y[2]; Huang, L[3]; Yuan, C[4].

Review question / Objective: Is Mediterranean-Dietary Approaches to Stop Hypertension (MIND) diet associated with risk of Incident Dementia among middle-aged and older adults in previous cohort studies?
Condition being studied: Dementia is the loss of cognitive functioning — thinking, remembering, and reasoning — to such an extent that it interferes with a person's daily life and activities.
Main outcome(s): In this study, we will include all-cause dementia, Alzheimer's disease and Vascular Dementia as the outcome. The outcome could be proxy-reported, objectively measured, doctor diagnosed, EHR defined, and death registry identified.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 July 2022 and was last updated on 31 July 2022 (registration number INPLASY202270127).

INTRODUCTION

Review question / Objective: Is Mediterranean-Dietary Approaches to Stop Hypertension (MIND) diet associated with risk of Incident Dementia among middle-aged and older adults in previous cohort studies?

Rationale: Dementia increasingly burdens healthcare systems and threats well-being of older adults worldwide, and its irreversible nature makes its early prevention of great importance. Among numerous potential risk factors, dietary factors have aroused huge interest, including specific nutrients and food groups. Previous studies have also

investigated the associations of dietary patterns with dementia. First proposed by Morris et al., Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet was associated with lower risk of Alzheimer's disease (AD) and slower cognitive decline. The MIND diet emphasizes natural plant-based foods and limited intakes of animal and high saturated fat foods but uniquely specifies consumption of berries and green leafy vegetables. Although several studies have assessed its relation to cognitive function and decline, only two studies have linked it to dementia or AD, with inconclusive results. A prospective study in 923 US participants aged 58 to 98 years (mean follow-up=4.5 years) found that higher adherence to MIND diet was related to lower risk of AD. In the Rotterdam Study, the relation of MIND diet was significant in the first 7 years of follow-up, but disappeared afterwards. Furthermore, whether these observational findings were causal remained unknown, as changes in dietary behavior might happen in the preclinical phase of dementia. Aggregately, despite the biological mechanism of specific nutrients in brain health, there lacks sufficient population-based evidence for the role of the MIND diet in dementia prevention, and the causal association remained unclear. In the current study, we will systematically review and conduct a meta-analysis on the associations of adherence to MIND diet with incident dementia in cohort studies.

Condition being studied: Dementia is the loss of cognitive functioning — thinking, remembering, and reasoning — to such an extent that it interferes with a person's daily life and activities.

METHODS

Search strategy: PubMed: (((("MIND diet"[Title/Abstract]) OR ("Mediterranean-DASH Diet Intervention for Neurodegenerative Delay"[Title/Abstract]) OR ("Mediterranean-Dietary Approach to Systolic Hypertension (DASH) diet intervention for neurodegenerative delay"[Title/Abstract]))) AND ((dementia [Title/Abstract]) OR ("alzheimer disease" [MeSH Terms]))

WoS: (TS=(dementia) OR (TS=(MIND diet) OR TS=(Mediterranean-DASH Diet Intervention for Neurodegenerative Delay)) AND (TS=(dementia) OR TS=(alzheimer's disease))

EMBASE: ('mind diet'/exp OR 'Mediterranean-dash diet intervention for neurodegenerative delay' OR 'Mediterranean-dietary approach to systolic hypertension (dash) diet intervention for neurodegenerative delay') AND ('alzheimer disease' OR dementia).

Participant or population: General middle-aged and older adults.

Intervention: Mediterranean-Dietary Approaches to Stop Hypertension (MIND) diet.

Comparator: Low level of adherence to the MIND diet.

Study designs to be included: Cohort studies.

Eligibility criteria: Original studies with multivariable confounding adjustments.

Information sources: EMBASE, Web of Science, and PubMed.

Main outcome(s): In this study, we will include all-cause dementia, Alzheimer's disease and Vascular Dementia as the outcome. The outcome could be proxy-reported, objectively measured, doctor diagnosed, EHR defined, and death registry identified.

Additional outcome(s): No other outcome will be included.

Data management: We will manage the data using Microsoft Excel 2016.

Quality assessment / Risk of bias analysis: We will use STROBE checlist to assess the quality of included literature. Two reviewers will independetly conduct the quality assessment. Risk of bias analysis will be performed using a funnel plot.

Strategy of data synthesis: We will use the R package 'Metafor' to conduct data synthesis. Fixed and random effect models will be use to pool the hazard ratios from the cohort studies included.

Subgroup analysis: We will conduct subgroup analysis by region of the studies that were conducted.

Sensitivity analysis: We will conduct leave-one-out (LOO) study to assess the robustness of the study findings.

Language restriction: English publications only.

Country(ies) involved: China.

Keywords: Diet; dementia; cohort study; MIND diet.

Contributions of each author:
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