INPLASY PROTOCOL

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Review Stage at time of this submission: Formal screening of search results against eligibility criteria.

Conflicts of interest: None declared.

Improvement of Omega-3 fatty acids on Cognitive Functions in the elderly and aged animals: a meta-analysis of randomized controlled trials

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Review question / Objective: To study the association between omega-3 fatty acids and cognitive function through a meta-analysis of the literature, analyze its effect on the improvement of cognitive function in the elderly and elderly animals, and evaluate the effect of the improvement of omega-3 fatty acids on the improvement of cognitive function in different senile diseases.

Condition being studied: Cognitive function is the ability of human brain to receive, process, store and extract information, which is a kind of higher mental function. Cognitive functions include feeling, perception, attention, memory, thinking, imagination, language, visuospatial, executive, calculation, understanding and judgment. When the brain changes, there may be cognitive decline or cognitive dysfunction.

INTRODUCTION

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Rationale: Cognitive dysfunction is the impairment of one or more aspects of the cognitive process, resulting in reduced efficiency or impaired function.

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METHODS

Search strategy: We searched PubMed, Embase, Cochrane Library and Web Of Science until March 10, 2023. In the retrieval strategy, we use MESH words and other free words for cognitive function and omega-3 fatty acids with Boolean operators (or, and) to combine searches. And. The elderly and the elderly animals were separated. The elderly used restricted retrieval, and the elderly animals used a combination of restricted retrieval and free word retrieval. In the search, we apply no restrictions on language or publication type. EndNote20 is used to store and sort retrieved literature, and to automatically and manually delete duplicate files through the software. Two people independently screen titles and abstracts based on predefined inclusion criteria. Inconsistent results are determined by additional discussion or by a third examiner. In addition, we searched references to other studies to ensure that our search strategy found all relevant studies. Subsequently, we determined final inclusion by reviewing the full text of the remaining studies.

Participant or population: Patients: The elderly, including healthy groups and those with cognitive diseases. Animals: elderly animals, healthy elderly animals, model animals with Alzheimer's disease, model animals with cognitive function decline after cerebral hemorrhage perfusion model.

Intervention: The intervention group was treated with omega-3 fatty acid supplements or foods containing omega-3 fatty acids.

Comparator: Humans and animals in the control group received routine care.

Study designs to be included: The s study was designed as a randomized controlled trial (RCT).

Eligibility criteria: All studies included in the initial search strictly met the criteria of the Population, Intervention, comparison, Outcomes and Research Design (PICOS) framework. Population: (1) Elderly: People 65 years of age or older. (2) Healthy people and people with cognitive diseases. The intervention group was treated with omega-3 fatty acid supplements or foods containing omega-3 fatty acids. Comparator: Control group patients received usual care. At least one cognitive function outcome was measured. The study design was a randomized controlled trial (RCTS). Animals: (1) The subjects were old male or female rodents. (2) The subjects were healthy animals or model animals with cognitive dysfunction. (3) The intervention was taking omega-3 fatty acid supplements or foods containing omega-3 fatty acids. (4) At least one test method was used to measure cognitive function outcomes. (5) The study design was a randomized controlled trial (RCTS).

Information sources: We searched PubMed, Embase, Cochrane Library and Web Of Science.

Main outcome(s): Cognitive function evaluation. The crowd: Cognitive functions were assessed by the Simple Mental State Scale (MMSE), the Montreal Cognitive Test (MoCA), the Montreal Cognitive Assessment (MoCA), the Simple Intelligent Mental State Examination Scale (MMSE), the elderly Cognitive Function Screening Measure (CASI), the Intelligence Test Score (MTS), or the General Practitioner Cognitive Function Assessment Scale (GPCOG) Scale evaluation. In animals, cognitive function was assessed using the Morris Water Maze (MWM) test, the Y Maze test, the new object recognition test (ORT) and the passive avoidance test (PAT).

Quality assessment / Risk of bias analysis: The Cochrane tool will be used to assess the risk of bias in random sequence generation, allocation concealment, participant and person blinding, outcome variable assessment blinding, outcome data integrity, selective reporting of study results, and other biases.

Strategy of data synthesis: Cochrane system software Revman Version 5.4 was used for statistical analysis. The aggregated SMDS (standard mean difference) values and 95%CI reports are used for impact sizes, and the forest maps are used to present the results.

Subgroup analysis: The subgroup analysis method and meta-regression analysis were used to investigate the source of heterogeneity. If the source of heterogeneity could not be identified, a general description was used.

Sensitivity analysis: Heterogeneity using Cochran's Q test and I2 statistics. I2 values of 25%-50%, 50%-75%, and ≥75% indicate low, moderate, and high heterogeneity, respectively. When the heterogeneity p value is less than 0.1, heterogeneity is considered. When the heterogeneity is low, the fixed effect model is used, and when the heterogeneity is high, the random effect model is used. In order to find the possible sources of heterogeneity, we will conduct a sensitivity analysis.

Language restriction: English.

Country(ies) involved: China.

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