THE EFFECTS OF MULTI-COMPONENT INTERVENTIONS ON COGNITION: A SYSTEMATIC REVIEW

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Given the lack of a cure for Alzheimer's disease (AD), the number of people with AD is expected to surge unless the onset is delayed. Although there have been efforts to examine the effects of single-domain neuroprotective interventions on cognition, no conclusive results have been found so far. Due to the multifactorial causes of AD, interventions combining multiple neuroprotective components may induce more beneficial effects. However, there are few comprehensive reviews evaluating the effects of multi-domain programs on cognition. Thus, the purpose of this systematic review was to evaluate the effects of currently available multi-component interventions on cognition such as global cognition, episodic memory, and/or executive function affected early in AD. The literature search was conducted using PubMed, CINAHL, Web of Science, Scopus, and PsycINFO up to September 2020. Of the 1,445 articles located, 17 met eligibility criteria (n = 10,056, mean age = 72.8 years). According to the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies, 8 and 9 studies had strong and moderate overall quality, respectively. The effect sizes of each included study were calculated using Cohen's d. Multi-component interventions comprising physical activity, cognitive exercise, cardioprotective nutrition, and/or cardiovascular health consultation/education exerted beneficial effects on cognition (very small to moderate effect sizes; Cohen's d = 0.16 to 0.77). Clinically, health care providers are recommended to consider those elements to potentially stave off AD. There is a pressing need for researchers to identify optimally effective doses of neuroprotective multicomponent interventions.

TRAJECTORIES OF COGNITIVE FUNCTION AND ASSOCIATED FACTORS IN COMMUNITY-DWELLING OLDER ADULTS: A PROSPECTIVE STUDY

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There is variability in cognitive aging between individuals. This study aimed to investigate cognitive aging trajectories, the associated modifiable factors, and the association of these trajectories with dementia. Community-dwelling older adults (n=19,114) without dementia or major cognitive impairment at inclusion were followed for up to 7 years, with regular standardized cognitive assessments. Group-based (multi-) trajectory modeling identified distinct cognitive trajectories. Structural equation modeling (n=16,018) was used to analyze the associated predictors. Four to seven trajectories were identified per cognitive domain, with generally stable trajectories. Improvement in verbal fluency and minor psychomotor slowing were common. Substantial decline in global cognition and episodic memory were observed in a small proportion of individuals. The highest proportions of dementia cases were in trajectories with major decline in global cognition (56.9%) and memory (33.2%). A number of sociodemographic characteristics, health behaviors and chronic conditions were either directly or indirectly associated with cognitive change in older adults. This study found that some individuals appear resilient to cognitive decline even with advancing age, and that factors that promote healthy cognitive aging are not simply the absence of factors which confer risk for decline.

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A PHASE I TRIAL ASSESSING LOMECEL-B INFUSION IN INDIVIDUALS WITH ALZHEIMER'S DISEASE: STUDY DESIGN AND RATIONALE

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Alzheimer's disease (AD) is an irreversible neurodegenerative disorder characterized by memory loss and persistent cognitive dysfunction which significantly compromises quality of life. Brain inflammation is a prominent feature of AD pathology. Lomecel-B which is derived from culture-expanded medicinal signaling cells (MSCs) have immuno-modulatory capacity and control inflammation and the cytokine production of lymphocytes. The primary objective of this study was to evaluate the safety of Lomecel-B infused intravenously in individuals with AD. Safety was monitored by examining vital signs, physical and neurological exams, laboratory tests (hematology, coagulation, blood chemistry, and urinalysis). This was a multicenter phase 1 double-blinded, placebo controlled trial initiated with a safety run in phase of 3 individuals followed by a randomized phase of 28 individuals. During the safety run-in phase all subjects were treated with low dose Lomecel-B no less than 5 days apart, and evaluated for safety. In the randomized phase, subjects were treated with either low or high dose Lomecel- B or Placebo in a 2:2:1 randomization ratio. The study enrolled adults aged 50-80 years diagnosed with AD via confirmatory brain MRI and PET scan and a MMSE score of 18-24. Safety and efficacy assessments were completed at 30, 90, 180, 270 and 365 days. We describe the design and rationale for this phase 1 trial with the primary objective of assessing the safety of Lomecel-B on adults with AD. The secondary efficacy measurements included ADAS-Cog 11, MMSE, TMT, UPSIT, GDS, blood biomarkers and numerous quality of life questionnaires.

CARDIOMETABOLIC RISK FACTORS PREDICT EXECUTIVE FUNCTION SCORES IN HIGH-RISK INDIVIDUALS

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