



Spatial Navigation Skills in Vascular Dementia - A Meta Analysis.

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Abstract

Dementia poses significant challenges for individuals and societies alike. Accounting for approximately 20% of dementia cases, vascular dementia (VaD) emerges from compromised brain blood supply due to vascular issues, making it the second most prevalent cause of dementia (Pendlebury & Rothwell, 2019; American Stroke Association, 2021). Spatial disorientation is among the earliest indicators of dementia, prompting an exploration of spatial navigation abilities to better understand the cognitive decline associated with VaD. Early diagnosis plays a pivotal role, enabling timely intervention, particularly in the management of vascular risk factors like hypertension.

Discussion

Our hypothesis is that the VaD group significantly differs from cognitively healthy older adults in terms of spatial navigation skills. Considering the findings from our previous meta-analysis on MCI and recognizing that VaD is associated with more pronounced cognitive impairment in general, the standardized mean difference between the VaD and cognitively healthy groups might potentially be even larger than that between MCI and cognitively healthy individuals. Analyzing potential moderators and comparing these results with the MCI meta-analysis should further enhance our understanding of spatial navigation skills in the context of dementia.

Results

The project is presently involved in extracting data from the articles that have been identified for inclusion. The current dataset contains information from seven studies, which compare the spatial navigation skills performance between participants with VaD and healthy older adults.

Introduction

Vascular dementia (VaD), resulting from diminished brain blood supply due to vascular issues, constitutes approximately 20% of dementia cases, ranking as the second most common cause (S.E. Pendlebury and M.S.L. Rothwell, 2019; American Stroke Association, 2021). High blood pressure is a significant risk factor for VaD (Gorelick et al., 2011). Clinical manifestations include memory loss, confusion, and problem-solving difficulties (Alzheimer's Society, 2020). Neuroimaging, using methods like MRI or CT scans, aids in diagnosing vascular abnormalities (A.M. Brickman, 2016). Early diagnosis is crucial, as it facilitates early intervention, especially in managing vascular risk factors such as hypertension (NHS options, 2023). The previous analysis revealed a difference between cognitively healthy older adults and individuals with mild cognitive impairment (MCI) with a standardized mean difference of .88. The aim of the current study is to investigate if VaD may contribute to an even further decline in spatial navigation skills.

Figures



Methods

- This meta-analysis aims to examine differences in spatial navigation test performance between cognitively healthy older adults and those diagnosed with VaD.
- The analysis will consider potential moderating factors, including age, gender, education level, test administration method (real-world or virtual reality), and the type of measure (time or accuracy).
- A comprehensive search of existing literature was conducted across multiple databases, including PsycInfo, Pubmed, Ageline, Dissertation & Thesis Global, Web of Science, and ERIC.
- Spatial navigation tasks were assessed and categorized into five groups: Maze, Hidden Goal Task, Virtual Environment, Money Road Map, and Block/Matrix Task.
- Studies underwent three stages of screening: title and abstract screening, full-text review, and extraction, managed using Covidence Software. Each screening stage required consensus between two reviewers for the study to proceed to the next stage. In case of discrepancies, a third reviewer resolved conflicts. Data extraction was conducted by at least two trained reviewers with specific coding training, with a third reviewer resolving discrepancies.

References

Reviews (covidence.org)

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