

Arithmetic Skills in Patients with Mild Cognitive Impairment and Alzheimer's Disease – Literature Review

Lauren E. Bing and Sabrina A. Roman, Dorota Kossowska-Kuhn

Background

Deficiencies in general arithmetic abilities appear to serve as an initial indicator of Alzheimer's disease (AD). However, research findings are inconsistent regarding the specific abilities that are affected. Furthermore, there is a lack of a comprehensive literature review that consolidates the progression of changes in arithmetic skills within the spectrum from Mild Cognitive Impairment (MCI) to Alzheimer's disease.

Objectives

Our objective is to systematically review the existing literature examining the performance of individuals with MCI and AD in arithmetic skills. The aim is to consolidate current knowledge on this subject and provide insights into potential avenues for future research.

Methods

PRISMA guidelines were applied to carry out the systematic literature search. Literature chosen described arithmetic skills in patients with MCI and/or AD. We excluded articles concentrating on financial capabilities or understanding medical information, non-English papers, and case-studies regarding one or two people. We categorized the articles into different areas of arithmetic skill (example: different arithmetic operations, type of numbers used).

Results

Through our search, 122 articles, identified 36 to include that specifically discussed the arithmetic skills in patients with MCI and/or AD.

Conclusions

In general, people with MCI or AD perform worse on arithmetic skills when compared to healthy older adults in both speed and accuracy measures. One of the reasons for this could be due to decline in working memory which is critical in conducting mental arithmetic (Uittenhove, 2015).

Identification of studies via databases and registers

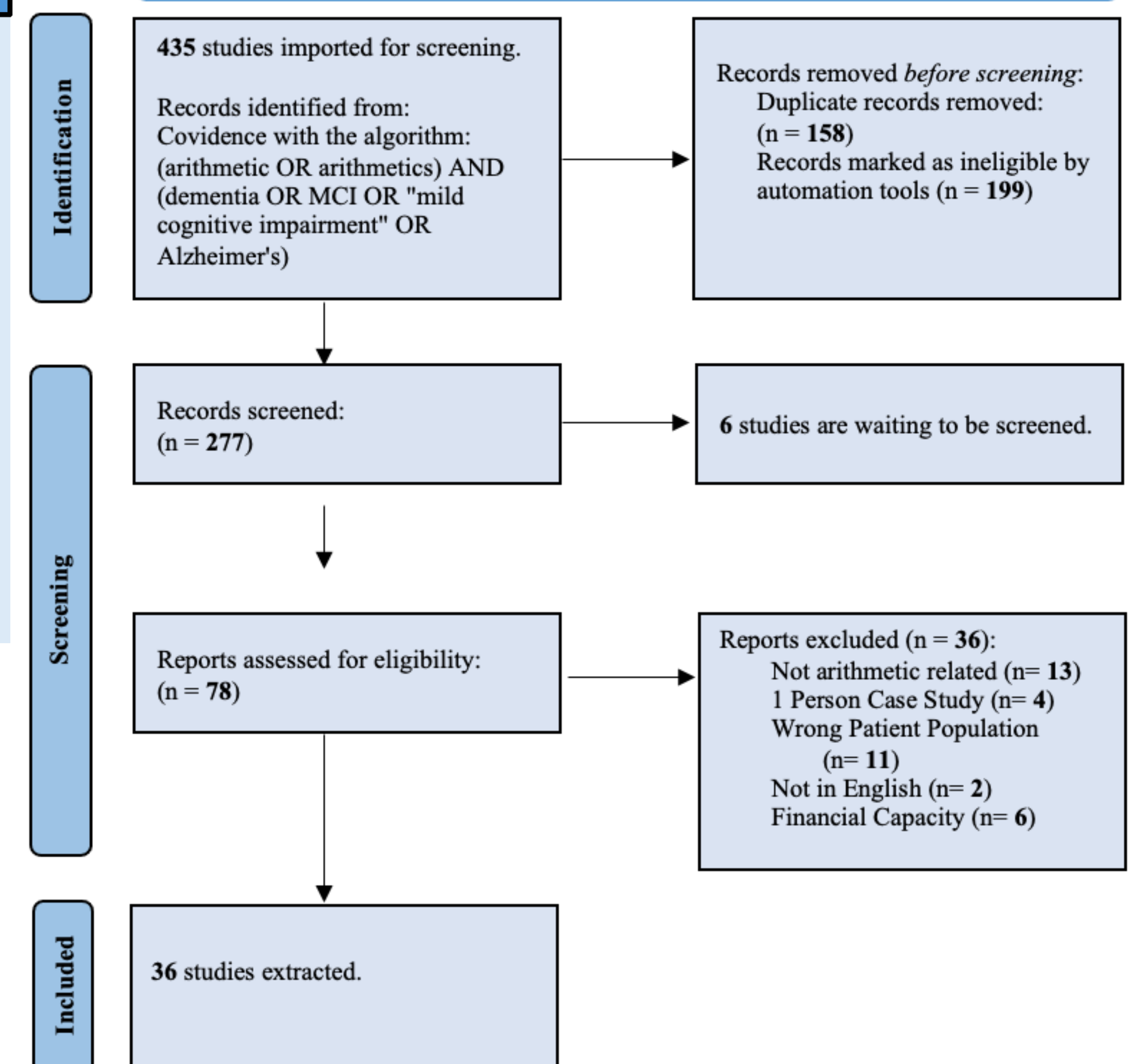


Fig. 2. PRISMA flowchart

Extraction Timeline and Process

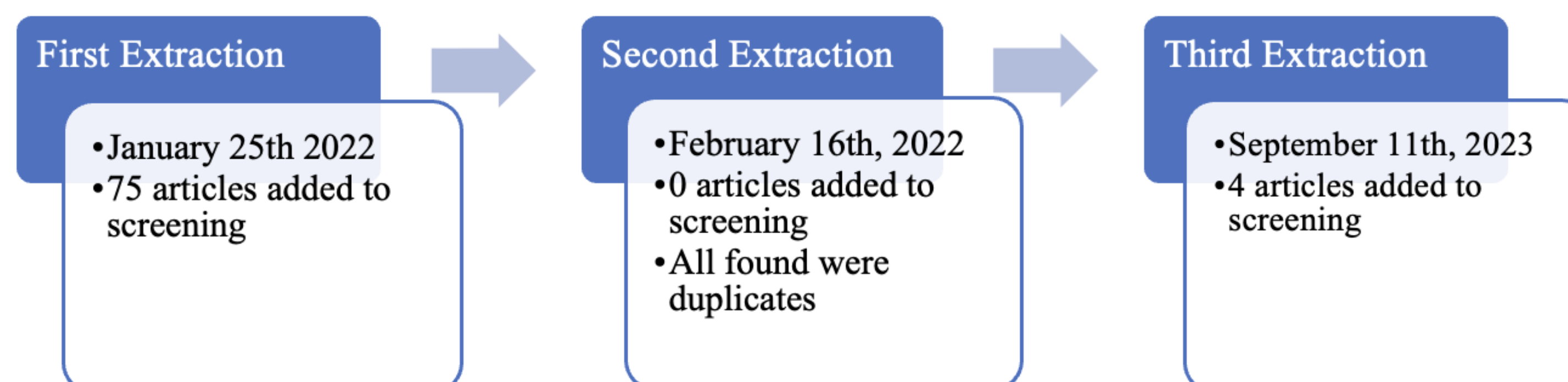


Fig. 2. Extraction Diagram

References

- Uittenhove, K., & Lemaire, P. (2015). Numerical cognition during cognitive aging. R. Kadosh & A. Dowke (eds.), *Oxford handbook of numerical cognition* (pp. 345-364). Oxford University Press.
- Kawashima, R., & Okita, K. (et al). (2005). Reading aloud and arithmetic calculation improve frontal function of people with dementia. J. E. Morley (Ed.), *The Journals of Gerontology: Series A* (3rd ed., Vol. 60, pp. 380–384). Gerontological Society of America Oxford University Press