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Individual Research Project Presentations Day 10th June 2024, Kent and Medway Medical School.

Scoping Review: What is the prognostic value in diagnosing Mild Cognitive Impairment in older adults at risk of Alzheimer's dementia.

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Abstract

Background: Mild cognitive Impairment (MCI) is a clinical syndrome that represents the transitional risk state between changes in one's cognition to developing Alzheimer's dementia (AD). However, there are no changes to activities of daily living (ADLs) (Petersen, 2004). Approximately 5-15% of those with MCI progress into developing AD annually, however around half of individuals with MCI remain stable for 5 years and there is also evidence of reversal in some cases. This is due to the syndrome's heterogeneous nature. Non-AD related causes include neurodegenerative, physical, and psychiatric conditions (Dunne et al., 2020). Therefore, rendering MCI's prognostic value questionable, regarding identifying those at risk of AD. MCI is currently diagnosed in clinical settings by cognitive deficits seen on neuropsychological testing. However, there are variations in diagnostic criteria implemented in both clinical and research settings (Ward et al., 2013). Making an accurate diagnosis of MCI is the first step to identifying a potential prodromal state for AD. At present, there are new avenues of research to identify more accurate methods of identifying MCI-AD conversion that can complement existing cognitive testing via fluid biomarkers and neuroimaging techniques (Dunne et al., 2020). Ultimately, in the absence of licensed disease-modifying options for AD at the MCI stage (Joe and Ringman, 2019), subjecting an individual to unnecessary investigations and management needs to be justified, when considering the syndrome's prognostic value.

Methods: This qualitative study is a scoping review of 35 research papers, where thematic analysis was conducted to answer the research aims. Papers were selected based on a specific inclusion/exclusion criterion.

Results: Thematic analysis of the 35 papers selected out of a total of 70, generated two main themes and further subthemes which reflects the scope of the literature: 1) Link between MCI and AD-conversion [subthemes of neuroimaging(N), fluid biomarkers (FB) and cognitive testing (CT)]. 91.7% (22 papers) of the studies agree that is there is a link between MCI and AD conversion. 8.3% (2 papers) did not support this theme. Clinical Outcomes of MCI diagnosis (subthemes of promising clinical utility (PCU) and limited clinical utility (LCU)). 50% of the studies demonstrated PCU regarding an MCI diagnosis

whilst 50% showed LCU.

Conclusions: The findings demonstrate that there is a link between MCI and AD. However, MCI should not be viewed as a sole cause of cognitive decline, instead it can be viewed as a heterogenous syndrome. Given the lack of standardised clinical guidelines, MCI's prognostic value lies in viewing as opportunity for treating modifiable risk factors associated with cognitive decline and patient co-morbidities. Ultimately, the results demonstrate a lack of clinical translation of research findings unless drastic changes occur in funding, standardisation of diagnostic criteria, recruitment of adequate sample sizes and conduction of longitudinal studies. With the advent of disease-modifying treatment for AD on the horizon, this may evoke such changes that are required to increase the prognostic value of MCI as a diagnosis in older adults at risk of AD.

Keywords: Mild Cognitive Impairment | Alzheimer's dementia | Prognosis | Older adults |

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