"Application of Mobile Health for Diagnosis of Dementia and Other Cognitive Disorders in Older Adults"

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Background: The number of people with dementia is increasing dramatically as the population ages.With increasing use of mobile technology specially smartphone, using mobile-based cognitive tests can be effective approach in cognitive assessment of older adults and early detection of cognitive impairment.

Objectives: The aim of this study is to review mobile apps for diagnosis of dementia and other cognitive disorders.

Materials and Methods: We searched Web of Science, ProQuest, PubMed, Scopus and Cochrane by using related keywords such as "dementia", "mobile app", and "cognitive test". After removing duplicate articles, we screened title, abstract, and then full text of studies based on the inclusion and exclusion criteria.

Results: Out of ١٣٤٨ articles initially identified, ١٩ were eligible for inclusion. Ten apps were developed based on existing paper based neuropsychological tests. Nine apps were new and innovative cognitive tests. The diagnostic performance of mobile apps for dementia and cognitive impairment was over ٧٠٪. BHA and CADi had the highest sensitivity with ١٠٠٪ and ٩٦٪, respectively. the VSM and BrainCheck had the highest specificity with ٩٤٪.

Conclusion: Mobile apps facilitate cognitive assessment and diagnosis of dementia and other cognitive disorders. During the outbreak of the COVID-١٩ pandemic, using these apps can play a significant role in continuous and remote cognitive assessment of older adults. Using artificial intelligence approach and novel digital health technologies such as virtual reality and chatbots, can improve reliability and usability of cognitive test apps and will set a bright future in detection and better management of cognitive disorders.

Keywords: mHealth, mobile health, digital health, dementia, cognitive disorder