

A digital intervention to improve or maintain cognitive function in people at risk for cognitive decline

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Abstract

Background: The landmark FINGER study (Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability) demonstrated that a multidomain intervention, including diet, exercise, cognitive training, and vascular risk monitoring, can improve or maintain cognitive functioning in at-risk older people. However, implementing a multidomain intervention is challenging since it requires significant resources from healthcare professionals and often poses a considerable burden for senior people regarding costs, transportation, and time commitment. We developed a digital multidomain intervention for people at risk for cognitive impairment or with mild cognitive impairment (MCI) with the overall aim to prevent or alter cognitive decline and to offer an easily accessible solution.

Method: Based on the Finger study, we designed a multidomain intervention that was delivered daily (via a mobile app) over 90 days to 17 participants that were recruited online. Participants received assignments for activities related to body fitness, cognitive exercises, multisensory stimulation, and nutritional advice. They received educational material on metabolic risk factors for dementia. Participants were encouraged daily to participate in social activities. Outcomes were evaluated on days 0, 30, 60, and 90 using the Health-Related Quality of Life Questionnaire (HRQOL) and the Subjective Cognitive Questionnaire.

Result: 17 participants volunteered to participate. Participants between 41 and 80 years of age were included; 9 participants were 60 or younger and 8 participants were 61 or older. One-third of the participants had a formal diagnosis of MCI. 15 participants completed the program (84% completion rate); After 90 days 71% of the participants indicated that their memory has improved, 50% reported improvements related to remembering recent conversations and, making plans and completing tasks. The number of reported healthy days increased from 13.6; 13.1 (mean, SD) to 21.4; 8.5 (mean, SD) and the days of limited activity dropped from 9.8; 10.1 (mean, SD) initially to 3.4; 3.5 (mean, SD) at the end.

Conclusion: The digital delivery of a multidomain intervention was feasible and accepted by participants, shown by a high completion rate. A digital dementia prevention and neurorehabilitation program may help overcome implementation issues of cost and time-intensive in-person programs and may improve clinical outcomes.