Digital cognitive interventions for people with cognitive impairment

The growing ageing population has increased the demand in interventions to address cognitive impairment associated with ageing. Traditional non-pharmacological interventions targeting cognition rely on the direct contact between care staff and the service users. This service arrangement might be affected by a wide range of factors, such as the availability of a meeting venue, manpower, travel time, and even weather. Elderly with fewer resources, in particular, might find it hard to receive the services they need.

The interest in digital interventions is emerging in recent years. With the flexibility to be delivered at home with little supervision, computer-based activities provide more options in time and location compared to face-to-face interventions. Programmed intervention materials ensure consistency in the stimulus. For people who cannot receive direct service, computer-based cognitive intervention might be a potential alternative. Besides, compared with paper-and-pen interventions, a real-time feedback and score recording provided by computer programs make it easier to keep track on the training progress.

Computer training program is also effective in enhancing the cognitive performance of people with mild cognitive impairment. In a recent research on a home-based online training program, Lin et al. reported that the intervention significantly improved both trained and untrained domains in people with mild cognitive impairment. Participants spent one hour per day for four days a week over the course of six weeks on vision-based, speed-of-processing tasks. They received a cognitive test after the training, their performance in selected instrumental daily life activities were timed, and their test results were compared to people who spent the same amount of time on leisure games. The results showed that participants not only improved in trained process speed, but also showed significant improvement in working memory, and the time they needed to perform tasks of daily activities was significantly lower. It was suggested that the rich stimulation provided by computer speed-of-processing training might be able to help memory and functional abilities.

Computer-based cognitive interventions were also found to benefit the cognition in people with dementia. A computer game program developed to stimulate cognitive abilities was provided to 348 elderly in four European countries, among which 118 were people with dementia. Participants attended a 60-minute gaming session twice-weekly for 12-week. Comparing to people who were on waitlist, participants who received intervention showed improvement in overall cognition, verbal memory, and executive functions.
It is uncertain whether a short-term commitment in computer cognitive activities can delay the progression of dementia as it might require sustained training to achieve so. However, computer use might provide high motivation for continued learning. Older adults are able to engage in enjoyable activities without time constraints, and the experience of novel technology is reported to increase self-confidence. In the mean time, the use of technologies among older people in Hong Kong is increasing in rapid speed. In 2009, 10.6% of people aged 65 or above were reported to have knowledge of using personal computer. In 2014, the percentage of computer knowledge increased to 23.5%, and 24.3% of people aged 65 years or above were reported to have owned a smartphone within the previous year. As digital devices become more accessible, digital cognitive interventions will be likely to become more disseminative, with the hope to benefit elderly with weaker mobility, less social support, and even those who are admitted into long term care facilities.

References


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