Cognitively impaired older adults improve memory with mindfulness

Posted 01.22.2020 | by AMRA

A diagnosis of mild cognitive impairment (MCI) represents a degree of cognitive decline greater than what one might expect from normal aging but not severe enough to call for a diagnosis of dementia. While older adults with MCI show mild memory and word-finding difficulties, they remain capable of independent living. Nevertheless, they are at an increased risk for developing dementia, and clinicians are interested in developing ways to delay or prevent the onset or progression of dementia. MCI symptoms are often accompanied by decreased structural and functional brain connectivity, as diverse regions of the brain show greater difficulty in cross-communicating information and coordinating activity.

Prior research suggests that mindfulness practice enhances aspects of structural and functional brain connectivity in healthy adults. **Fam et al. [*Psychiatry and Clinical Neurosciences*]** examined whether mindfulness practice can also improve dynamic functional connectivity (changing patterns of functional connectivity over time) in older adults with MCI.

The researchers randomly assigned 47 meditation-naïve older adults (average age = 72 years; 72% female; 97% Chinese) diagnosed with MCI to a mindfulness awareness program or an active control. Mindfulness participants attended a series 12 weekly 40-minute group mindfulness training sessions and were encouraged to engage in daily home practice.

Control group participants attended a series of 12 weekly 40-minute talks on health-related topics including diet, sleep, exercise, and personal safety. Four mindfulness participants and 7 controls failed to complete the study, leaving a final analytic sample of 36 participants.

All participants underwent resting-state functional magnetic resonance imaging (fMRI) at baseline and three months later. Measures of the efficiency of brain information transmission were calculated. Higher efficiency is indicative of a shorter transmission time between disparate brain regions. Longer brain transmission times result from information taking a roundabout route to get from point A to point B. The more intermediate steps information has to take to get from one brain region to the another, the greater the chance information gets distorted or lost.

Participants were also assessed on neuropsychological measures of spatial analysis, auditory verbal learning, attention, short-term memory, processing speed, and semantic fluency.

The results showed that the mindfulness group significantly improved over time on auditory verbal learning recognition, while controls did not ($\eta 2=0.12$). Controls showed a significant decline in overall brain temporal efficiency, while mindfulness participants retained their level of overall brain temporal efficiency ($\eta 2=0.16$). In addition, controls showed specific significant declines in temporal efficiency involving the insula, cingulate gyrus and superior temporal gyrus, whereas mindfulness participants maintained their regional temporal efficiency.

The study shows that mindfulness training can slow or prevent degradation of neural functional connectivity over a three-month window, as well as improve auditory verbal recognition memory in older adults with mild cognitive impairment. Findings support the use of mindfulness as a potential means to slow or halt cognitive decline in adults with mild cognitive impairment, possibly preventing the onset or progression of dementia.

Reference:

Fam, J., Sun, Y., Qi, P., Lau, R. C., Feng, L., Kua, E. H., & Mahendran, R. (2020). Mindfulness practice alters brain connectivity in community-living elders with mild cognitive impairment. Psychiatry and Clinical Neurosciences.

[Link to study]