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The epidemiology of cognitive impairment among the aged in Brazil: Digital literacy as a health promotion strategy

Luiz Roberto Ramos
Center for the Study of Aging, Brazil

A population cohort of elderly people in Sao Paulo (EPIDOSO), ongoing since 1991, has provided data on the prevalence of MCI and dementia in a large urban center and was used to validate the Portuguese version of the Clinical Dementia Rating (CDR). A follow-up has shown that the CDR score 0.5 was the main independent predicting factor for dementia – hazard ratio (HR) 3.8 and 5.7 for those with sum of boxes ≤ 1 and > 1 respectively, comparing with CDR=0. Data from ELSA in the UK has shown that the use of internet physical activity independently associated with lower mortality, HR=0, 84 and 0, 61 respectively. A sample of those with a CDR 0 or 0.5 in EPIDOSO were randomly allocated to an intervention study using a digital literacy strategy to prevent cognitive decline measured by a neuropsychological battery. The intervention group had two sessions (80 min) per week of supervised activity with computers and internet. The control group received standard recommendations for memory exercise. The results have suggested that it can be a simple and low cost intervention at the primary care level, capable of preventing cognitive decline and improving quality of life of the aged.

lrr@uol.com.br

The aging brain

Sangeeta James
Jazan University, KSA

About 500 million people worldwide were at least 65 years old by 2006, according to the National Institute on Aging; that is 12 percent of the world's population and by 2030 this figure is expected to climb to 20 percent. Aging is inevitable as a person gets older changes occurs in all parts of the body including the brain. These changes in the brain occur as structural changes, chemical changes and neuropsychological changes. Certain part of the brain shrinks especially the prefrontal cortex and hippocampus both areas are important to learning, memory, planning and other complex activities. Changes in neurons and neurotransmitters affect communication between neurons. In certain brain regions, communication between neurons can reduced because white matter is degraded and lost. Changes in the brain's blood vessels occur. Blood flow can be reduced because arteries narrows and less growth of new capillaries occurs. Many other changes take place in the brain during aging; these changes may cause mild cognitive impairment, Alzheimer's disease, cerebrovascular disease and Parkinson's disease. The developmental trajectory of the brain through the entire life is affected by genetic, physical and psychological factors. As we age, our brain constantly recognize in response to new experiences. Even after adverse physical or psychological events such as a stroke or a loved one's sudden death there is an astonishing level of flexibility in the brain that enables an individual to compensate and adjust. Reaching a better understanding of aging and disease prevention strategies is critically important for maintaining brain health.