

September 2, 2011

New Study Finds Substantial Cognitive Decline in Very Old Age is not Normal

Study Challenges Widely Held Belief about Aging

BOSTON—New research published in the British journal *Age and Ageing* suggests that cognitive decline among older adults is not normal. In fact, two out of every three older adults experience only a trivial amount of decline in cognitive performance over a decade. The finding challenges widely held beliefs about cognitive decline and aging.

Researchers at Duke University, Rush University, and the Institute for Aging Research of Hebrew SeniorLife, an affiliate of Harvard Medical School, analyzed data from a large study involving more than 1,000 adults 56 to 102 years of age. Study participants were followed for up to 12 years, and their cognitive abilities were measured annually.

“The usual approach to these kinds of data is to extract a single estimate of average change over time for all people in the study,” says senior author Richard N. Jones, Sc.D., a senior scientist at the Institute for Aging Research. “What we did was assume that the population is a mix of people who age differently, at least in terms of cognitive performance.”

The finding has important implications for the care of seniors. Currently, in doctors’ offices and hospitals, assuming that cognitive decline is a part of normal aging can lead to clinicians writing off poor performance from an elderly patient as something that is to be expected. With an understanding that cognitive decline is not normal, however, poor performance can be investigated and preventable or reversible conditions, such as delirium, medication side effects, or vitamin deficiency can be properly addressed.

The researchers identified three groups of people, those experiencing slow, moderate and rapid cognitive decline. About two in three participants were in the slow decline group. “This was a study of cognitive performance, not IQ,” says Dr. Jones. “But one could think of our results in terms of an outcome that was scored like an IQ test, where 100 was average and the normal range is between 70 and 130.”

Take a 75-year-old person, with a score of 100 in 2005. In 2015, they would be expected to have a score of 94 if they were in the slow decline group. “That is not much of a change, and it is the group where most people fit,” says Dr. Jones.

About one in four participants were in the moderate decline group. A 75-year-old with a score of 100 in 2005 would be expected to have a score of 75 in 2015 if they were a member of this group. If they were experiencing



fast cognitive decline, a 75-year-old with a cognitive performance score of 100 in 2005 would be expected to have a score of 57 in 2015.

“People with moderate or fast cognitive decline, and their families, probably need medical or social support,” says Dr. Jones. The authors found that people in the moderate and fast decline groups had more Alzheimer’s disease neuropathology at autopsy than did people in the slow decline class.

“This research is important,” says Dr. Jones, an assistant professor of medicine at Harvard Medical School, “because the focus for seniors can be on living independently for as long as possible and putting less of a burden on our health-care system.”

The group hopes to extend the published research by finding a way to identify people who have a high probability of belonging to the moderate or fast decline groups, and to try to predict what factors influence when a person might switch from a slow decline group to a moderate or fast decline group. “It is important to replicate these findings in other studies,” says Dr. Jones.

The investigators used data from the Religious Orders Study, a long-term study of cognitive aging and neuropathology supported by the National Institutes of Health/National Institute on Aging, and conducted by Dr. David Bennett and colleagues at Rush University in Chicago. The researchers are grateful for the voluntary participation in the Religious Orders Study on the part of more than 1,000 nuns, priests and brothers from across the country. “Without the generosity of their gifts of time, effort and organ donation, we simply could not advance science in this or any other area of cognitive aging,” says Dr. Jones.

Replication will be possible in another study led by Dr. Bennett of the Rush Memory and Aging Project. This study involves more than 1,100 older people from across northeastern Illinois. Dr. Bennett and his team at the Rush Alzheimer’s Disease Center at Rush University Medical Center have recruited very large numbers of people and secured commitments for anatomical gifts to advance science. “It will be difficult to replicate in other cohorts, many of which have shorter follow-up and do not have the level of commitment to scientific research from participants. These studies are very rare and their participants are precious,” says Dr. Jones.

Scientists at the Institute for Aging Research seek to transform the human experience of aging by conducting research that will ensure a life of health, dignity and productivity into advanced age. The Institute carries out rigorous studies that discover the mechanisms of age-related disease and disability; lead to the prevention, treatment and cure of disease; advance the standard of care for older people; and inform public decision-making.

Founded in 1903, Hebrew SeniorLife, an affiliate of Harvard Medical School, is a nonprofit, nonsectarian organization devoted to innovative research, health care, education and housing that improves the lives of seniors. For more information, please visit www.hebrewseniorlife.org.

The project described above was supported by Award Numbers P30AG10161, R01AG15819, K01AG029336, R13AG030995, and P60AG008812 from the National Institute on Aging. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Aging or the National Institutes of Health.



Affiliated with
Harvard Medical School