

Paper published in *Journal of the Neurological Sciences*[§]

“Trajectories of Cognitive Function in Dementia-free Subjects: A RERF Adult Health Study”

Michiko Yamada, Reid D. Landes, Yasuyo Mimori, Yoshito Nagano, Hideo Sasaki

J Neurol Sci 2015 (April); 351(1-2):115-9

(doi: 10.1016/j.jns.2015.02.050)

Study Findings

Age is an important predictor of cognitive function. In the elderly subjects in our study, we found cognitive function level to be low and the degree of cognitive decline to increase rapidly with aging. Years of education affected cognitive function level but not the degree of age-associated cognitive decline. The effect of sex on cognitive function was insignificant. The higher cognitive function scores noted in the younger cohorts and men are attributable to more years of education in these groups.

Explanation

The effects of age, sex, education, and birth cohort on cognitive function were analyzed in a population of people who did not develop dementia during cognitive function monitoring from 1992 to 2011.

1. Objectives

The objectives were to investigate the relationship of age, sex, education, and birth cohort to cognitive function level and age-associated changes in cognitive function in a population that would most likely not progress to dementia (i.e., population not developing dementia during monitoring).

2. Methods

We followed the cognitive function of the 1538 Hiroshima participants in the RERF Adult Health Study who were 60 to 80 years of age in 1992 and did not develop dementia during monitoring through 2011. A standardized cognitive performance test, the Cognitive Ability Screening Instrument (CASI), was used to evaluate cognitive function. The data were analyzed with mixed-effects models.

3. Results

- (1) Cognitive function level was higher in the younger subjects and those with more education than in the older subjects and those with less education. The effect of sex was insignificant on cognition.
- (2) The degree of cognitive decline increased with age. Sex and education did not modify the degree of cognitive decline with age.
- (3) The higher cognitive function seen in the younger cohorts and men is attributable to greater education in these groups.

We found that age at examination and education affected cognitive function level and that age affected changes over time in cognitive function. These findings suggest the need to consider age and educational attainment when setting cognitive function cutoff values for dementia screening (i.e., values below which the person screened is considered to have cognitive decline). The findings also indicate that knowledge about the normal degrees of change in cognitive function in dementia-free people of a given age group will assist the early identification of dementia in people of that age group.

The Radiation Effects Research Foundation has studied A-bomb survivors and their offspring in Hiroshima and Nagasaki for more than 60 years. RERF's research achievements are considered the principal scientific basis for radiation risk assessment by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and for recommendations regarding radiation protection standards by the International Commission on Radiological Protection (ICRP). RERF expresses its profound gratitude to the A-bomb survivors and survivors' offspring for their cooperation in our studies.

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