

## Cognitive function\* among elderly survivors prenatally exposed to atomic bombings

Due to harmful effects of radiation on children prenatally exposed (in the mother's womb) to the 1945 atomic bombings of Hiroshima and Nagasaki, cognitive disabilities and decreased intelligence scores in a number of cognitive-function tests in childhood have been reported. In this study, RERF examined cognitive function in the population of prenatally exposed A-bomb survivors—in whom effects from radiation were not observed in childhood—after they reached old age.

As a study method, cognitive-function tests were conducted for a total of 303 participants, made up of prenatally exposed people and their controls (those in the womb at the time of the bombing whose mothers were far enough from the hypocenter [at least 3 km] to be considered unaffected by A-bomb radiation), from among the RERF Adult Health Study (AHS)\*\* population during the period from 2011 to 2015. For exposure dose, maternal uterine doses estimated by dosimetry system 2002 were used. The association between cognitive function and radiation dose was assessed using a statistical method called [regression analysis](#).

As a result of analysis, no participants appeared to have cognitive impairments during childhood or dementia at the time of examination. Significant radiation effects on cognitive function were also not observed, either overall or when compared by gestational week at the time of exposure. On the other hand, a clear difference in cognitive function regarding educational level was observed, but it was not associated with radiation dose.

In conclusion, no significant radiation effects were found on cognitive function among 65–70-year-old participants who were prenatally exposed to the bombings and did not exhibit marked cognitive deterioration in childhood. However, since the study was based solely on results from RERF's AHS, there remain challenges to establishing its results as a general conclusion.

\* Cognitive function indicates such mental skills as memory, judgment, and understanding.

\*\*The Adult Health Study (AHS) is a clinical research program based on biennial health examinations. The study's major objective is to investigate disease incidence and other long-term health effects of A-bomb radiation. About 20,000 participants have been followed since 1958.

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RERF's objective with this brief outline is to succinctly explain our research for the lay public. Much of the technical content of the original paper has been omitted. For further details about the study, please refer to the full paper published by the journal.