

# Pregnancy history may be tied to Alzheimer's disease

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A woman's history of pregnancy may affect her risk of Alzheimer's disease decades later, according to a study published in the July 18, 2018, online issue of *Neurology*, the medical journal of the American Academy of Neurology. The study found that women who give birth to

five or more children may be more likely to develop Alzheimer's disease than women who have fewer births. The study also showed that women who have had an incomplete pregnancy, whether through miscarriage or abortion, are less likely to develop Alzheimer's disease in the future than women who have never had an incomplete pregnancy.

"Estrogen levels double by the eighth week of pregnancy before climbing to up to 40 times the normal peak level," said study author Ki Woong Kim, MD, Ph.D., of Seoul National University in Seoul, South Korea. "If these results are confirmed in other populations, it is possible that these findings could lead to the development of hormone-based preventive strategies for Alzheimer's disease based on the hormonal changes in the first trimester of pregnancy."

For the study, researchers combined the data from two, independent population-based studies from Korea and Greece, with a total of 3,549 women. Women who were currently taking hormone replacement therapy and those who had a hysterectomy or surgery to remove the ovaries were not included in the study.

The women, who were an average age of about 71 at the start of the study, provided information on their reproductive history. They took the diagnostic examination after an average of 46 years from their first childbirth. During that time, the participants took tests of their memory and thinking skills to see whether they had developed Alzheimer's disease or its precursor, [mild cognitive impairment](#). A total of 118 women developed Alzheimer's disease and 896 women developed mild cognitive impairment.

Women who had given birth to five or more [children](#) were 70 percent more likely to develop Alzheimer's disease than women who gave birth to fewer children. Of the 716 women with five or more children, 59 developed Alzheimer's disease, compared to 53 of the 2,751 women

with fewer children. The results stayed the same after researchers adjusted for other factors, such as other medical conditions, use of [hormone replacement therapy](#) and breastfeeding.

Women who had experienced an incomplete pregnancy were about half as likely to develop Alzheimer's disease as women who had never had an incomplete pregnancy. Of the 2,375 women who had an incomplete pregnancy, 47 developed Alzheimer's [disease](#), compared to 71 of the 1,174 women who never had an incomplete pregnancy.

On the tests of memory and thinking skills, women who had five or more children had lower scores than women who had fewer children. On a test where the maximum score is 30 points and scores of 24 or more indicate normal thinking skills and scores of 19 to 23 indicate mild cognitive problems, the women with five or more children had average scores of about 22 points, compared to almost 26 points for the women with fewer than five children.

Women who had one or more incomplete pregnancies had higher test scores than women with no incomplete pregnancies, regardless of how many children they had. For example, among women with five or more children, those with no incomplete pregnancies had average scores of about 22, compared to scores of more than 23 points for those with one or more incomplete pregnancy.

"It's possible that the modestly raised levels of estrogen in the first trimester of [pregnancy](#) are within the optimal range for protecting [thinking skills](#)," Kim said.

A limitation of the study is that incomplete pregnancies may be underestimated either because abortions were not reported or because [women](#) may not have realized that they had miscarriages. Another limitation is that the researchers did not collect information on the

timing and cause of incomplete pregnancies.

Provided by American Academy of Neurology

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