

## Both low and high levels of hemoglobin linked to increased risk of dementia

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Having either low or high levels of hemoglobin in your blood may be linked to an increased risk of developing dementia years later, according to a study published in the July 31, 2019, online issue of *Neurology*, the medical journal of the American Academy of Neurology.

Hemoglobin is the protein in [red blood cells](#) responsible for transporting oxygen. Very low hemoglobin is called [anemia](#).

"With around 10 percent of people over age 65 having anemia in the Americas and Europe and up to 45 percent in African and southeast Asian countries, these results could have important implications for the burden of [dementia](#), especially as the prevalence of dementia is expected to increase threefold over the next decades, with the largest increases predicted in the countries where the anemia rate is the highest," said study author M. Arfan Ikram, Ph.D., of Erasmus Medical Center in Rotterdam, the Netherlands.

The study involved 12,305 people with an average age of 65 who did not have dementia. Participants' hemoglobin levels were measured at the start of the study. Overall, 745, or 6 percent, of the participants had anemia.

The participants were followed for an average of 12 years. During that time, 1,520 people developed dementia. Of those, 1,194 had Alzheimer's disease.

The researchers found that the people with anemia were 41 percent more likely to develop Alzheimer's disease and 34 percent more likely to develop any type of dementia than those who did not have anemia. Of the 745 people with anemia, 128 developed dementia, compared to 1392 of the 11,560 people who did not have anemia.

People with high levels of hemoglobin were also more likely to develop dementia. High levels can also be a sign of a health problem. The study participants were divided into five groups based on their hemoglobin levels. Compared to the middle group, the group with the highest levels were 20 percent more likely to develop dementia. Those in the lowest group were 29 percent more likely to develop dementia than those in the

middle group.

The results stayed the same after researchers adjusted for other factors that could affect the risk of dementia, such as smoking, [high blood pressure](#), high cholesterol and alcohol use.

Ikram noted that the study does not prove that low or high hemoglobin levels are a factor in causing dementia; it only shows an association.

"More research is needed to determine whether [hemoglobin](#) levels play a direct role in this increased risk or whether these associations can be explained by underlying issues or other vascular or metabolic changes," he said.

A limitation of the study was that the participants were primarily of European descent, so the results may not apply to all populations. For example, Ikram noted that a genetic mutation that is common among people of African descent makes people more likely to have anemia, and that the prevalence of malaria and sickle cell disease, which can contribute to anemia, varies around the globe.

Provided by American Academy of Neurology

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