

How well-controlled type 2 diabetes is may play a part in dementia risk, says study

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It has long been known that type 2 diabetes is associated with a higher risk of developing dementia disease. However, as for the risk of developing cognitive impairment, a preclinical or very early phase of

dementia, the research has been contradictory.

Followed for twelve years

Researchers at Karolinska Institutet have followed over 2,500 individuals over the age of 60 for twelve years. None of the participants had a dementia diagnosis when the study began, but over 700 of them had cognitive impairment (preclinical dementia). The remainder, over 1,800 individuals, had no cognitive impairment. The group measured long-term levels of blood glucose (HbA1C) and CRP, an [inflammation](#) marker. At the start of the study, 8.6 percent of the participants had type 2 diabetes and approximately one in three had prediabetes.

After twelve years, a number of participants showed a decline in cognitive faculties. Almost 30 percent had developed cognitive impairment. Of those who had preclinical dementia at the start of the study, 20 percent had developed dementia. The researchers were able to conduct nuanced analyses of the part played by type 2 diabetes in the development of the disease and found that the important factor was how well-controlled the diabetes was, not the presence of the diabetes itself. According to the treatment guidelines for older adults, HbA1C of over 7.5 percent is considered poorly controlled diabetes. In the study, people with poorly controlled diabetes disease, compared to people without diabetes, were twice as likely to develop preclinical dementia and three times more likely to deteriorate from preclinical dementia to dementia disease.

Prevention is vital

The researchers also examined the risk of impaired cognitive health in participants who had type 2 diabetes and comorbid heart disease, in this case atrial fibrillation, heart failure or coronary artery disease. Heart disease can be a complication in type 2 diabetes and an indication of

more severe diabetes disease. The participants who had type 2 diabetes and concurrent heart disease had twice the risk of developing preclinical dementia or dementia disease compared with those who had neither type 2 diabetes nor heart disease. However, having either type 2 diabetes or heart disease was not associated with a higher risk.

"We didn't find that type 2 diabetes per se entails a higher risk of developing cognitive impairment or of cognitive impairment worsening to full dementia," says Abigail Dove, doctoral student at the Aging Research Center at the Department of Neurobiology, Care Sciences and Society, Karolinska Institutet. "What matters is how well-controlled the diabetes is. Since there is currently no cure for dementia, prevention is vital, and here we have evidence that this can be done through the careful control of diabetes. Our results can also possibly explain why earlier studies have produced conflicting results, since few of them factor in how well-controlled the participants' diabetes was."

Elevated CRP levels

It is common in type 2 diabetes for there to be chronic inflammation in the body. The same applies to many cardiovascular diseases and dementia. In this study, the researchers had access to the inflammation marker (CRP) and were able to observe that people with type 2 diabetes and elevated CRP levels had a three-times higher risk of passing from preclinical dementia to [dementia](#) disease.

"It appears as if people with higher levels of CRP had faster progressing cognitive impairment," says Dove. "Inflammation seems to play an important part in this, but more studies are needed to better understand its role."

More information: Abigail Dove et al, The impact of diabetes on cognitive impairment and its progression to dementia, *Alzheimer's &*

Dementia (2021). [DOI: 10.1002/alz.12482](https://doi.org/10.1002/alz.12482)

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