

## Prediabetes a Risk for Cognitive Decline and Dementia

Results from the UK Biobank study, one of the largest cohorts of middle-aged adults to provide data for HbA1c across the glycemic spectrum as well as measures of cognitive function, neuroimaging, and dementia, were [recently published](#) in the journal *Diabetes, Obesity & Metabolism*. The authors report that both prediabetes and diabetes were associated with an increase in risk for vascular dementia and cognitive decline, while diabetes was also associated with an increase in risk for all-cause and Alzheimer's dementias. This study adds to the growing [body of research](#) pointing to diabetes as only one part of a spectrum rather than a distinct disease, as well as the importance of addressing any impairments in glucose regulation as early as possible.

The nearly 500,000 participants in this study were categorized in one of the following five groups: low HbA1c (mean 5.1), normoglycemic (mean 5.6), prediabetes (mean 6.2), known diabetes (mean 7.0), or unknown (?) diabetes (mean 7.5). Prediabetes was associated with a 54% increased (adjusted) risk for vascular dementia, while diabetes carried a nearly 3-fold higher risk. Prediabetes and diabetes had a similar increase in risk for cognitive decline (42% and 39%, respectively), while diabetes had a nearly 2-fold higher risk for both all-cause and Alzheimer's dementias. (DSR: I think these stats are going to lose the audience. They sound important but are not easy to grasp, maybe partly because there are not apples-to-apples comparisons. Also, on the cognitive decline there is no explanation as to why prediabetes appears worse than diabetes.)

Antihypertensive medication use appeared to be associated with ~~account for some of the~~ excess risk found between prediabetes and vascular dementia. The authors suggest rather than an adverse effect of medication, this is more likely an indicator of hypertension that had been untreated for far too long, again emphasizing the importance of optimizing both blood pressure and glucose/insulin regulation early, rather than waiting for overt disease to progress.

There also was an apparent benefit in the low HbA1c group; individuals in this group had *greater* hippocampal volume and *lower* white matter hyperintensity (WMH) volume compared with normoglycemic individuals. Hippocampal atrophy is a [consequence of hyperglycemia](#) linked to cognitive decline and memory loss, while WMH volume is a tentative (DSR: tentative?) [indicator of neurological](#) decline. In sharp contrast, hippocampal volume *declined* approximately 80mm<sup>3</sup> among diabetics compared to those with normoglycemia, in contrast to the 12mm<sup>3</sup> increase found among those in the low HbA1c group.

An additional, but equally disturbing finding from the same cohort (study sample) showed a nearly [2-fold increase](#) in cardiovascular disease risk among prediabetics (in a separate analysis of this same cohort), the advantage to achieving healthy glucose control sooner than later could not be clearer.

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