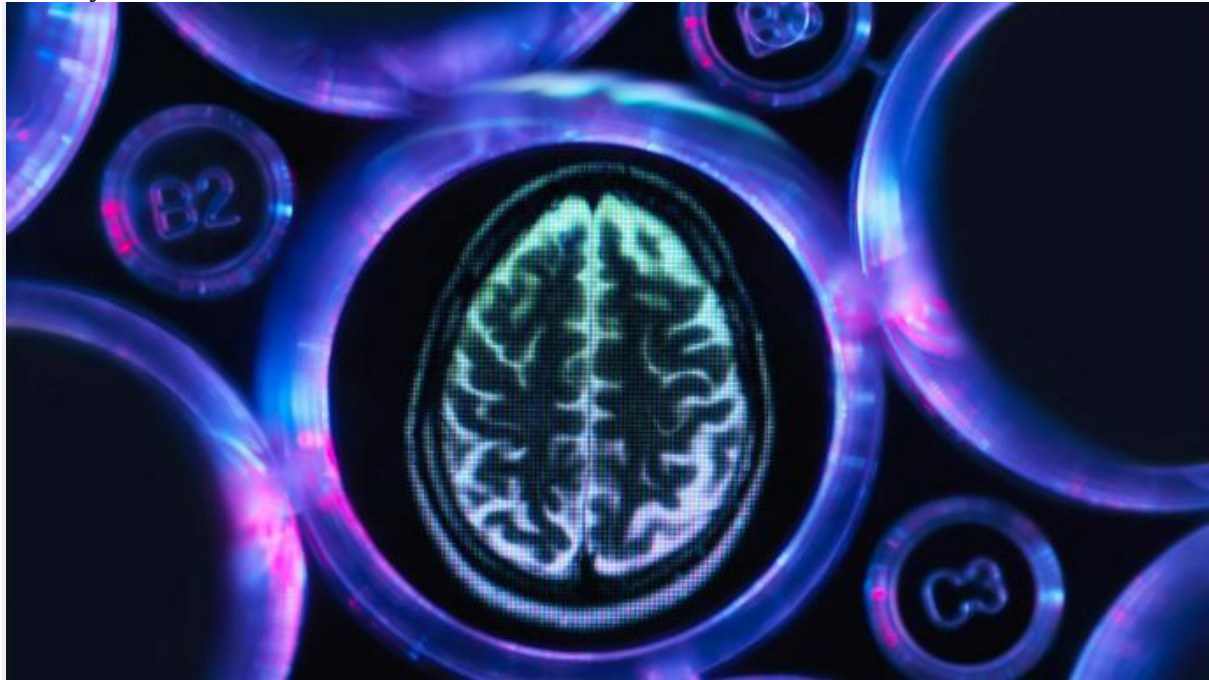


Belly fat ‘linked to brain shrinkage’ and could raise risk of Alzheimer’s

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Researchers used magnetic resonance imaging to determine brain volumes for white brain matter GETTY IMAGES

Scientists may have come up with a new reason to slim: to stop your brain shrinking.

A study published in the journal *Neurology* concluded that extra body fat, especially around the middle, may be linked to brain shrinkage, which has been associated with a higher risk of memory decline and degenerative conditions such as Alzheimer’s.

Mark Hamer of Loughborough University, who led the study, said that previous research on whether extra body fat was detrimental to brain size had been inconclusive.

The study looked at more than 9,600 people across Britain, with an average age of 55. Of that group, 19 per cent were obese, according to their body mass index (BMI), calculated as weight in kilograms divided by height in metres squared. The researchers also measured

waist-to-hip ratio, by dividing waist circumference by hip circumference. People with bigger bellies compared with their hips have higher ratios. The researchers also measured overall body fat and surveyed participants about their health.

They used magnetic resonance imaging to determine brain volumes for white brain matter, which contains nerve fibre bundles that connect brain regions, and grey matter, which contains most of the brain's nerve cells and includes regions involved in muscle control and sensory perception.

After adjusting for factors that could affect brain volume, such as age, physical activity, smoking and high blood pressure, researchers found that a high BMI alone was linked to slightly lower brain volumes.

The effect increased in those subjects who had a high BMI coupled with a high waist-to-hip ratio. A high waist-to-hip ratio was taken to be above 0.8 for women and 0.9 for men.

The subjects with a high BMI and a high waist-to-hip ratio had the lowest average grey matter volume, of 786 cubic centimetres.

Those of healthy weight had an average grey matter brain volume of 798 cubic centimetres. The 514 people with a high BMI but without a high waist-to-hip ratio had an average gray matter brain volume of 793 cubic centimetres.

Only a few dozen subjects were underweight, too small a sample to analyse. The researchers found no significant differences in white matter brain volume.

The study was not able to separate cause and effect. "It's unclear if abnormalities in brain structure lead to obesity or if obesity leads to these changes in the brain," Professor Hamer said, "but it may be possible that someday regularly measuring BMI and waist-to-hip ratio may help determine brain health."

Rosa Sancho, the head of research at Alzheimer's Research UK, said: "While BMI can be a crude measure and not necessarily a good

indication of our general health, this research suggests that taking a person's waist-to-hip ratio into account may provide additional information that could be relevant to the health of the brain."

Dr Sancho added: "As well as maintaining a healthy weight, the best current evidence suggests that staying mentally and physically active, not smoking, only drinking in moderation, eating a healthy diet, and keeping blood pressure and cholesterol in check can help to support brain health and keep our dementia risk as low as possible."