Mediterranean diet may protect your brain in old age, new finding suggests

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Credit: AI-generated image (disclaimer)

Amid the contention about diets and detoxes, sugar and fats, there is at least general agreement that a Mediterranean diet – fruit, vegetables, olive oil, grains, fish – is a good thing. Now, a new study based on brain imaging in over 400 people seems to show that we have even more reason to celebrate this diet and, more importantly, to stick to it. The

researchers found that over a three-year period – from the age of 73 to 76 – adherence to a Mediterranean diet is associated with a reduction in the inevitable loss of brain volume that occurs with age.

The difference in volume loss associated with the diet is not large – about 2.5ml (half a teaspoon) – and it only accounts for a very small fraction of overall volume variability. But, who's to say what you might achieve with that extra half teaspoon of brain? If these results prove reliable, there is surely an incentive to stock up on family-sized bottles of olive oil.

We already have evidence that the Mediterranean diet, and particularly higher fish and lower meat consumption, is associated with increased brain size. But it's hard to interpret associations between lifestyle and the brain because a causal relationship is equally credible in both directions. That is to say, if I eat healthily and have a big brain, it might be that my diet is good for my brain or my big brain is good at helping me maintain my diet. Or there may be something that I haven't measured, something that influences my brain and my diet separately. For example, if I live a comfortable, affluent, stress-free life perhaps this is simultaneously good for my brain and facilitates my healthy diet. If so, finding a healthy association between diet and a big brain does not mean that they are directly related.

These are critical considerations. Citing evidence to support lifestyle changes demands that one knows the precise lifestyle changes needed and what the precise benefits may be. This is why randomised control studies are so appealing. If you have two well-matched groups, subject them two controlled dietary interventions, and do a before and after analysis, you are on firmer ground when asserting that the dietary intervention has had a direct role in producing the changes.

While the researchers in this latest study did not carry out a randomised

trial, however, they have nevertheless provided important insights by gathering repeat data, allowing them to compare brain size not in terms of absolute values but of changes across time.

At age 70, participants gave a detailed report on their dietary habits. On this basis, they could be characterised as "high" and "low" in their adherence to a Mediterranean diet. Three years later, they had a baseline brain scan and, a further three years afterwards, brain changes from this baseline were assessed with a second brain scan, so every participant served as their own control. This is a powerful approach and, as well as using the initial scans to confirm that brain volume is indeed greater in people who follow the Mediterranean diet more closely, they determined that, between the ages of 73 and 76 years, there was a greater loss of brain volume for those with low adherence to the diet. This remained significant when taking into account a number of highly relevant factors relating to age, sex, health, body weight, education and aspects of psychological functions.

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Interpret with caution

These findings are consistent with the heartening possibility that the right diet has a genuine impact on brain tissue loss. But the authors are cautious, and rightly so. To begin with, their results are not entirely consistent with previous studies of the diet's effects on the brain. They failed to find, for example, previously-observed effects of higher fish and lower meat consumption. It becomes hard to know whether it is the diet as a whole or specific components of it that could exert the positive effect on brain volume.

The analysis also shows that cognitive function did not significantly differ across the diet styles, raising the question of just how useful it might be to alter brain loss at this scale.

Also, as the researchers acknowledge, they carried out several statistical tests looking for significant associations – ones that have a low p-value (the probablility of finding this difference when there is not a true difference in brain size) – and from this they found the reduction in brain loss. But if you take all of these searches into account, picking out a significant association (brain volume) from non-significant ones (for example, a lack of change to the volume of grey matter), you increase your chances of accidentally attributing significance to something that occurs just by chance.

Although the authors have made nice attempts in their design and analysis in ruling out potentially complicating factors, there is still necessarily an ambiguity over cause and effect here. They previously

showed in another study that an apparent relationship between Mediterranean diet and later-life cognitive functions could actually be accounted for by childhood IQ.

While the current analysis ruled out a similar explanatory role of a more constrained IQ measure and of a set of tests of mental function, we must bear in mind the possibility that there are other factors, unaccounted for here, that could separately relate to dietary adherence and brain volume and would therefore produce an illusion of a dietary influence on brain. For example, it's not clear whether excessive alcohol consumption might associate with a non-Mediterranean diet. Or perhaps levels of physical activity could also play a part.

But, at the same time, there are reasons why this finding – that adherence to a Mediterranean diet results in less brain loss in the elderly – may be even stronger than the numbers show. Participants were split according to the general style of their diet. So some in the high and low diet groups would actually have been quite near the mid-point and so less likely to show strong effects. One might imagine that, if you took two groups who more purely exemplified the Mediterranean and non-Mediterranean diets, there could be even bigger effects on brain volume. We shall see. In any case, keep eating the legumes. Even if it turns out that the Mediterranean diet doesn't stop your brain from shrinking, there are still plenty of other benefits to be had.

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