

## Letter to the Editor

# Dietary intervention and cognitive performance in patients with type 2 diabetes

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The risk for dementia increases in patients with type 2 diabetes mellitus (T2D), and dietary factors contribute to incident dementia and T2D, respectively<sup>(1,2)</sup>. Tay *et al.*<sup>(3)</sup> described a randomised-controlled trial to compare the long-term effect of a very low-carbohydrate, low-SFA (LC) diet with a high-carbohydrate, low-fat (HC) diet on cognitive performance in 115 obese patients with T2D. They reported that there were no significant changes in cognitive performance scores between LC and HC groups. In addition, both LC diets and HC weight-loss diets in combination with exercise training had similar effects on cognitive performance. By considering the efficacy of LC diet-only approach, the authors recommended LC diet for the management of weight and T2D. I have some concerns about their study.

First, the same research group examined the long-term effects of LC diet and HC diet with a supervised exercise programme on psychological health in 115 obese patients with T2D<sup>(4)</sup>. The overall weight loss was 9.5 kg on average, and psychological well-being scores improved significantly by either a LC or a HC diet intervention in combination with exercise training. As Tay *et al.* did not use psychological *variables* for their analysis, cognitive performance and psychological health should be evaluated simultaneously in relation to dietary contents in future studies. Furthermore, I speculate that the improvement of T2D by LC diet or HC diet plus exercise would lead to an improvement in cognitive performance and/or psychological health in patients with T2D according to the report of Brinkworth *et al.*<sup>(4)</sup>. In contrast, Cezaretto *et al.*<sup>(5)</sup> reported that there was no significant reduction in depression scores by lifestyle interventions in subjects with the pre-clinical stage of T2D; therefore, the hypothesised inter-relationship among depression, lifestyle factors and T2D remains unclear.

Second, Kok *et al.*<sup>(6)</sup> conducted a meta-analysis for psychological interventions in patients with T2D and depression. There was no significant effect of psychological interventions on T2D and depression. Adjustment for psychological factors to confirm the net effect of LC diet and exercise on cognitive performance in patients with T2D should be performed in future studies.

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