Journal club: You are what – and when – you eat

In our diabetes service, we use the Alphabet strategy (Upreti et al, 2021) for diabetes care. This checklist approach is based on **A**dvice, **B**lood pressure, **C**holesterol and **C**KD prevention, **D**iabetes control, **E**yes, **F**eet and the concept of **G**uardian drugs. The team is always on the look-out for additional ideas that we can employ in our clinics to reduce complications and improve the lives of our patients with diabetes.

One of our general approaches to weight loss is simply to advise the patient to have a balanced diet in terms of protein content, small amounts of fat, and at least five to seven portions of fruits and vegetables, but to halve the carbohydrate intake. The research study undertaken by Hu et al (2023) supports this. The authors followed up 10 101 people with type 2 diabetes for over 13 years on average, and observed that lower-carbohydrate diets (LCDs) were associated with reduced total mortality and cardiovascular disease. However, there were no significant reductions with animal protein/fat-based LCDs or unhealthy LCDs (i.e. those with high ratios of animal fats/proteins and low-quality carbohydrates).

In a similar vein, the study by Chen et al (2023) used data from three large US cohorts (total 198 366 people), with diet repeatedly evaluated every 2–4 years over 30 years of follow-up. There was a significant and positive association between total ultra-processed food intake and risk of developing type 2 diabetes (an increased risk of 46% comparing the highest to lowest quintiles of intake).

Staying on the theme of advice to patients, the study by Parr et al (2023) was interesting as it suggests that time-restricted eating (TRE) patterns have the potential to improve glycaemic control. The authors examined the effect of TRE (restricting eating to a 9-hour window) on at least 5 days a week. Only 19 participants, with an HbA_{1c} of 60 mmol/mol and BMI approximately 34 kg/m^2, were studied in a non-randomised trial. TRE did not alter total daily calorie intake, macronutrient composition or physical activity. The daily eating window was reduced by 2 hours 35 minutes compared with baseline, and the mean 24-hour glucose concentration decreased in the 4-week TRE period. The participants also spent 10% more time in range (3.9–10.0 mmol/L) and 10% less time above range (>10.0 mmol/L). This is conclusive evidence, albeit in a small study, that adhering 5 days per week to a 9-hour TRE schedule improves glycaemic control in adults with type 2 diabetes, independent of changes in physical activity or dietary intake.

I absolutely agree with the NICE guidelines on managing patients with SGLT2 inhibitors (within licensed indications or simply in those with a QRISK2 score of ≥10%). Many of our patients are on GLP-1 receptor agonists (GLP-1 RAs) as well. It is reassuring to see new evidence that the latter agents have the potential to reduce ischaemic cerebrovascular events, rather than just HbA_{1c} and body weight. Banerjee et al (2023) analysed data from 28 randomised controlled trials of GLP-1 RAs and concluded that adverse cerebrovascular outcomes were reduced significantly by 17% compared with placebo and active comparators. Specifically, the benefits were statistically significant for dulaglutide and subcutaneous or oral semaglutide.

I would like to finish with a study that reported on the importance of targeting multiple risk markers in patients with type 2 diabetes by Tye et al (2023). This was a post hoc analysis of the well-known CANVAS cardiovascular outcome trial of canagliflozin. In this study, "clinically relevant improvements in cardiovascular risk factors" were defined as reductions in HbA_{1c} of ≥1.0% (approximately 11 mmol/mol), systolic blood pressure ≥10 mmHg, body weight ≥3 kg, uACR ≥30%, uric acid ≥0.5 mg/dL, or an increase in haemoglobin of ≥1.0 g/dL from baseline to week 26. Participants were categorised according

Vinod Patel
Professor in Clinical Skills, Warwick Medical School, and Honorary Consultant Physician, George Eliot Hospital NHS Trust, Nuneaton

Citation: Patel V (2023) Journal club: You are what – and when – you eat. *Journal of Diabetes Nursing* **27**: JDN291

"Switching to a healthy low-carbohydrate diet pattern (with minimal ultra-processed foods) after type 2 diabetes diagnosis is associated with lower overall, cardiovascular and cancer-related mortality."

to the number of improvements in these cardiovascular risk markers.

There were 9487 participants (93.5% of the total CANVAS/CANVAS-R population) with available data at baseline and week 26. After week 26, the adjusted risk reduction associated with four or more improvements in the above risk markers versus no risk marker improvement were 33% for composite cardiovascular events, 42% for heart failure or cardiovascular death, and 51% for composite kidney outcomes. Significant trends of decreased hazard ratios for all three outcome types were observed as the number of risk marker improvements increased.

The take-home messages from these papers, then, are:

- Switching to a healthy low-carbohydrate diet pattern (with minimal ultra-processed foods) after type 2 diabetes diagnosis is associated with lower overall, cardiovascular and cancer-related mortality.
- Consider time-restricted eating.
- GLP-1 RAs do reduce strokes.
- Improvements in multiple risk markers are associated with a reduced risk of cardiovascular and kidney outcomes in comparison to fewer or no risk marker improvements.

So carry with the multifactorial intervention in your patients with diabetes. The Alphabet strategy works! ■

Banerjee M, Pal R, Mukhopadhyay, Nair K (2023) GLP-1 receptor agonists and risk of adverse cerebrovascular outcomes in type 2 diabetes: a systematic review and meta-analysis of randomized controlled trials. *J Clin Endocrinol Metab* 17 Feb [Epub ahead of print]

Chen Z, Khandpur N, Desjardins C et al (2023) Ultra-processed food consumption and risk of type 2 diabetes: Three large prospective U.S. cohort studies. *Diabetes Care* 28 Feb [Epub ahead of print]

Hu Y, Lui G, Yu E et al (2023) Low-carbohydrate diet scores and mortality among adults with incident type 2 diabetes. *Diabetes Care* **46**: 874–84

Parr EB, Steventon-Lorenzen N, Johnston R et al (2023) Time-restricted eating improves measures of daily glycaemic control in people with type 2 diabetes. *Diabetes Res Clin Pract* **197**: 110569

Tye SC, Oshima M, Arnott C et al (2023) The importance of targeting multiple risk markers in patients with type 2 diabetes: A post-hoc study from the CANVAS programme. *Diabetes Obes Metab* **25**: 1638–45

Upreti R, Lee JD, Kotecha S, Patel V (2021) Alphabet strategy for diabetes care: A checklist approach in the time of COVID-19 and beyond. *World J Diabetes* **12**: 407–19