

# Journal club: Ideas for diabetes care – something borrowed, something blue

I am sure we have all noticed that the wedding season is drawing to a close. The famous tradition “*Something old, something new, something borrowed, something blue, and a sixpence in your shoe*” is invoked at many weddings to inspire good luck to follow the happy couple. In this Journal Club, it can also remind us of the evidence-based interventions that we must maintain, or implement, in our diabetes clinics and in communities at high risk of diabetes.

The “something old” is physical activity. In the research conducted by [Balducci et al](#) (2023), an increase in physical fitness, as measured by maximum oxygen uptake and by lower body muscle strength, predicted an improvement in clinical parameters that we accept lead to reduced risk of significant diabetes complications. These included reductions in HbA<sub>1c</sub> and blood pressure and an increase in HDL-cholesterol. The good news is that it was an increase in physical fitness per se that led to a better cardiometabolic risk profile, independently of changes in BMI, daily amount of moderate-to-vigorous physical activity and daily sedentary time.

Although not quite in the order of the rhyme, I would next like to offer you “something blue”, blue being the main colour in the Obesity UK logo and solidarity wrist band. Again, there is good news. In one of what must be several thousands of publications from [Kamlesh Khunti et al](#) (2023), the UK CPRD GOLD database was used to determine whether a change towards a more optimal weight is associated with clinical benefits or whether, once the excess weight has been put on, there is no prospective of improved outcomes even if weight is lost. It was found that a median weight loss of 13%, which is achievable, was associated

with a reduction in obesity-related complications such as type 2 diabetes itself, sleep apnoea, hypertension, dyslipidaemia and osteoarthritis.

The “something borrowed” is the (admittedly tortuous) allusion to the fact that, in the research report from Beijing, [Song et al](#) (2023) used data from the English Longitudinal Study of Aging. The data on sleep quality and duration came from 5728 participants, all of whom were free of type 2 diabetes at the start of the study. Over a median follow-up of 8 years, 7.2% of participants developed diabetes. Those with poor quality of sleep were found to have a 45% increased risk of progression to type 2 diabetes. Too little ( $\leq 5$  hours) or too much ( $\geq 9$  hours) sleep was also associated with increased risk. The headline results were similar using different models of adjustment for covariables which included age, gender, BMI, education level, occupation, physical activity, alcohol consumption, smoking and previous cardiovascular disease. There is little doubt that we should be stressing the importance of good-quality sleep in general and, based on this research, specifically as an important risk factor for type 2 diabetes.

The “something new” was a little easier to glean from the recent research outputs. There are several meta-analyses now on the beneficial effects of the relatively new classes of drug in our diabetes care dispensaries, SGLT2 inhibitors and GLP-1 receptor agonists. There is considerable evidence for each class on its own, but what about when the two are combined? This is a pertinent question given the financial burden of these agents in most health economies. The research conducted by [Riley et al](#) (2023) was a retrospective cohort analysis of over 2.2 million people with type 2 diabetes. Over a 5-year period, compared



**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: Ideas for diabetes care – something borrowed, something blue. *Journal of Diabetes Nursing* 27: [Early view publication]

**“Vitamin D3 supplementation is of benefit, but only if the supplements are taken, and especially in those with vitamin D deficiency.”**

with patients who were on neither drug, these newer agents were both found to reduce all-cause mortality (SGLT2 inhibitors by 51% and GLP-1 RAs by 53%); however, when administered together, the two agents reduced mortality by 75%. Similar significant results were found for diabetes complications such as heart failure, stroke, lower limb amputation, chronic kidney disease, myocardial infarction and hospitalisation. So fortunately or unfortunately, depending on your outlook, there appears to be synergy of clinical benefit rather than overlap.

Finally, vitamin D supplementation and treatment remains controversial as the evidence is conflicting. But powerful meta-analyses have emerged from the D2d Research Group. The original report from this group showed no evidence of benefit with vitamin D supplementation in people with ADA-defined prediabetes (Pittas et al, 2019). However, these participants were not selected for vitamin D deficiency. In this more recent report by [Hsia et al](#) (2023), participants with distinct vitamin D3 deficiency (<12 ng/mL at baseline) saw an 83% reduction in progression to diabetes. This study specifically analysed participants who were adherent to the original D2d protocol and who were not prescribed diabetes/weight loss medications, which might have obscured some of the effects of the intervention. In comparison to control subjects in this randomised controlled trial, the intervention group had a 16% reduced risk of progression to new-onset type 2 diabetes and were more likely to revert to normal glucose regulation over a median follow-up of 1.9 years.

So vitamin D3 supplementation is of benefit, but only if the supplements are taken, and especially in those with vitamin D deficiency. Have I conveniently glossed over the “sixpence in your shoe”? No, I have not! The supplementation in this study was 4000 units of vitamin D3 in a single soft-gel capsule. A sixpence is worth 2.5 pence. The cost of a vitamin D3 soft-gel capsule, in 2023, is 2.74 pence. This is about the same, I think you will agree, allowing for a little inflation. ■

Balducci S, D’Errico V, Haxhi J et al; Italian Diabetes and Exercise Study 2 (IDES\_2) investigators (2019) Effect of a behavioral intervention strategy on sustained change in physical activity and sedentary behavior in patients with type 2 diabetes: The IDES\_2 randomized clinical trial. *JAMA* **321**: 880–90

Hsia DS, Nelson J, Vickery EM et al; D2d Research Group (2023) Effect of vitamin D on regression to normal glucose regulation and individual glycemic measures: A secondary analysis among participants adherent to the trial protocol in the randomized clinical trial vitamin D and type 2 diabetes (D2d) study. *Diabetes Res Clin Pract* **202**: 110792

Khunti KF, Schnecke V, Haase CL et al (2023) Weight change and risk of obesity-related complications: A retrospective population-based cohort study of a UK primary care database. *Diabetes Obes Metab* **25**: 2669–79

Pittas AG, Dawson-Hughes B, Sheehan P et al; D2d Research Group (2019) Vitamin D supplementation and prevention of type 2 diabetes. *N Engl J Med* **381**: 520–30

Riley DR, Essa H, Austin P, Preston F et al (2023) All-cause mortality and cardiovascular outcomes with sodium-glucose Co-transporter 2 inhibitors, glucagon-like peptide-1 receptor agonists and with combination therapy in people with type 2 diabetes. *Diabetes Obes Metab* **25**: 2897–909

Song Y, Chang Z, Song C et al (2023) Association of sleep quality, its change and sleep duration with the risk of type 2 diabetes mellitus: Findings from the English longitudinal study of ageing. *Diabetes Metab Res Rev* **39**: e3669