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DIABETES

Breakfast most important meal of the day, especially for patients with T2DM

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Postprandial hyperglycaemia is increased after both lunch and dinner in patients with type 2 diabetes mellitus (T2DM) who skip breakfast. These findings, reported in *Diabetes Care*, suggest that the effects of missing breakfast persist throughout the day and simply eating a morning meal might be a useful strategy to reduce postprandial hyperglycaemia in patients with T2DM.

The team enrolled 26 individuals who had T2DM and HbA_{1c} levels of 7.7 ± 0.1% (61 ± 0.8 mmol/mol), of whom 22 completed the study. Each patient underwent two separate meal tests, and each time were randomly assigned to eat either three identical meals per day (breakfast, lunch and dinner), or miss breakfast and only eat lunch and dinner.

Each participant followed this regime for 2 days before returning to the clinic, where the investigators assessed plasma levels of glucose, postprandial hormones and free fatty acids (FFA) after lunch and dinner. Unsurprisingly, plasma levels of glucose, insulin and glucagon-like peptide 1 (GLP-1) were higher after breakfast in participants who ate this meal than in those who fasted until lunch.

After lunch, individuals who did not eat breakfast had higher plasma levels of glucose, FFA and glucagon than those who ate breakfast (36.8%, 41.1% and 14.8%, respectively; $P<0.0001$), while levels of insulin and GLP-1 were 17% and 19% lower, respectively ($P<0.0001$). This effect persisted throughout the day and similar results were seen in the same tests after dinner.

Furthermore, after lunch and dinner, levels of insulin and GLP-1 peaked later in the participants who had no breakfast than in those who ate breakfast. For insulin, peak levels were recorded 30 min later, and were 24.7% lower after lunch, and 60 min later and were 10.8% lower after dinner in patients who did not have breakfast compared with those who did ($P<0.0001$). Similarly, GLP-1 levels peaked 60 min later after lunch ($P<0.0001$) in patients who missed breakfast.

As this study only included patients with T2DM, whether this effect also applies to healthy patients is unclear. However, the authors highlight their findings indicate that breakfast is crucial to control postprandial glucose levels in individuals with T2DM.

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Original article Jakubowicz, D. *et al.* Fasting until noon triggers increased postprandial hyperglycaemia and impaired insulin response after lunch and dinner in individuals with type 2 diabetes: a randomized clinical trial. *Diabetes Care* doi:10.2337/dc15-0761