

# The Effect of Ramadan on Glycaemic Control in Type 2 Diabetic Patients

Ayfer Altas<sup>1</sup>, Emine Ulku Akcay<sup>1</sup>, Aysel Gurkan Tocoglu<sup>1</sup>, Hasret Cengiz<sup>2</sup>, Taner Demirci<sup>2</sup>,  
Ceyhun Varim<sup>1\*</sup>, Hakan Cinemre<sup>1</sup>, Ali Tamer<sup>1</sup>

<sup>1</sup> Department of Internal Medicine, Sakarya University, Medicine Faculty, Sakarya, Turkey

<sup>2</sup> Department of Internal Medicine, Division of Endocrinology, Sakarya University, Medicine Faculty, Sakarya, Turkey

---

## Abstract

**Background:** People with type 2 diabetes fasting during Ramadan have significant increases in glycaemic excursions. Therefore, diabetes management in Ramadan should target glycaemic variability to empower people with diabetes to fast safely for prolonged periods. For this purpose, we planned to evaluate the glucose variability that might occur during the month of Ramadan by monitoring the treatments and blood glucose levels in our patients.

**Aim:** The current study aimed to evaluate the glucose variability that might occur during Ramadan.

**Study Design:** Methodological study analyzing the glucose variability during Ramadan.

**Methods:** One hundred patients, diagnosed with

Type 2 diabetes and wanted to fast during Ramadan, were recruited. Patients were divided into three groups: the metformin group, the multiple oral anti-diabetic (OAD) group, and the insulin group. During Ramadan, the patient's capillary blood glucose was monitored and recorded five times per day (before sahur, 11 am, 5 pm, before iftar and two hours after iftar). Biochemical data, pre- and post-Ramadan fasting glycated haemoglobin (HbA1c) levels, and glucose measurements were compared between the three groups.

**Results:** There was no significant difference between the three group in terms of age, gender, body mass index (BMI), or diabetic complications. Diabetic nephropathy frequency,

fasting plasma glucose, and HbA1c levels were significantly lower in the metformin group. There was no significant association between HbA1c changes among the three groups. There was also a significant association between before sahur, 11 am, 5 pm, and iftar blood glucose levels among the three groups. A higher risk of post-iftar excursions was observed in insulin-treated patients.

**Conclusion:** Patients on insulin treatment were less tolerant of fasting and had an increased risk for hypoglycaemia. The insulin group required more frequent warnings regarding the acute and chronic complications that may develop due to fasting.

**Keywords:** blood glucose measurements, Ramadan fasting, type 2 diabetes mellitus,