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Ramadan Fasting and Diabetes Care

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Ramadan defines a month-long (29–30 day) obligatory fasting for all healthy Muslims. The length of fasting is dependent on one's geographic location (at some parts of the world the fasting duration can last for up to 18 hours). In this holy month followers must abstain from eating and drinking between dawn and sunset, and must also abstain from using oral medications and smoking. However, exemptions exist for subjects with medical conditions, including diabetes and pregnancy (1). Interestingly. A large number of Muslims with diabetes fast regardless of this concern; as such, according to a population study, 79% of type 2 diabetic Muslims were observed as fasting worldwide (2).

In 2018 the number of people living with diabetes globally was estimated to be 500 million, with a 55% rise expected by 2040 (1). The number of patients with diabetes in the Middle East, Africa and South East Asia, where the majority of the population is Muslim, is estimated to be doubled by 2040 (1). According to, CREED, which is a multi-country study aimed to define the multiple approaches for management of patients with diabetes who fasted during Ramadan, 15 days of fasting was observed in 94.2% of type-two diabetic cases and 63.6% fasted every day (3).

Ramadan fasting is a type of intermittent fasting. It is previously shown that Intermittent fasting with adequate sleep is associated with improved brain function and cardiometabolic health (4). Reduction in the levels of oxidative stress and high sensitivity C-reactive protein (hs-CRP) were also seen in fasting healthy adults (5). Moreover, according to a study findings on Ramadan fasting the metabolism remained stable by the endocrine responses to alterations in the patterns of feeding, with elevated gluconeogenesis and lipolysis (6). However, this new cycle generates stress over increased evening cortisol, loss of its circadian normal pattern and insulin resistance (6). Therefore, the benefits of intermittent fasting during Ramadan could be overshadowed by the destructive effects of circadian dysregulation.

According to a study conducted by Yarahmadi et al., there was a significant reduction in the levels of insulin and insulin resistance in patients with type 2 diabetes (7). Notably in another study, there was a reduction

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in glycemic control after Ramadan fasting in type 2 diabetic patients whom consumed oral hypoglycemic medications (8). It is suggested that differences in these study results may be characterized by cultural food diversity, calorie intake, and duration of fasting, number of days of fasting and physical activity (9).

It is recommended that patients with multiple diabetic complications and hypoglycemia should be advised against prolonged fasting. Agents such as metformin, alpha-glucosidase inhibitors, thiazolidinediones (TZDs), and dipeptidyl peptidase-4 (DPP4) inhibitors seem to be safe and do not require major dose adjustments. However, the dose of Sulfonylureas should be reduced (or the intake of medication should stop) before fasting starts, depending on the kidney function and presence of diabetic complications (10).

Currently limited data is available on the efficacy and safety of incretin-based therapies such as DPP4-inhibitorsagents alone or in combination with metformin therapy; their use appears to be safe and with low rates of hypoglycemia. Patients with type 1 and type 2 diabetes treated with insulin should be educated regarding the appropriate use of insulin and the need for regular glucose monitoring during the fasting period. The majority of patients are required to change the dose of basal insulin and/or the use of pre-meal insulin to cover mealtime glucose spikes after breaking the fast (5).

According to IDF-DAR practical guidelines recommendation, patients at high or very high risk of type two diabetes complications are advised not to fast. Although, patients taking metformin, or insulin are required to apply adjustments to dose and/or timings in order to decrease the risk of complications. Newer anti-glycemic medications, including incretin-based therapies, are in accordance with a lower risk of hypoglycemia and may be more advisable for use during Ramadan (1).

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