

Ramadan Fasting in people with Diabetes

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Fasting is an essential component to many of the world's religions including Christianity, Hinduism, Islam, Jainism, Judaism and Baha'is. Fasting during Ramadan is one of the five pillars of Islam and obligatory for all healthy adult Muslims. According to 2009 demographic study, there are around 1.5 billion Muslims worldwide - up to 23% of the world's population.¹ Epidemiology of Diabetes and Ramadan (EPIDIAR) study in 13 Islamic countries showed that about 43% of people with type 1 diabetes and 79% of people with type 2 diabetes fast during Ramadan.² Based on worldwide population of 382 million diabetics in 2013,³ one can estimate that around 65 million Muslims with diabetes fast during Ramadan.

Ramadan is a lunar month lasting 29 or 30 days. Its timing and duration changes with respect to season and geographical location. The duration of the daily fast may range from a few to more than 20 hours. Muslims who fast during Ramadan must abstain from eating, drinking, oral medications and smoking from dawn to dusk. The elderly, the travelers, the expectant and breast feeding mothers, children and people with multiple co morbidities are exempted.⁴ Many people insist on fasting during Ramadan out of religious emotion although fasting is not prescribed endangering health such as diabetic people with many complications who need tight control and avoid hypoglycaemia. Allah has made alternative provisions for them.

Good glycaemic control in diabetes is achieved through adjustment of diet, exercise and medications. A change in any one of these can alter blood sugar levels and create acute complications including both hypo and hyperglycaemia. Since Ramadan fasting involves abstinence from food and water, it is evident that advice regarding diet, exercise and medication will have to be modified appropriately during this period to reduce the harmful consequences. A study of changes in glucose profiles among people with diabetes using continuous glucose monitoring has documented important differences in glucose excursions and variability during Ramadan fasting.⁵ Although previous studies^{6,7} using relatively small groups of diabetic subjects have not

found high rate of acute complications, the EPIDIAR study has found comparatively high rate of acute complications. This study found 4.7 fold and 7.5 fold increase of severe hypoglycaemia and 3 fold and 5 fold increase of severe hyperglycaemia in type 1 and type 2 diabetes respectively.² Ketoacidosis in type 1 diabetes, dehydration, thrombosis, retinal vein occlusion are also evident in people with diabetes during Ramadan fasting. Therefore, it is very important that people with diabetes, their healthcare providers and also religious leaders should be aware of the potential risks associated with Ramadan fasting.

Often medical professionals discourage Ramadan Fasting for people with diabetes considering associated risks. People with diabetes who wish to fast may have to alter the dose of their medications or modify their therapeutic and dietary regimen to avoid hypo and hyperglycaemia. These normally cause huge psychological stress to the people with diabetes. Therefore, pre-Ramadan counseling must be an integral component of management for the people with diabetes. Counseling should be addressed to nutritional issues, physical activity, medical assessment specially monitoring of glycaemia, timing and dose changes to antidiabetic medications and associated risks of fasting.

It is evident that Ramadan gives an incentive for getting good glycaemic control and reinforce education. People with diabetes can test blood and take insulin while fasting. Studies have also found significant effect of Ramadan fasting to reduced blood pressure, improve lipid profile, greatly reduced stress levels, weight loss, decrease of waist circumference and decrease of body mass index.

Management plan for people with diabetes for Ramadan fasting must be individualized considering their risk status which includes type of diabetes, use of medication (s), pre-Ramadan glycaemic level, history of pre-Ramadan hypo and hyperglycaemia and associated macro and microvascular complications.^{8,9} Physicians should also consider the pattern of jobs of their clients before management planning.

Normally, people with type 1 diabetes are at high risk of developing severe complications due to its underlying pathological background, and therefore are strongly

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advised not to fast during Ramadan. However, there are not enough data on the safety and/or efficacy of different insulin regimens in people with type 1 diabetes who practice Ramadan fasting. In general, physicians prefer basal bolus regimen for people with type 1 diabetes due to fewer episodes of hypo and hyperglycaemia.⁸ There are also a number of different strategies i.e. insulin pump that can be used for administration of insulin during Ramadan but for the implementation of newer strategies need close monitoring of patients.

In people with type 2 diabetes who are well controlled with lifestyle therapy alone, the risk associated with fasting is quite low. They need instructions on distribution of energy intake and modification of physical exercise programme. People with type 2 diabetes may be on oral hypoglycaemic agents alone or may use a combination of oral agents and insulin. People with type 2 diabetes who are managed only on oral antidiabetic agents, can continue their medication (s) with appropriate dose adjustments during fasting. Medications which pose a high risk of hypoglycaemia when used during fasting are sulfonylureas and insulin. Metformin, glitazones, incretin mimetics (like exenatide and liraglutide) and dipeptidyl dipeptidase-4 inhibitors (DPP-4 inhibitors like sitagliptine and vildagliptine) and long and ultra-long acting insulin (glargine, degludec) have a negligible risk of hypoglycaemia. Newer members of the sulfonylureas (glipizide, gliclazide MR, glimepiride) and non-sulfonylureas (repaglinide, nateglinide) have been shown to have a lower risk of hypoglycaemia. People with type 2 diabetes who have to take insulin are somewhat similar to type 1 diabetes, although the incidence of hypoglycaemia is lower. The aim of the physicians should be to maintain necessary levels of basal insulin.⁸ Studies have found that careful use of intermediate or long-acting insulins plus a

short-acting insulin administered before meals would be an effective strategy for people with type 2 diabetes needing insulin.⁸

In conclusion, all adult Muslims with well controlled type 2 diabetes without complications can fast but they should prepare themselves in advance for Ramadan fasting and take the advice from their physicians and diabetes educators before doing so. They should also remember that Allah has made provision for people who are unable to fast in Ramadan due to health reasons. Recent therapeutic advancement has made fasting easier and less hazardous.

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