SHORT REPORT

Pre-Ramadan diabetes risk stratification and patient education

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Abstract

The fast (Sawm) is one of the religious obligations "Pillars" of Islam. The target audience of pre-Ramadan diabetes risk stratification and pre-education are the healthcare providers (particularly the Primary care physicians), diabetic patients and community members including general public. As per IDF-DAR (International Diabetes Federation & Diabetes and Ramadan International Alliance) guideline, it is advisable that healthcare providers should arrange pre-Ramadan session (appointment) at least 6-8 weeks prior to Ramadan quantify/stratify the patient risk category and educate all the diabetic patients on Ramadan aspects of Diabetes Mellitus. Diabetic patients are classified in to three risk groups (very high risk, moderate risk and low risk) based on specific patient characteristics. The physician should estimate the effect of fast on the patient, whether he will be able to fast or not, and the patient will estimate his ability and endurance to fast. The mode of Pre-Ramadan diabetes patient education could be group sessions or one to one consultation. Patient education should include information on risks, glucose monitoring, nutrition, exercise and medication adjustment. Studies have shown that pre-Ramadan counseling reduces the incidence of hypoglycaemia. Altering the drug dosage, dietary counseling and patient education, together with regular blood glucose monitoring enables the patients to fast without major complications. Patients classified as very high/high risk including T1DM and pregnant women with diabetes need close medical supervision and focused Ramadan-specific education if they insist on fasting. With the correct advice and support from healthcare providers most people with T2DM can fast safely during Ramadan.

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Introduction

The fast (Sawm) is one of the religious obligations "Pillars" of Islam, which have been ordained by Allah (Subhan-o-waTaAala) on adult Muslims (Al-Baqara: 185). The month-long (29–30 day) fast is obligatory for all healthy Muslims who have reached puberty. Spiritual rewards for good deeds are multiplied seventy times (or more) during Ramadan, and there is an intense desire by Muslims to participate in fasting, even among those who could seek exemption, such as the elderly, children, unwell and those suffering from chronic diseases such as diabetes mellitus. The Epidemiology of Diabetes and Ramadan (EPIDIAR) study performed in 13 countries with a Muslim population (Algeria, Bangladesh, Pakistan, Saudi Arabia, Egypt, Turkey, Indonesia, Jordan, Lebanon, Malaysia, Morocco, Tunisia, and India) found that 42.8% of patients with type 1 diabetes mellitus (T1DM) and 78.7% of those with T2DM fasted for at least 15 days during Ramadan.[1] CREED study reported that 94.2% of patients with T2DM enrolled in the study fasted for at least 15 days, and 63.6% fasted every day.[2]

Allah Almighty however gives space by saying: "Allah intends every facility for you; He does not want to put you to difficulties" (Al-Baqara: 185).

The targets of Ramadan pre-education are the healthcare providers (particularly the Primary care physicians), diabetic patients and community members including general public.

The physician should estimate the effect of fast on the patient, whether he will be able to fast or not, and the patient will estimate his ability and endurance to fast. Harmony between medical and religious advice is essential to ensure safe fasting for people with diabetes. In the light of the available information to the diabetic patient, an informed decision making by the diabetic patient to fast or not to fast will be superior than an ill-informed decision. As per guideline, it is advisable that healthcare providers should arrange pre-Ramadan session (appointment) at least 6-8 weeks prior to Ramadan quantify/stratify the patient risk category and educate the patient on Ramadan aspects of Diabetes Mellitus.[3]

The IDF-DAR (International Diabetes Federation & Diabetes and Ramadan International Alliance) practical Guidelines provides a new risk stratification strategy (Risk Stratification of Individuals with Diabetes before Ramadan). Three risk categories are defined, based on the most up-to-date information from science and practice during Ramadan (Very high risk, High risk, Moderate/low risk). Those diabetic patients falling in the Very high and high risk categories should be advised not to fast. Those

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diabetic patients in the moderate/low risk category may fast. However all the diabetic patients should receive pre-Ramadan education. The risk stratification is depicted in Table 1.[3]

Table 1. IDF-DAR risk categories and recommendations for patients with diabetes who fast during Ramadan

Risk category and religious opinion on fasting*	Patient characteristics	Comments
Category 1: very high risk Listen to medical advice MUST NOT fast	One or more of the following: • Severe hypoglycaemia within the 3 months prior to Ramadan • DKA within the 3 months prior to Ramadan • Hyperosmolar hyperglycaemic coma within the 3 months prior to Ramadan • History of recurrent hypoglycaemia • History of hypoglycaemia unawareness • Poorly controlled T1DM • Acute illness • Pregnancy in pre-existing diabetes, or GDM treated with insulin or SUs • Chronic dialysis or CKD stage 4 & 5 • Advanced macrovascular complications • Old age with ill health	If patients insist on fasting then they should: • Receive structured education • Be followed by a qualified diabetes team • Check their blood glucose regularly (SMBG) • Adjust medication dose as per recommendations • Be prepared to break the fast in case of hypo- or hyperglycaemia • Be prepared to stop the fast in case of frequent hypo- or hyperglycaemia or worsening of other related medical conditions
Category 2: high risk Listen to medical advice Should NOT fast	One or more of the following: • T2DM with sustained poor glycaemic control** • Well-controlled T1DM • Well-controlled T2DM on MDI or mixed insulin • Pregnant T2DM or GDM controlled by diet only or metformin • CKD stage 3 • Stable macrovascular complications • Patients with comorbid conditions that present additional risk factors • People with diabetes performing intense physical labour • Treatment with drugs that may affect cognitive function	
Category 3: moderate/low risk Listen to medical advice Decision to use licence not to fast based on discretion of medical opinion and ability of the individual to tolerate fast	• Well-controlled T2DM treated with one or more of the following: – Lifestyle therapy – Metformin – Acarbose – Thiazolidinediones – Second-generation SUs – Incretin-based therapy – SGLT2 inhibitors – Basal insulin	Patients who fast should: • Receive structured education • Check their blood glucose regularly (SMBG) • Adjust medication dose as per recommendations

A cornerstone of Ramadan diabetes management is patient education, which should include information on risks, glucose monitoring, nutrition, exercise and medication adjustment. Studies have shown that pre-Ramadan counseling reduces the incidence of hypoglycaemia, while recent reports from the UK and Pakistan show that effective education can be given by healthcare providers. In the Ramadan prospective study the authors concluded that altering drug dosage, dietary counseling and patient education, together with regular blood glucose monitoring enabled patients to fast without major complications.[6]

The pre-Ramadan education components are depicted in figure 2.[3]

The healthcare providers should schedule a pre-Ramadan

Figure-2: Key components of a Ramasan-focused educational programme.

assessment with their patients in order to discuss management of the condition while fasting. This will enable the physician to assess the risk, provide advice and produce an individualized treatment plan with the patient. Patients should have a clear understanding before Ramadan as to how, by changing their behaviours, they can minimize potential risks. Pre-Ramadan Education can benefit diabetic patients by maintaining glycaemic control, preventing weight gain and changes in behavior and lifestyle to minimize the risk.

Mode of delivery of the pre-Ramadan Education programme

• Group Sessions with diabetic patients

• One to one consultation with diabetic patients.

• Sessions could be in hospital setting or community settings by physicians, dietitians and / or community health workers.

Medication adjustments during fasting[3]

• The change in lifestyle and eating patterns during Ramadan places patients with diabetes at an increased risk of hypoglycaemia during the daytime and hyperglycaemia at night.

• The type of diabetes medication can also impact this risk.

• In the pre-Ramadan assessment, the healthcare provider may adjust the dose, timing or the type of medication to minimize the risk to the patient.

Blood glucose monitoring during Ramadan[3]

• There is a misconception held by some Muslim communities that pricking the skin for blood glucose testing invalidates the Ramadan fast. It should be strongly emphasised in educational programmes that this is not the case.

• Those at moderate or low risk, may do self-monitoring of blood glucose (SMBG) once or twice a day.

• Those at high or very high risk should check their blood glucose levels several times a day.

• Patients on insulin and/or sulphonylureas may choose to monitor their blood glucose levels more frequently because of the increased risk of hypoglycaemia associated with these medications.

• It is important for all patients with diabetes to measure blood glucose levels after iftar to detect postprandial hyperglycaemia.

• Patients should check blood glucose levels whenever they experience symptoms of hypoglycaemia, hyperglycaemia or feel unwell, and understand when they should immediately break the fast.

When to break the fast?[3]

Patients should be educated to recognise the symptoms of hypoglycaemia and hyperglycaemia, as shown in the table below.[3]

⁂ Patients should be advised to test their blood sugar whenever any of these complications (or an acute illness) occur, and be prepared to break the fast if necessary (as shown in the figure below).[3]

When breaking the fast because of hypoglycaemia, patients should consume a small amount of a fast-acting carbohydrate e.g. a small pack of juice, and retest their blood after 15–20 minutes.

Risks associated with hot weather and lack of dietary advice

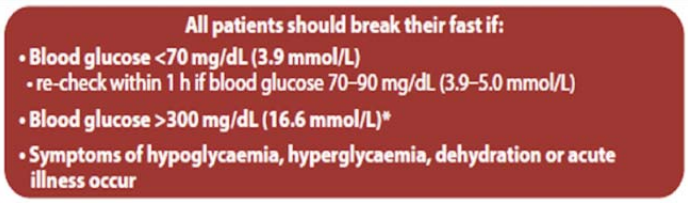


Figure-3: When to break the fast

⁂ 1. Hypoglycaemia, especially during the late period of fasting before iftar

⁂ 2. Severe hyperglycaemia after each of the main meals

⁂ 3. Dehydration due to prolonged fasting hours and hot climate.

⁂ 6. Acute renal failure in patients prone to severe dehydration, particularly elderly patients and those with impaired kidney function.

⁂ 4. Significant weight gain due to increased caloric intake and reduced physical activity

⁂ 5. Electrolyte imbalance

Principles of Ramadan Nutrition Plan (RNP)[3]

• Maintaining adequate hydration by drinking enough water and non-sweetened beverages at or between the two main meals is important.

Hypoglycaemia	Hyperglycaemia
• Trembling • Sweating/chills • Palpitations • Hunger • Altered mental status • Confusion • Headache	• Extreme thirst • Hunger • Frequent urination • Fatigue • Confusion • Nausea/vomiting • Abdominal pain

• Diet beverages may be consumed.

• Sugary drinks, canned juices or fresh juices with added sugar should be avoided.

• Consumption of caffeinated drinks (coffee, tea as well as cola drinks) should be minimized as they are diuretics.

• Take suhoor as late as possible.

• Consume an adequate amount of protein and fat at suhoor as foods.

• Iftar should begin with plenty of water to overcome dehydration from fasting, and 1–2 dried or fresh dates to raise blood glucose levels.

• Meals should be balanced, with carbohydrates (low glycaemic index preferred) comprising around 45–50%; protein (legumes, fish, poultry or lean meat) comprising 20–30%; and fat (mono and polyunsaturated fat preferred) comprising <35% of the meal.

• Select carbohydrates with low GI, particularly those high in fibre (preferably whole grains). Consumption of carbohydrates from vegetables (cooked and raw), whole fruits, yoghurt and dairy products is encouraged.

• Use the "Ramadan plate" method for designing meals (Figure 3 below).

• Sugar-heavy desserts should be avoided after iftar and between meals. A moderate amount of healthy dessert is permitted, for example a piece of fruit.

Exercise during Ramadan[3]

• Rigorous exercise is not recommended during fasting because of the increased risk of hypoglycaemia and/or dehydration.

• Patients with diabetes should be encouraged to take regular light-to-moderate exercise during Ramadan.

• Patients should be reminded that the physical exertions involved in 5 prayers and Tarawih prayers, such as bowing, kneeling and rising, should be considered part of their daily exercise activities.

Summary

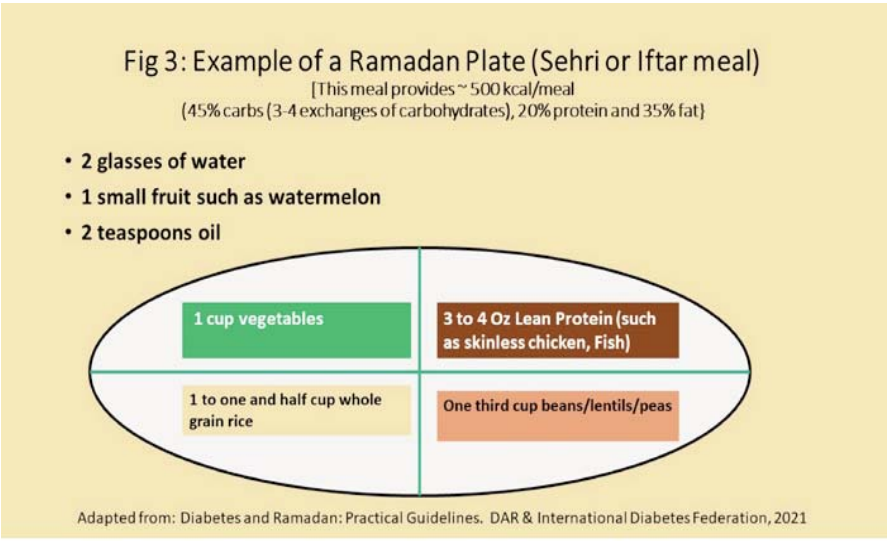
• A pre-Ramadan assessment is vital for any patient with diabetes who intends to fast in order to evaluate the risks, educate the patient in self-management of the condition during Ramadan and to produce a patient-specific treatment plan.

• Education is an essential component of diabetes management during Ramadan.

• Programmes should be aimed at patients with diabetes, the healthcare providers who manage them and the general public who support them.

• A structured educational programme should include information on risk quantification, blood glucose monitoring, diet, exercise, medication adjustments, recognition of the symptoms of complications and when to break the fast to prevent harm.

• There is a misconception held by some Muslim communities that pricking the skin for blood glucose testing invalidates the Ramadan fast. It should be strongly emphasised in educational programmes that this is not the case.



• Studies have demonstrated a clear benefit of Ramadan-focused education programmes in terms of glycaemic control, weight loss and a reduced risk of hypoglycaemic events.

• The positive outcomes of these programmes may also extend beyond the month of fasting.

•With the correct guidance, many people with diabetes can fast safely during Ramadan but they must be under close supervision and be made aware of the risks.

• The risks associated with fasting include hypoglycaemia,

hyperglycaemia, DKA, dehydration and thrombosis; physicians must quantify the risks and stratify each individual patient accordingly.

• Patients classified as very high/high risk including T1DM and pregnant women with diabetes need close medical supervision and focused Ramadan-specific education if they insist on fasting.

• With the correct advice and support from healthcare providers most people with T2DM can fast safely during Ramadan.

• Patients taking metformin, short-acting insulin secretagogues, sulfonylureas or insulin will need to make adjustments to dose and or timings to reduce the risk of hypoglycaemia while maintaining good glycaemic control.

• Newer meds including incretin-based therapies (Gliptins and GLP1 receptor agonists) are associated with a lower risk of hypoglycaemia and may be preferable for use during Ramadan.

• A post-Ramadan follow-up consultation is recommended.

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