



Chapter 1. **Introduction to the IDF-DAR** **Practical Guidelines**

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1.1 Ramadan fasting regulations

Fasting during Ramadan is one of the five pillars of Islam and commemorates the time when the Holy Quran was revealed to Muhammad. The month-long (29–30 day) fast is obligatory for all healthy Muslims who have reached puberty, and is a time for spiritual contemplation and seeking nearness to God. Followers must refrain from eating and drinking between dawn and sunset, and must also abstain from using oral medications, sexual activity and smoking. It is believed that spiritual rewards for good deeds are multiplied during Ramadan, and there is an intense desire to participate in fasting, even among those who could seek exemption, such as the elderly, children, the infirm, and pregnant women. Missed fasts should be completed at other times; for example when health is restored or after the delivery of a baby. Fasting outside of Ramadan (when the rest of the community is not observing a fast) can be challenging, and this may discourage people from taking advantage of granted exemptions. Those who are permanently incapacitated can compensate by Fidya, a donation of food or money to the poor, for every day's fast that is missed. The timing of Ramadan is based on the lunar calendar (355 days per lunar year), which is shorter than the Gregorian (Western) calendar, and therefore Ramadan occurs 10–11 days earlier every year. This means that the duration of daylight fasting varies according to the time of year in which Ramadan falls. In some parts of the world, daylight can be as long as 20 hours in the peak of summer. Climate conditions also vary according to the date of Ramadan, with people fasting in very dry and hot weather some years and cold temperatures in others.



Many Muslims, even those who could seek exemption, have an intense desire to participate in fasting during Ramadan

1.2 The need for practical guidelines on diabetes management during Ramadan fasting

The management of people with diabetes who fast during Ramadan is mostly based on expert opinion rather than medical evidence gained from clinical studies. Muslims living as a minority in any country, including the USA and many countries in Europe, may need extra attention since healthcare professionals (HCPs) who are not experienced in dealing with fasting people with diabetes might not consult or even be aware of published recommendations [1]. Evidence-based guidelines are important and, although the evidence available in this area continues to increase, more randomised controlled trials are needed to fully answer questions related to Ramadan fasting and diabetes, such as:

- Is fasting during Ramadan associated with a significant risk?
- What are the criteria that predispose patients with diabetes to increased risk during fasting?

- What is the most appropriate oral anti-diabetic drug(s) for patients with type 2 diabetes (T2DM) who fast during Ramadan?
- What is the most appropriate type and regimen of insulin for patients with diabetes who fast during Ramadan?



Most of the guidance available for the management of diabetes during Ramadan represents expert opinion rather than medical evidence

Although the results from new clinical trials will provide much needed data in the future, there is an immediate requirement for practical guidance for the many Muslims with diabetes planning to fast over the coming years. The *IDF-DAR Practical Guidelines* aim to address this need by providing HCPs with both background and practical information as well as recommendations, allowing them to deliver the best possible care and support to the patient.

1.3 Epidemiology of diabetes in Muslim populations

In 2015, the number of people living with diabetes globally was estimated to be 415 million, with a 55% rise expected by 2040 [2]. The number of patients with diabetes in the Middle East and Africa – a region where a high proportion of inhabitants are Muslim – is predicted to more than double by 2040. A similar increase is expected in South East Asia, another area where Islam predominates [2].

Ramadan is widely observed across the world. A recent survey in 39 countries involving over 38,000 Muslims reported that a median of 93% fasted during Ramadan [3]. The Epidemiology of Diabetes and Ramadan (EPIDIAR) study performed in 2001 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 [4]. More recently, the 2010 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 [1]. Therefore, Ramadan has a major impact on the management of diabetes in the Muslim population. More detailed descriptions of the EPIDIAR and CREED studies, along with further epidemiological data can be found in Chapter 2 of this booklet (*Epidemiology of Diabetes and Ramadan Fasting*). With so many Muslims with diabetes deciding to fast, the importance of practical diabetes and Ramadan guidance becomes evident.



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1.4 Physiological effects of fasting, and potential risks to people with diabetes

Fasting during Ramadan has a number of physiological effects on both homeostatic and endocrine processes. In patients with diabetes, these changes and the type of medication being taken to treat the condition can be associated with the development of complications such as hypoglycaemia and hyperglycaemia [5]. Ramadan fasting not only alters the timings of meals but it may also disturb sleeping patterns and circadian rhythms, all of which can affect a person's metabolic state. Understanding these changes can help with the management of diabetes during Ramadan. Chapter 3 (*Physiology of Ramadan Fasting*) takes a closer look at the effects of fasting on the body of both healthy individuals and those with diabetes. The impact of fasting on glucose homeostasis is of particular importance when considering the risks to people with diabetes.

To help HCPs deliver the best possible advice, individuals with diabetes can be stratified into different groups according to the risk that fasting would impose. Different factors, such as the type of diabetes, level of glycaemic control, medication, presence of comorbidities and personal circumstances, can be used to assess individual risk. Medical experts and religious leaders have previously agreed on four categories of risk from very high to low [5, 6]. The *IDF-DAR Practical Guidelines of Individuals with Diabetes before Ramadan* provides a new risk stratification strategy (presented in Chapter 4 – *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. This classification follows a more practical approach and has been approved by the Mofty of Egypt, the highest religious regulatory authority in Egypt. The religious opinion on fasting for the three categories is given in Chapter 5 (*Diabetes and Ramadan: A Medico-religious Perspective*). Also, within this chapter the importance for religious scholars to acquaint themselves with current recommendations so that they can give the best advice and support to patients with diabetes both before and during Ramadan is reviewed.

1.5 The importance of diabetes and Ramadan education

A cornerstone of Ramadan diabetes management is patient education, which should include information on risks, glucose monitoring, nutrition, exercise and medication [5, 7, 8]. Studies have shown that pre-Ramadan counselling reduces the incidence of hypoglycaemia, while recent reports from the UK and Pakistan show that effective education can be given by HCPs [8-10]. The importance of Ramadan-focused education is discussed in Chapter 6 (*Pre-Ramadan Education*). Pre-Ramadan education provides a platform to remind patients about the importance of diet and exercise, and that regular glucose monitoring is essential to avoid complications (while reassuring them that this does not invalidate the fast).

Education of physicians, especially in Muslim-minority countries, is also needed. A study in France found that among general practitioners, medical understanding of fasting in patients with diabetes during Ramadan was lacking and resulted in suboptimal advice being given [11]. In the US, a study reported that while 67% of patients with diabetes consulted HCPs before Ramadan, the majority did not receive relevant advice regarding risks, breaking the fast, diet, exercise or medications [12]. A practical guide of what should be covered and disseminated to patients is provided in Chapter 6.

1.6 Differences in Ramadan fasting practices across the world: consequences for individuals with diabetes

Nutrition therapy plays a vital role in diabetes management, and an individual's religion and culture should be considered when preparing their diet plan [13]. It is recommended that the diet of a person with diabetes during Ramadan should be comparable with that followed for the rest of the year [5, 8, 14]. However, Ramadan can result in an extra burden of calories. Iftar, the meal taken when the fast is broken at sunset, often turns into a celebration, with huge volumes of food laden with sugar and carbohydrates. Regional variations exist in the timings of meals during Ramadan, and physicians need to understand regional and cultural differences to advise the patient accordingly. Because of the different foods traditionally eaten at iftar by different cultures, a well-trained dietician should be at the centre of the diabetes management and follow-up team.



Physicians need to understand regional and cultural differences to advise the patient accordingly

Regional and cultural differences are an important component of the Ramadan Nutrition Plan (RNP), a mobile and web-based application that aims to provide HCPs with information to help them individualise medical nutrition therapy for patients with diabetes during Ramadan. Example meal plans for different countries and regions are included in this app, along with country-specific best-practice recommendations. A full description of the RNP can be found in Chapter 7 (*Ramadan Nutrition Plan (RNP) for Patients with Diabetes*).

1.7 Optimising strategies for the management of diabetes during Ramadan

Many patients with diabetes choose to fast during Ramadan [4] and they should schedule a pre-Ramadan assessment with their HCP in order to discuss management of the condition while fasting. This will enable the physician to assess the risk, provide advice and produce an individualised treatment plan with the

patient. A recommended patient assessment flowchart can be found in Chapter 8 (*Management of Diabetes during Ramadan*). Patients with diabetes can be treated with a number of different agents from a range of therapeutic classes, with differing side effects and associated risks. Some of these medications will require dose or timing adjustments during Ramadan fasting in order to minimise the risk of complications. Generating optimised Ramadan-specific treatment regimens for each patient is essential if a physician is to offer the best possible care. Chapter 8 reviews the range of pharmacological agents used to treat diabetes and highlights any associated Ramadan data. Some of these medications do not require dose modification. For those that do, Ramadan-specific regimens are proposed.



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As already indicated, there is no one-plan-fits-all scenario, as each patient will have factors specific to them that will affect the treatment strategy. This is especially true for patients that are considered high risk with a high probability of harm if they fast during Ramadan. This includes patients with T1DM and pregnant women with diabetes, many of whom will decide to fast against medical and religious advice. Guidance on the management of these high risk populations, including dose adjustments to medication is given in Chapter 8.

1.8 Disseminating and implementing the guidelines

For the *IDF-DAR Practical Guidelines* on diabetes management to be effective it is necessary to understand what obstacles may hinder their uptake. Chapter 9 (*Identifying and Overcoming Barriers to Guideline Implementation*) looks at this issue and discusses strategies that may help to surmount these difficulties. Problems exist among the community and patients, as well as within the healthcare service. For example, encouraging patients to change their dietary habits during Ramadan can be challenging. One study has reported poor compliance to diet guidelines even after repetitive counselling [15]. HCPs, including pharmacists, need to be educated about Ramadan fasting and diabetes. The 2010 CREED study found wide variation in the consultation of guidelines by HCPs across different countries, highlighting the need to disseminate this information more widely, particularly in Muslim-minority countries [1]. Implementation of guidance relies on the education of all those involved: religious leaders, HCPs, patients and the community.



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Embracing and utilising advances in technology may be one way to improve accessibility to information about management of diabetes during Ramadan, especially for people in remote regions. The mDiabetes project is one such initiative. Diabetes and Ramadan-related information is sent in text messages to enrolled individuals in Senegal (see Chapter 9) [16]. Since its launch in 2014 there has been a rapid rise in people registering to receive such information, and 100% of participants surveyed had requested to receive messages for the next Ramadan. This could prove to be an effective way of publicising and circulating up-to-date guidelines to a wider population.

Summary

- With the worldwide prevalence of diabetes increasing, and the number of fasting Muslims set to rise, the importance of effective guidelines for the management of diabetes during Ramadan fasting is clear.
- There is a paucity of evidence-based medicine in the field of diabetes management during Ramadan. Indeed, many recommendations are based on expert opinion rather than clinical evidence.
- The *IDF-DAR Practical Guidelines* provide HCPs with both background and practical information, as well as management recommendations to optimise the care delivered to patients with diabetes who plan to fast during Ramadan.
- Pre-Ramadan education has been shown to reduce the incidence of hypoglycaemia. However, guidance given by medical professionals, particularly in Muslim-minority countries, may be suboptimal.
- Different medications to treat diabetes have varying levels of hypoglycaemic risk, and Ramadan-specific treatment regimens including dose and/or timing adjustments should be produced for each patient.
- Implementation of guidelines requires effective communication with, and education of all those involved, including patients, HCPs, religious leaders, and the wider community.
- Education, communication and accessibility are all critical to the success of the guidance provided in this document.

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