

Survey of the Knowledge and Attitude of Physicians toward the Management of Diabetes Mellitus during Ramadan

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p> <hr/> <p><i>Article History:</i> Received: 24 Oct 2016 Accepted: 01 Nov 2016 Published: 10 Nov 2016</p> <hr/> <p><i>Keywords:</i> Diabetes Diabetes guidelines Diabetes management Muslims Ramadan fasting</p>	<p>Ramadan fasting has been a major concern among researchers considering the theoretically imposed risk on patients with diabetes mellitus due to prolonged fasting. Studies indicate that the knowledge and practices of physicians do not comply with the proposed recommendations in this regard in many cases. This study aimed to explore the viewpoints and attitudes of physicians toward the management of diabetes mellitus regarding to Ramadan fasting. In addition, we assessed the knowledge and compliance of physicians with available recommendations regarding the management of diabetes mellitus in Ramadan. According to the results, Ninety five percent of the physicians (n=862) believed the type of diabetes to be "important" or "very important" in decision-making for Ramadan fasting. Control of diabetes before Ramadan was noted as "important" or "very important" by 95% of the physicians (n=848). Moreover, the majority of respondents emphasized on the pivotal role of self-monitoring of blood glucose in the management of patients receiving insulin or <i>sulphonylureas</i> (SUs), and to a lesser extend in cases treated with other oral hypoglycemic agents than SUs. Among the participants, 63.8% (n=397) confirmed the availability of Ramadan-focused educational programs for their patients, whereas thirty six percent (n=225) mentioned the absence of such programs. According to the results of this study, it is crucial to raise the awareness of patients and physicians about the importance of Ramadan fasting through structured educational interventions in order to reduce the health risks associated with fasting in diabetic patients. Therefore, it is recommended that simplified guidelines and educational materials be dispensed for healthcare providers for related training programs before Ramadan.</p>

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Introduction

Population of Muslims is rising steadily across the world. In 2010, total number of Muslims was estimated at 1.6 billion (23% of the global population), and it is predicted to reach 2.76 billion (29.7%) by 2050 (1). Ramadan is a lunar month in the Islamic calendar, during which healthy Muslims are obliged to fast from sunrise until sunset. In the holy month of Ramadan, fasting Muslims mainly abstain from eating and drinking and intercourse and some other actions which are abondenet. Illness, pregnancy and overall weakness account for the exemptions from Ramadan fasting.

Nevertheless, many of these individuals are willing to fulfill the religious duty of fasting.

According to the Epidemiology of Diabetes and Ramadan (EPIDIAR) study, approximately 43% and 79% of the patients with diabetes type I and II fast for almost 15 days during Ramadan, respectively (2). This is a major challenge for medical professionals in the risk stratification of these patients in terms of hypoglycemia, hyperglycemia, comorbidities, and type of diabetes. Decreasing the risk of the mentioned health issues is possible through the implementation of structured educational

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programs before, during and after Ramadan.

In the Ramadan Education and Awareness in Diabetes (READ), Bravis et al. evaluated the effects of an educational program on the body weight and hypoglycemic events of diabetic patients during Ramadan. According to the results, frequency of hypoglycemic events was significantly lower in the patients who participated in the educational intervention compared to those who did not attend the sessions ($P<0.001$). Furthermore, weight loss (0.6 kg) was reported in the first group, as opposed to the weight gain (0.7 kg) in the second group ($P<0.001$) (3).

Another study in this regard was conducted in Pakistan on 110 patients with diabetes, two-third of whom received insulin therapy and attended an educational sessions. In these sessions, patients were advised on insulin dose adjustment, self-monitoring of blood glucose (SMBG), and fast break in the presence of hypoglycemia. In the mentioned study, no severe or acute complications were observed in the majority of the patients during Ramadan (4).

The aforementioned trials have confirmed the efficacy of SMBG as an inherent element in structured educational programs for Ramadan fasting. However, no specific recommendations have been proposed regarding the frequency of SMBG during Ramadan. Many researchers believe that patients with type I diabetes must measure their blood glucose four times while fasting, while this varies in patients with type II diabetes based on the class of their medications.

Several physicians believe in the efficacy of structured educational programs in the improvement of Ramadan fasting outcomes; however, they might not have access to the necessary resources or adequate time to implement such interventions. It is also noteworthy that some physicians may dismiss the importance of these programs for Ramadan.

This study aimed to evaluate the knowledge, attitudes, and practices of physicians toward fasting in patients with diabetes mellitus during Ramadan.

Material and methods

The primary objective of this study was to explore the viewpoints and attitudes of physicians toward the management of patients with type II diabetes during Ramadan. The

secondary objective of the study was to assess the knowledge and compliance of physicians with the available recommendations regarding the management of diabetes in Ramadan.

This professional survey was conducted to evaluate the perceptions of physicians toward the influential factors in the management of diabetic patients who intend to fast during Ramadan. The questionnaire was formulated de-novo based on the objectives of the study with multiple-choice items in English only. Target population was identified from the participants of three recent endocrine conferences held in Turkey (2014) and Dubai (2015).

Participants completed the questionnaires, which included data on the physicians' current appointment (primary or secondary care) and perception toward the importance of several influential factors in their recommended plans for the management of diabetes during Ramadan. Some of these factors were the knowledge of diabetes type, medication use, glycemic control, frequency of hypoglycemic events, availability of structured educational programs, physical exercise, and frequency of SMBG. Moreover, the questionnaire consisted of a section to obtain the recommendation of physicians regarding the frequency of SMBG and availability of structured educational programs for Ramadan fasting in their medical centers.

Results

In total, 905 participants were surveyed in this study, 36.7% of whom ($n=333$) were primary care physicians, 29.4% ($n=267$) were members of a secondary care setup, and 22.5% ($n=204$) were recruited in private institutions. Among the physicians, 11.5% ($n=104$) had unspecified workplace.

With respect to the importance of the type of diabetes in fasting recommendation in Ramadan, 5% of the physicians ($n=43$) believed this issue to be insignificant or of average importance. On the other hand, 95% ($n=862$) considered this issue to be important or very important. In addition, 4% and 6% of the respondents believed that the type of treatment and insulin therapy were insignificant and of average importance in Ramadan fasting, respectively. The same parameters were marked as important or very important by 96% and 94% of the participants, respectively.

According to the surveyed physicians, diabetes

control before Ramadan is crucial in the decision-making for fasting. Correspondingly, 95% (n=848) mentioned this factor to be important or very important, whereas 6% (n=52) marked it to be important or of average importance.

In this survey, 96% (n=841) and 95% of the physicians (n=857) considered the hypoglycemic history and physical exercise pattern of diabetic patients to be important and very important indices, respectively. On the other hand, 4% (n=33) and 5% (n=50) of the participants noted these parameters to be insignificant or of average importance, respectively.

Presence of other medical conditions was not considered important or very important in 88% of the respondents (n=793), while 12% (n=110) believed this issue to be insignificant or of average importance.

The majority of the surveyed physicians considered SMBG to be important or very

important in patients receiving treatment with insulin or *sulphonylureas* (SUs), and to a lesser extent in diabetic patients treated with other oral hypoglycemic agents than SUs (Table 1).

Interestingly, 3.6% of the participants (n=27) voted against the necessity of educational programs (not important/average importance), while it was considered necessary by 96.4% of the physicians (n=728). Despite the scarcity of qualified trainers for structured diabetes and Ramadan educational programs, 63.8% of the surveyed physicians (n=397) confirmed the availability of such programs in their medical centers, whereas lack of these educational programs was reported by 36.2% (n=225).

Among 140 participants in the last conference, only 63.8% reported access to structured educational programs for Ramadan. With regard to SMBG, responses ranged between "Not at All" to "Four Times per Day" (Table 2).

Table 1. Professional background and views of physicians on importance of different variables in decision-making for Ramadan fasting in diabetic patients

	1ry Care	2ry Care		private	Un-specified		Total
work place	333/ 36.7%	267/ 29.4%	SUM.	204/ 22.5%	104/ 11.5%	SUM.	908
When you are considering your MEDICAL advice to your patients regarding fasting Ramadan, do the following factors play a role?	Not Important	Average Importance		Important Role	Very Important		Total
Type of diabetes	24	19	43/5%	314	548	862/ 95%	905
Type of treatment	24	14	38/ 4%	286	576	862/ 96%	900
Number of Daily Insulin Injections	28	24	52/ 6%	299	549	848/ 94%	900
Pre-Ramadan Glycaemic control	15	31	46/ 5%	353	509	862/ 95%	908
The individual hypoglycemia history	12	21	33/ 4%	305	536	841/ 96%	874
Physical intensity of work	18	32	50/ 5%	348	502	857/ 95%	900
The presence of other medical conditions	14	96	110/ 12%	320	473	793/ 88%	903
SMBG - Insulin	13	10	23/ 3%	307	476	783/ 97%	806
SMBG- diet/OHG not SU	26	72	98/ 11%	305	481	786/ 89%	884
SMBG If on OHG/ SU	18	51	69/ 8%	325	491	816/ 92%	885
How important is Ramadan focused structured education programs?	17	10	27/ 3.6%	272	456	728/ 96.4%	755
	Yes	No					Total
Do your patients have access to Ramadan focused structured education programs?	397/ 63.8%	225/ 36.2%					622

Table 2. Viewpoints of physicians toward SMBG frequency based on different patient scenarios

	Not at all	Only if suspected hyperglycemia	4 times weekly	Only if suspected hypoglycemia	Total
How frequent should a person with diabetes wishing to fast Ramadan treated with other OHG/GLP-1-RA EXCLUDING SU do SMBG?	6/ 4.2%	18/ 12.9%	67/ 47.9%	49/ 35%	140
	4 times daily	1-2 times	Only if suspected hypoglycemia	Only if suspected hyperglycemia	Total
How frequent should a person with diabetes wishing to fast Ramadan treated with Insulin do SMBG?	73/ 53.7%	52/ 38.2%	3/ 2.2%	8/ 5.9%	136
	Only if Suspecting Hyperglycemia	1-2 times	4 times weekly	Only if suspected hypoglycemia	Total
How frequent should a person with diabetes wishing to fast Ramadan treated with SU with or without other OHG/GLP-1-RA do SMBG?	3/ 2.2%	82/ 60.3%	25/ 18.4%	26/ 19.1%	136

Discussion

The Diabetes and Ramadan (DAR) survey offers an insight into the approaches adopted by physicians for the risk stratification and management of the diabetic patients who are willing to fast during Ramadan. Results of our survey are consistent on many fronts with the CREED study (5), which was among the first studies to survey the perceptions of physicians toward the health risks associated with Ramadan fasting in diabetic patients.

While the questionnaire used in the CREED survey reviews the subjects included in patient education programs and treatment changes by physicians, the DAR survey is mostly focused on the perceptions and approaches of physicians before altering educational and treatment programs.

Both mentioned surveys have denoted that structured diabetes educational programs before Ramadan are available in a large number of healthcare centers in different countries (63% in DAR, 67% in CREED). Furthermore, the majority of physicians in both studies agreed on several key criteria to identify risk stratification of fasting, including the type of diabetes (95% in DAR, 90.38% in CREED) and type of treatment (96% in DAR, 91.8% in CREED).

Approaches adopted by the physicians in the DAR survey were in line with the 2010 ADA

standards for diabetes management in Ramadan (6). Correspondingly, a significant number of the our surveyed physicians agreed on the factors that could determine high-risk patients for fasting, such as pre-Ramadan glycemc control (95%), history of hypoglycemia (96%), type of diabetes (95%), type of treatment (96%), and intensity of physical activity (95%).

On the other hand, a slightly lower percentage of these physicians confirmed the importance of other medical conditions in this regard (88%). This is inconsistent with the ADA guidelines, which classify acute diseases, pregnancy, renal impairment and macrovascular diseases as very-high- to high-risk conditions.

In terms of diabetes management, 96.4% of the surveyed physicians agreed with the ADA guidelines regarding the importance of Ramadan-focused structured educational programs. However, only 53.7% believed that frequent SMBG is necessary in fasting diabetic patients receiving insulin therapy. In addition, 8.1% of the physicians considered SMBG to be necessary only in case of suspected hypoglycemia or hyperglycemia, while 38.2% believed that recording SMBG for 1-2 times per day would be sufficient.

Results of the DAR survey indicates that the expert guidelines for the management of diabetes in Ramadan are followed or supported

by the majority of physicians dealing with diabetic patients who are willing to fast during Ramadan. This could be attributed to the general interest and knowledge of the surveyed physicians in this subject since the questionnaires in the DAR survey was completed in specialized conferences held to raise awareness about diabetes and Ramadan. Some of the findings of the DAR survey are in line with the CREED study, which was a multiregional survey.

In this study, a small, yet significant percentage of the physicians considered the presence of comorbidities to be unimportant in the risk stratification and frequency of SMBG of fasting patients receiving insulin therapy. To clarify this issue, it would be helpful to find out whether these physicians practice in primary healthcare sectors or in non-Muslim countries. According to the CREED study, only 28% of physicians in France adhered to the expert guidelines of diabetes management, while this rate was reported to be 88% in Indonesia.

A cross-sectional study in this regard was performed by Gaborit et al. to evaluate the attitudes of patients and primary care physicians toward diabetes and fasting in France (7). Results of the study were indicative of inadequate knowledge of fasting in primary care physicians.

Ramadan-focused structured educational programs are not for patients only, but they should also include healthcare professionals to raise awareness about fasting and disease management. Although 96.4% of the physicians in our survey agreed on the importance of such programs, only 63% had access to the resources and facilities to implement these interventions.

Development of simplified guidelines and educational materials that could be readily accessed by physicians and patients is essential to identifying the sectors and regions with the need to raise awareness regarding diabetes management during Ramadan.

Conclusion

According to the results of this study, raising

the awareness of patients and physicians about the importance of Ramadan-focused structured educational programs results in the reduction of the risks associated with fasting in diabetic patients. Therefore, it is recommended that simplified guidelines and educational materials be dispensed for healthcare providers in order to enhance the quality of educational interventions before Ramadan.

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