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KNOWLEDGE AND ATTITUDE OF IRAQI DIABETIC PATIENTS WHO FAST DURING RAMADAN

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ABSTRACT

Although fasting during Ramadan can negatively affect on glycemic control for diabetic patients, but many of them insist on fasting during Ramadan; so this study aimed to find out the percentage of diabetic patients who fast during Ramadan and their knowledge and preparations for adjusting glycemic control during the fasting month. A cross sectional - pilot study was done for 15 adult diabetic patients in community pharmacies of Baghdad – Iraq during Ramadan 2015. Each patient fill in a questionnaire format which consisted from two main parts: the 1st one involves general questions to all participated patients about themselves, their disease and fasting status, while the second part was specified only for patients who fast during Ramadan and involve questions about monitoring and treatment of diabetes. More than 46% of diabetic patients fast during Ramadan. There was no significant difference between fasting and non fasting diabetic patients, in their number, age, gender, type of DM, and the presence of other comorbid diseases, however the only significant difference was in the duration of DM, at which non fasted patients usually have long history with DM. It was found that participated diabetic patients were usually adherent to their treatment and using the same dose of their medications during Ramadan, however more than 28% of these patients were usually trying to change their dosing regimen to less frequent times during the fasting month of Ramadan. Additionally 85.7% of diabetic patients think that fasting have the ability to improve glycemic control, while 60% of patients didn't seek medical consultation during their preparation to fast during Ramadan. Additionally more than 57% of fasting diabetic patients never tried to measure their blood glucose level during Ramadan. Iraqi diabetic patients who fasted during Ramadan had very little knowledge about the relationship between fasting and glycemic control, besides that most of their attitudes and practices toward their treatment and disease monitoring were wrong and not compatible with the international guidelines.

Key words: Diabetic patients, Fasting, Ramadan, Knowledge, Practices.

INTRODUCTION

Ramadan is the fasting month in the Islamic calendar, at which fasting is obligatory for all adult Muslims all over the world and includes total abstention from food, fluid during the daylight hours, however patients are an exception from fasting especially diabetes mellitus patients (Leiper *et al*., 2003; Hassanein, 2010) at which fasting during Ramadan can negatively affect on glycemic control for such patients (Norouzy *et al.*, 2012; Benaji *et al.*, 2006); Yet , a significant number of patients with diabetes insist on fasting during Ramadan; therefore, a systematic pre-Ramadan assessment to diabetic patients with appropriate plan regarding therapeutic adjustments and educational advice about healthy diet, exercise and awareness of the risks of hyper and hypoglycemia are important for diabetic patients who are intending to fast during Ramadan (Chamsi-Pasha *et al*., 2014). So this study aimed to find out the percentage of diabetic patients who fast during Ramadan and their knowledge and preparations for adjusting glycemic control during Ramadan.

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METHODS

A cross sectional - pilot study was done for assessing a convenient sample of 17 adult diabetic patients in 3 different pharmacies (one in the west, the second one in the north and the one last in the east of Baghdad) during Ramadan 2015. All diabetic patients who provide us with their informed consent were included in this study, only 1 patient refused to participate and 1 other patient was excluded from this study because she was a Christian. Each patient who accepted to participate in the study was asked to answer honestly the questions of the Arabic questionnaire. The questionnaire (Appendix 1) consisted from two main parts: the 1st one involves general questions to all participated patients about their age, and gender, besides information about the diabetes and its treatment and the presence of other co-morbid diseases. A final question was about fasting habits. While the second part was specified only for patients who fast during Ramadan and involve questions about monitoring and treatment of diabetes.

Statistical Analysis

Chi square test was used to assess the statistical significance for categorical variables, while independent t test was used for assessing statistical significance for continuous variables. P values less than 0.05 was considered significant.

RESULTS

Table (1) showed the demographic data of participated patients at which more than 46% of diabetic patients fast during Ramadan. There was no significant difference between fasting and non fasting diabetic patients, in their number, age, gender, type of DM, and the presence of other comorbid diseases, however the only significant difference was in the duration of DM, at which non fasted patients usually have long history with DM.

Table (2) showed that diabetic patients are usually adhering to their treatment and use the same dose of their medications during Ramadan, however more than 28% of the patients are usually change their dosing regimen to less frequent times. Additionally these 2 cases who favors changing their dosing regimen were never consulted a health care practitioner about their fasting and treatment.

Table (3) showed that the majority (85.7%) of diabetic patients think that fasting have the ability to improve glycemic control.

Table (4) showed that the majority (60%) of patients didn't seek medical consultation during their preparation to fast during Ramadan.

Table (5) showed that more than 57% of fasting diabetic patients never tried to measure their blood glucose level during the fasting (Ramadan) month.

Table 1. Demographic data for participated diabetic patients

Parameter	Fasting (N=7)	Non fasting (N=8)	P value
Number of patients	7	8	0.795
Age (years)	57.14±11.07	56±19.49	0.893
Type of DM Type 2 N(%) Type 1 N(%)	 7 (100%) 0 (0%)	 7(87.5%) 1 (12.5%)	0.332
Duration of DM (years)	4.14±3.24	14.63±8.72	0.0103
Gender Male N(%) Female N(%)	 2 (28.6%) 5 (71.4%)	 4 (50%) 4 (50%)	0.515
Presence of comorbid disease N(%)	4 (57%)	4 (50%)	0.781

DM = Diabetes Mellitus; N= number.

Table 2. Attitude and practices of fasting diabetic patient toward their pharmacological treatment

Parameter	Same	Changed	P value
Medication type N(%)	7 (0%)	0 (0%)	0.008
Dose of medication N(%)	7(100%)	0 (0%)	0.008
Dosing regimen N(%)	5 (71.4%)	2 (28.6%)	0.256

N = number

Table 3. Knowledge of diabetic patient about the effect of fasting on blood glucose level

Question	Improved	Not affected	Worsened (fluctuated)	P value
Blood Glucose during Ramadan N(%)	6 (85.8%)	1(14.2%)	0 (0%)	0.011

Table 4. Visiting of diabetic patients to health care professional during their preparation to fast during Ramadan

Question	Patients' fasting status	Never consulted health care professional	Consultation of health care professional		P value
			Physician	Pharmacist	
Did you consult any health care professional before the start of Ramadan	Fasting patients N(%)	3 (42.9%)	3 (42.9%)	1 (14.2%)	0.564
	Non Fasting patients N(%)	6 (75%)	2 (25%)	0 (0%)	0.03
	All patients N(%)	9 (60%)	5 (33.3%)	1 (6.7%)	0.04

N= number

Table 5. Frequency of blood glucose monitoring by fasting diabetic patients

Parameter	Never measured	Measured				P value
		Many times/day	Once daily	Sometimes along the month	Just once at the start of Ramadan	P value
Blood glucose monitoring N (%)	4 (57.1%)	0 (0%)	1 (14.3%)	2 (28.6%)	0 (0%)	0.091

DISCUSSION

This study showed that only 46.7% of diabetic patients fast during Ramadan, however this percent is less than that observed in other studies (Adarmouch *et al*., 2013). It was found in this study that the majority (71.4%) of fasting diabetic patients were females, similarly the majority (62.7%) of fasting patients in Singapore were females (Siaw *et al.,* 2014).The result of this study showed that there is no any significant difference in the age or gender between diabetic patients who fasted and those who didn't fast during Ramadan, similarly it was found in many other studies that there is a non significant difference in the age and gender between fasting and non fasting DM patients (Adarmouch *et al.,* 2013; Karatoprak *et al.,* 2013). Additionally this study also showed that there is no significant difference in the type of DM between patients who fasted and those who didn't fast during Ramadan, this finding may be expected since diabetic patients of both types are usually fast during Ramadan, despite the expert discouragement for diabetic patients with type 1 for fast during Ramadan (Ahmed *et al.,* 2011). Furthermore this study showed a non significant difference in the presence of comorbid diseases between fasting and non fasting diabetic patients; despite the fact that diabetic patients with comorbid diseases are considered at high risk from fasting and thus it is not recommended for them to fast during Ramadan (Abdul Jaleel *et al.,* 2011). Meanwhile it was found that even diabetic patients who suffer from other serious diseases like angina, heart failure, and stroke are fasting during Ramadan (Salim *et al.,* 2013). The results of this study showed that all fasted patients were suffering from type 2 DM, similarly more than 95% of diabetic patients who fast Ramadan in Libya (Elmehdawi *et al*., 2010) and Pakistan (Ahmadani *et al.,* 2008) were suffering from type 2 DM. This study showed that the only significant difference between fasting and non fasting patients was in the duration of DM, at which non fasted patients usually have longer history of DM than fasted patients. This difference is simply explained based on the fact that all participated patients in this study were suffering from type 2 DM, and this type of DM usually progress and worsen with time (Fonseca, 2009), this means that patient with long duration of DM may be suffering from hyperglycemic symptoms such as polyuria and polydipsia which make fasting is so difficult. In this regard most of the non fasting patients mentioned that the main cause for their non-fasting is their inability to tolerate abstinence from food and water during fasting hours.

This study showed that diabetic patients during Ramadan are usually adhering to their treatment and use the same dose of their medications, however many studies and guidelines favor doing dose adjustment of oral anti-diabetic medications (Al-Arouj *et al.,* 2005; Hui *et al.,* 2010) to any patient who wish to fast during Ramadan. Additionally this study showed that more than 28% of the patients were changing their dosing regimen to less frequent times; similarly it was found that 58 % of diabetic patients from Arabic countries who live in USA change their medication dosing regimen during Ramadan (Pinelli *et al.,* 2011). Although the percent of patients who change their medication dosing frequency in that study is higher than in this study, but that change was more safer

than that done by patients in this study at which two third of patients who live in USA were sought physician consultation prior to fast in Ramadan while in this study all patients who change their medication dosing regimen do so by themselves without prior health care consultation. Despite the fact that visiting health care professionals (physician or pharmacists) is one of the most important recommendations that must be done by diabetic patients who wish to fast during Ramadan (Al-Arouj *et al.,* 2010). In this study, it was found that more than 57% of fasting diabetic patients never tried to measure their blood glucose level during Ramadan, which can be considered as a wrong practice since it is recommended to do multiple daily measurement of blood glucose during Ramadan to ensure well glycemic control (Freidoun *et al.*, 1998).

This study showed that the majority (85%) of participated patients think that fasting have the ability to improve glycemic control, which is absolutely wrong thought by the patient since blood glucose level usually fluctuated during the fasting day, at which there is an overall increase in glucose level during Ramadan after iftar (Elnasri *et al.,* 2006), and there is significant reduction in fasting blood glucose level around the iftar time (Paul *et al.,* 2015). Collectively Iraqi diabetic patients who fast Ramadan have a poor fasting knowledge with many mistaken beliefs toward blood glucose level during Ramadan, similarly it was found that Iranian diabetic patients had poor fasting knowledge (Akhoundan *et al.,* 2014). Although this study is limited by its small sample size, yet it is the 1st one to be done in Iraq, which opens the gate to other researchers to confirm the finding of this study and seek the solutions to improve patient knowledge and practices during the fasting month of Ramadan.

CONCLUSION

Iraqi diabetic patients who fasted during Ramadan had very little knowledge about the relationship between fasting and glycemic control, besides that most of their attitudes and practices toward their treatment and disease monitoring were wrong and not compatible with the international guidelines.

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CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

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Appendix 1. Questionnaire for diabetic patients to assess their knowledge and preparations to fast during Ramadan

Dear,

This is a questionnaire for assessing your knowledge and practices toward diabetes and its treatment during Ramadan. If you accept to help us in this regard, please fill in the following information:

Age:

Sex: Male: Female:

Duration of disease: Years

Type of diabetes

DM type 1 (if you are affected with disease when you were younger than 30 years old)

DM type 2 (if you are affected with disease when you were older than 30 years old)

Medication that you use for diabetes treatment: (please specify dosing strength for each medication)

Insulin

Oral anti-diabetic agent (s) (mention its/their name (s)):

Both insulin and oral anti-diabetic agent

Frequency of using above medication (s):

Presence of comorbid diseases (for example: renal failure, hypertension, angina, heart failure, ulcer, rheumatological diseases, asthma, COPD, etc …):

Yes No

Fasting status

Are you fasting: Yes No

For Non – Fasting patients please answer the following question only

What is the cause for your decision of non fasting?

a. In ability to fast because of DM
b. Due to Physician advice

For Fasting patients, please answer all of the following questions

1. What is the relationship of fasting with diabetes mellitus?

A. Improved and may become normal
B. May cause fluctuation in blood glucose level
C. Fasting never affect on blood glucose level

2. Do you take a consultation from a health care professional before start Ramadan and fasting?

A. Not at all
B. Yes, from a physician
C. Yes, from a pharmacist

3. Do you measure your blood glucose level during Ramadan?

A. Many times per day
B. Once Daily
C. Few times during fasting month
D. Just once at the start of Ramadan
E. Never measured it

4. Regarding your pharmacological treatment for diabetes, choose a best suitable answer.

A. I stop the use of my treatment during Ramadan
B. I continue to use my treatment through Ramadan
C. During Ramadan I usually change my anti-diabetic medication to another one

5. What is your action toward the dose of your medications during Ramadan?

A. I don't think that there is a need to change adjust (change) the dose of my medications
B. I use a different (lower or higher) dose of my medications according to my knowledge
C. I use a new adjusted dose of my medication according to consultant advice

6. What is your action toward the frequency of using your medications during Ramadan?

A. I still use my medications with same frequency
B.I change the my dosing regimen to less frequent times
C. Other actions: specify it