http://www.banglajol.info/index.php/JACEDB

Original Article

DOI: https://doi.org/10.3329/jacedb.v1i2.78420

Journal of Association of Clinical Endocrinologist and Diabetologist of Bangladesh
July 2022, Vol. 1, No. 2, pp. 50-54

ISSN (Online): 2959-8176
ISSN (Print): 2958-0307

Knowledge, attitude, and practices of Ramadan fasting in adult type 2 diabetes mellitus: A nationwide survey in Bangladesh in 2021

Fariduddin M[1], Gaffar AJ[2], Selim S[3], Islam AA[4], Sultana N[5], Hasan AK[6], Akter F[7], Alam MJ[8], Tarek AH[9], Paul AK[10], Hasan MQ[11], Hossain MA[12], Akter N[13], Emran MS[14], Afroz S[15], Saifuddin M[16], Mir AS[17], Sayem MA[18], Amin F[19], Bakar MA[20], Khan MA[21]

[1]Md. Fariduddin, Professor, Department of Endocrinology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh; [2]Abu Jar Gaffar, Lecturer, Department of Physiology, Naogaon Medical College, Naogaon, Bangladesh; [3]Shahjada Selim, Associate Professor, Department of Endocrinology, BSMMU, Dhaka, Bangladesh; [4]AKM Aminul Islam, Associate Professor, Sir Salimullah Medical College & Hospital, Dhaka, Bangladesh; [5]Nusrat Sultana, Assistant Professor, Department of Endocrinology, BSMMU, Dhaka, Bangladesh; [6]ABM Kamrul Hasan, Assistant Professor, Department of Endocrinology, Mymensingh Medical College, Mymensingh, Bangladesh; [7]Farhana Akter, Associate Professor, Department of Endocrinology, Chittagong Medical College, Chattogram, Bangladesh; [8]Md. Jahangir Alam, Assistant Professor, Department of Endocrinology, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh; [9]Abdul Hannan Tarek, Assistant Professor, North East Medical College & Hospital, Sylhet, Bangladesh; [10]Ajit Kumar Paul, Professor, Department of Endocrinology, Mainamoti Medical College, Comilla, Bangladesh; [11]Md. Qamrul Hassan, Associate Professor, Department of Endocrinology, Rangpur Medical College Hospital, Rangpur, Bangladesh; [12]Md. Anwar Hossain, Associate Professor, Department of Endocrinology, Mymensingh Medical College, Mymensingh, Bangladesh; [13]Nazma Akter, Assistant Professor, Department of Endocrinology, Shaheed Tajuddin Ahmad Medical College Hospital, Gazipur, Bangladesh; [14]Md. Shah Emran, Associate Professor, Department of Endocrinology, Sylhet M. A. G. Osmani Medical College, Sylhet, Bangladesh; [15]Shireen Afroz, Ex-consultant Chattogram Diabetic Hospital, Chattogram, Bangladesh; [16]M Saifuddin, Associate Professor, Department of Endocrinology, Dhaka Medical College, Dhaka, Bangladesh; [17]Ahmed Salam Mir, Associate Professor, Department of Endocrinology, Dhaka Central International Medical College, Dhaka, Bangladesh; [18]MA Sayem, Consultant Diabetologist, Popular Diagnostic Centre, Dhaka, Bangladesh; [19]Feroz Amin, Professor, Department of Endocrinology, BIRDEM General Hospital, Dhaka, Bangladesh; [20]Md. Abu Bakar, Assistant Professor, Chattogram Maa-O-Shishu Hospital, Chattogram, Bangladesh; [21]Murshed Ahamed Khan, Assistant Professor, Department of Endocrinology, BSMMU, Dhaka, Bangladesh.

Abstract

Background: During Ramadan fasting there are changes in meal frequency, eating pattern, rhythm in life, the sleep cycle, and daily activity. Most people with uncomplicated type 2 DM (T2DM) fast during Ramadan in Bangladesh.

Objective: To assess the knowledge, attitude, and practices of people of Bangladesh with T2DM about Ramadan fasting.

Methods: The survey enrolled 3835 adult people with T2DM (age 49.4±11.8 years; mean±SD; 57.4% female) through 17 endocrine outpatient centers in Bangladesh. Patient enrolment started one month before Ramadan in 2021. The survey questionnaire comprised 25 questions that addressed the characteristics of study subjects, their knowledge and attitude towards fasting, their lifestyle, and usual practices to control blood glucose during Ramadan.

Result: About 83.3% of participants intend to fast. Most were aware of the necessity of pre & post-Ramadan health checkups (48% and 77% respectively). The participants were aware of risks during fasting like hypoglycemia (58.6%), dehydration (64.6%) & uncontrolled DM (74.0%). Near seventy percent answered that they could control diabetes by themselves, and similar proportion did follow the doctor's advice of medication adjustment. The necessity of glucose monitoring was known by 47% while 49% knew what to do if hypoglycemia occurs. However, 36.9% believed finger pricking would break the fast; and 18% said they would not break the fast despite hypoglycemia.

Conclusion: Most Bangladeshi adults with T2DM fast during Ramadan, and their knowledge, attitude, and practices are good, but still, some have myths, particularly about monitoring of blood glucose by finger pricking & breaking fast due to hypoglycemia during Ramadan fasting. *[J Assoc Clin Endocrinol Diabetol Bangladesh, July 2022; 1 (2): 50-54]*

Keywords: Knowledge, Practice, Ramadan fasting, Siam, Hypoglycemia

***Correspondence:** Md. Fariduddin, Professor, Department of Endocrinology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh; e-mail: dr.md.fariduddin@gmail.com, Phone: +88010711847389

Introduction

Ramadan fasting, or Al-Siam, is one of the five pillars of the Muslim faith, during which the changes in meal frequency, eating pattern, rhythm in life, and disturbances or changes in the sleep cycle and daily activity may affect different aspects of human health.[1,2] During Ramadan, food quality and habits traditionally change to include more carbohydrates and sweet foods, mainly due to two large meals at dawn and sunset.[3,4] Most uncomplicated type 2 DM (T2DM) patients fast during the holy month of Ramadan in Bangladesh.

During Ramadan, comprehensive diabetes education is necessary for managing diabetes throughout fasting and after the fast is broken.[5] Before Ramadan, diabetic patients should get information and discuss glucose control and medication regimens to lessen the health effects of fasting and improve or maintain glucose control. Compared to a group that did not get diabetes education before Ramadan, patients who did so gained less weight and experienced fewer hypoglycemic episodes.[6] Diabetes self-management practices are required to provide the best glycemic control throughout Ramadan. Numerous sociodemographic characteristics may impact an individual's knowledge, attitudes, and practices toward Ramadan. It is critical to identify these aspects to develop effective ways for Ramadan-focused patient education regarding fasting.[7] Most patients who want to fast during Ramadan should come to their physician 2-3 months before fasting. Patients should be informed about medication regimens and dosages, dietary changes, and blood glucose self-monitoring.[8] During Ramadan, T2DM patients, may experience health issues due to changes in meal times, food patterns, medication use, and lifestyle changes.[9-11] Many Muslim patients with T2DM fast during Ramadan. The Diabetes and Ramadan International Alliance (DAR) and The International Diabetes Federation (IDF) have developed comprehensive guidelines for diabetes patients aiming to fast during Ramadan. The respective policies cover the evaluation of risk, adjustment of medicines, and guidance about diet. The pre-Ramadan assessment must include evaluating risks, developing a "patient-specific medication adjustment plan", and educating the patients about self-management during Ramadan.[12] Pre-Ramadan medicine adjustments and patient education have reportedly had positive results.[13] Pre-Ramadan education, particularly when planned, has considerable positive impacts on safe Ramadan fasting, as seen by decreased HbA1c and less frequent hypoglycemia.[14] Most studies concerning diabetes and fasting during Ramadan originate from some Muslim countries; however, due to geographical and sociodemographic differences, several countries have developed local guidelines for their diabetes patients who intend to fast during Ramadan.[15] In Bangladesh we have had a Bengali booklet with a fatwa for Ramadan guidelines since 2006. However, we need more data regarding the knowledge, attitude, and practices of Ramadan fasting among adults with T2DM in Bangladesh. The current study aimed to assess these aspects.

METHODS

The survey was conducted through 17 endocrine outpatient centers throughout Bangladesh. The centers were chosen according to convenience and covered most parts of Bangladesh. Participants were enrolled consecutively after informed written consent. The enrolment started one month before the holy month of Ramadan in 2021. A total of 3835 patients were included in this survey.

The self-administered survey questionnaire comprised 25 questions that addressed the characteristics of study subjects, their knowledge and attitude towards fasting, their lifestyle, and usual practices to control blood glucose during fasting in Ramadan. The questionnaire was written in an understandable languages following the pretest.

All data were processed and analyzed by SPSS version 23. Quantitative variables were summarized as mean and standard deviation (SD) while qualitative variables were presented as frequency and percentage.

Ethical approval for the study was obtained from the departmental technical committee of the department of Endocrinology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.

RESULT

The mean age of the participants was 49.36 (±11.82) years whereas the highest number of participants were within the age group of 41-50 years (30.5%; Table-I). There was a female preponderance among the participants (57.4%). More than 80% of participants observed fasting during the previous Ramadan and a similar proportion expressed their intention to fast in the next Ramadan (Table-II).

Most of the participants answered that they were aware of the pre & post- Ramadan necessity for health

checkups (48% and 77% respectively). The study participants were aware of risks during fasting like hypoglycemia (58.6%), dehydration (64.6%) & uncontrolled DM (74.0%). Nearly seventy percent of participants answered that they could control blood sugar independently, and similar proportion followed the doctor's advice of medication adjustment. Forty-seven percent of participants knew the necessity of glucose monitoring, and about 49% knew what to do if hypoglycemia occurs (Table-III).

Table I: Age distribution of the participants (n=3835)

Age (years)	Frequency	%
18-30	210	5.5
31-40	772	20.1
41-50	1170	30.5
51-60	1014	26.4
61-70	537	14.0
71-80	109	2.8
81-90	15	0.4
Total	**3835**	**100**

Table II: Proportion of participants who observed fasting in the previous Ramadan & intended to fast during the next Ramadan (n=3835)

Variable	Frequency	%
Observed fasting in previous Ramadan	3328	86.8
Intended to fast during the next Ramadan	3270	85.3

Table III: Awareness about the major issues regarding Ramadan fasting among participants (n=3835)

Major issues	Frequency	%
Pre-Ramadan health checkup	1834	47.8
Post-Ramadan health checkup	2967	77.4
Risk of hypoglycemia	2247	58.6
Risk of dehydration	2477	64.6
Risk of uncontrolled DM	2826	74.0
Ability to control blood glucose	2489	64.9
Medication adjustment (Doctors' advice)	2567	66.9
Inability to fast due to drugs	1009	29.3
Regularly blood glucose test	1123	47.5
Need of breaking fast if hypoglycemia	1822	48.9

There were also few myths regarding the Ramadan practice as 36.9% believed that finger pricking would break the fast and 18% of participants said they would not break the fast despite hypoglycemia (Table-IV).

Table IV: Patients' myths regarding the belief of finger prick and breaking of fast (n=3835)

	Frequency	%
Finger prick causes breaking of Ramadan fasting	1414	36.9
Should not break fasting even in hypoglycemia	686	18.0

Discussion

Fasting during the period of Ramadan is a potential challenge to self-control. The main hazards for diabetes patients who fast during Ramadan include hypoglycemia or hyperglycemia, dehydration, thrombosis, and ketoacidosis.[16-18] This study aimed to assess knowledge, attitude, and practices of Ramadan fasting among people with type 2 DM. In analyzing the major issues regarding knowledge, attitude, and practices of the participants, we observed that a good number of the participants were aware of the necessity of pre-Ramadan health checkups, the necessity of post-Ramadan health checkups, risk of hypoglycemia, risk of dehydration, risk of uncontrolled DM, ability to control blood glucose, medication adjustment as per doctor's advice and breaking fast due to hypoglycemia. Therefore, in well-controlled diabetes patients, safe fasting with a lower risk of hypoglycemia is possible. A study from Taiwan reported that self-care behavior scores were significantly influenced by the education level, gender, economic status, and religious beliefs of older diabetes patients.[19]

In our study, Majority of participants agreed about the necessity of medication adjustment. However, in a Turkish study, it was reported that despite having good knowledge about fasting during Ramadan, 83.5% of their T2DM subjects did not visit the physician during Ramadan, while 65.8% did not even ask for advice for fasting from their respective health professional.[20] In our study, 36.9% participants believed in the myth that finger prick causes the breaking of Ramadan fasting, while 18% thought that they should not break the fast even in hypoglycemia. However, Jaleel et al. reported that checking blood glucose through a finger prick does not invalidate the fasting state.[21] If blood sugar levels are low and the patient is experiencing signs/symptoms of hypoglycemia, the fast should be broken immediately.[22] All the findings of this study will help to improve understanding of previous reports and may be helpful in similar further studies.

Conclusion

This survey revealed that most adults with type 2 DM fast during the holy month of Ramadan, and their knowledge, attitude, and practices are reasonably good. However, some patients still have myths about monitoring blood glucose by finger pricking & breaking fast due to hypoglycemia during Ramadan fasting. Most people who fasted during Ramadan were aware of the necessity of health checkups and the possibilities of hypoglycemia and dehydration during fasting. Repeated awareness programs are needed to improve knowledge, attitude, and practices of Ramadan Fasting in adults with type 2 DM.

Acknowledgement

We are grateful to the participants of the study for giving their consent.

Conflict of Interest

The authors have no conflicts of interest to disclose.

Financial Disclosure

The author(s) received no specific funding for this work.

Data Availability

Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

Ethical approval for the study was obtained from the departmental technical committee. In addition, written consent was obtained from all study participants.

How to cite this article: Fariduddin M, Gaffar AJ, Selim S, Islam AA, Sultana N, Hasan AK, et al. Knowledge, attitude, and practices of Ramadan fasting in adult type 2 DM: A nationwide survey in Bangladesh in 2021. J Assoc Clin Endocrinol Diabetol Bangladesh, 2022; 1 (2):50-54

Publication History

Received on: 02 February 2022

Accepted on: 18 May 2022

Published on: 1 July 2022

References

1. Lou A and Hammoud M. Muslim patients' expectations and attitudes about Ramadan fasting during pregnancy. Int J Gynaecol Obstet 2016; 132:32124.
2. Hassanein M, Al-Arouj M, Hamdy O, Bebakar WMW, Jabbar A, Al-Madani A et al. International Diabetes Federation (IDF), in collaboration with the Diabetes and Ramadan (DAR) International Alliance. Diabetes and Ramadan: Practical guidelines. Diabetes Res Clin Pract 2017; 126:303-16.
3. Bajaj S, Khan A, Fathima FN, Jaleel MA, Sheikh A, Azad K et al. South Asian consensus statement on women's health and Ramadan. Indian J Endocrinol Metab 2012;16(4):508-11.
4. Sarraf-Zadegan N, Atashi M, Naderi GA, Baghai AM, Asgary S, Fatehifar MR, et al. The effect of fasting in Ramadan on the values and interrelations between biochemical, coagulation and hematological factors. Ann Saudi Med 2000; 20(5-6):377-81.
5. Bravis V, Hui E, Salih S, Mehar S, Hassanein M, Devendra D. Ramadan Education and Awareness in Diabetes (READ) programme for Muslims with Type 2 diabetes who fast during Ramadan. Diabet Med 2010; 27(3):327-31.
6. Ibrahim M, Abu-Al-Magd M, Annabi FA, Assaad-Khalil S, Ba-Essa EM, Fahdil I et al. Recommendations for management of diabetes during Ramadan: update 2015. BMJ Open Diabetes Res Care 2015;3(1):e000108.
7. Alsunni AA, Albaker WI, Almansour AH, Alenazi AS, Alaftan MS, Badar A. Knowledge, Attitude and practice regarding Ramadan fasting and related determinants in patients with type 2 diabetes at a Saudi diabetes clinic Diabetes Metab Syndr Obes 2020; 13:151-59.
8. Jaber D, Albsoul-Younes A, Wazaify M. Physicians' knowledge, attitude and practices regarding management of medications in Ramadan. East Mediterr Health J 2014; 20(1):56-62.
9. Khatib FA, Shafagoj YA. Metabolic alterations as a result of Ramadan fasting in non-insulin-dependent diabetes mellitus patients in relation to food intake. Saudi Med J 2004; 25(12):1858-63.
10. Aadil N, Houti IE, Moussamih S. Drug intake during Ramadan. BMJ 2004; 329(7469):778-82.
11. Salti I, Bénard E, Detournay B, Bianchi-Biscay M, Le Brigand C, Voinet C et al. EPIDIAR study group. A population-based study of diabetes and its characteristics during the fasting month of Ramadan in 13 countries: results of the epidemiology of diabetes and Ramadan 1422/2001 (EPIDIAR) study. Diabetes Care 2004; 27(10):2306-11.
12. Hassanein M, Al-Arouj M, Hamdy O, Bebakar WMW, Jabbar A, Al-Madani A et al. International Diabetes Federation (IDF), in collaboration with the Diabetes and Ramadan (DAR) International Alliance. Diabetes and Ramadan: Practical guidelines. Diabetes Res Clin Pract 2017; 126:303-316.
13. Tourkmani AM, Alharbi TJ, Bin Rsheed AM, AlRasheed AN, AlBattal SM, Abdelhay O et al. Impact of Ramadan Focused Education Program on medications adjustment for patients with type 2 diabetes in a primary health care institution in Saudi Arabia. Diabetes Metab Syndr 2019;13(1):161-165.
14. Fariduddin M, Islam AKMA, Gaffar MAJ, Khan MA, Alam MJ, Hassan M et al. Effects of pre-Ramadan education on safe Ramadan fasting of people with type 2 diabetes: J Assoc Clin Endocrinol Diabetol Bangladesh, 2022: 1(1); 09-14.
15. Bajaj HS, Abouhassan T, Ahsan MR, Arnaout A, Hassanein M, Houlden RL et al. Diabetes Canada position statement for people with Types 1 and 2 Diabetes who fast during Ramadan. Can J Diabetes 2019; 43(1):3-12.
16. Malek R, Hannat S, Nechadi A, Mekideche FZ, Kaabeche M. Diabetes and Ramadan: A multicenter study in Algerian population. Diabetes Res Clin Pract. 2019; 150:322-330.
17. Babineaux SM, Toaima D, Boye KS, Zagar A, Tahbaz A, Jabbar A et al. Multi-country retrospective observational study of the management and outcomes of patients with type 2 diabetes during Ramadan in 2010 (CREED). Diabet Med 2015; 32(6):819-28.
18. Abdelgadir EI, Hafidh K, Basheir AM, Afandi BO, Alawadi F,

Rashid F. Comparison of incidences, hospital stay and precipitating factors of diabetic ketoacidosis in Ramadan and the following month in three major hospitals in United Arab Emirates. A prospective observational study. J Diabetes Metab 2015; 6(514):2.

19. Savaş E. Attitudinal determinants of Turkish diabetic patients and physicians about Ramadan fasting. J Relig Health. 2018;57(1):47-56.
20. Belkhadir J, elGhomari H, Klöcker N, Mikou A, Nasciri M, Sabri M. Muslims with non-insulin dependent diabetes fasting during Ramadan: treatment with glibenclamide. BMJ. 1993;307(6899):292-5.
21. Jaleel MA, Raza SA, Fathima FN, Jaleel BN. Ramadan and diabetes: As-Saum (The fasting). Indian J Endocrinol Metab. 2011;15(4):268-73.
22. Fariduddin M. editor Ramadan & Diabetes (booklet) 8th ed. Dhaka, April 2019; 33-34.