

EFFECT OF RAMADAN ON CARDIAC PATIENTS ATTENDING CARDIOLOGY DEPARTMENT OF CHATTOGRAM MEDICAL COLLEGE HOSPITAL

Anisul Awal^{1*} Md. Nuruddin Tareq¹ Biplob Bhattacharjee¹ Probir Kumar Das² Abul Hossain Shahin³
Md. Mohammed Saleh Uddin Siddique¹ Sreepati Bhattacharjee⁴ Rezwan Rehan¹

Abstract

Background: During the Ramadan fast, among Muslims due to change in life-style, in terms of obtaining the daily calorie intake via two meals with alteration of medication schedule or reduction in sleep duration, might affect patients with cardiovascular diseases. The aim of this study was to determine the proportion of cardiac patients who fasted and factors associated with breaking fast.

Methods and materials: This cross-sectional study was conducted during the month of Ramadan 2018 (17 May to 15 June) in the outdoor and indoor of Cardiology Department of Chattogram Medical College Hospital, Chattogram, Bangladesh. Muslim patient, age above 18 years was included. Pregnant lady lactating mother and Non-Muslims patients were excluded. Data regarding age, sex, comorbid conditions, fasting status and reason for breaking fast if applicable were collected through a case record form and cardiovascular condition was evaluated. **Results:** Out of 221 patients, 121 (54.8%) were admitted in indoor and 100 (45.2%) patients attended in outdoor. Male to female ratio was equal (Male 103 and female 118) and mean (\pm SD) age was 53.48 ± 12.22 years. Of those, 76 (73.8%) male and 86 (72.9%) female were fasting. Significantly higher number of female broke fast than male [Male 41 (53.9%) versus female 65 (75.6%)]. One hundred

and twenty fasted patients (78.4%) experienced symptom aggravation and most of them (91.7%) had to break their fast. Aggravating symptoms were chest pain, breathlessness and hypoglycemic attack present respectively in 68.1%, 16.3% and 12.5% patients. Besides symptoms aggravation, other causes of breaking fast were medication in 36 (22.1%) patients and diagnostic procedure in 4 (2.47%) patients. **Conclusion:** Ramadan fasting had significant effect on female cardiac patients than male. Findings should be investigated with a prospective study.

Key words: Ramadan; Cardiac patients; Indoor; Outdoor; CMCH.

Introduction

Fasting over a prescribed period of time, the act of willingly abstaining from food, drink, or both is practiced to some extent by most religions¹. It takes different forms: complete (Total abstinence from food and water) liquid only (Only water/liquid is consumed) partial (Low calories of about 300 kcal/day) continuous or intermittent. A month of daily fasting from fajr (Dawn) until the maghrib (Dusk) is an obligatory practice during the holy month of Ramadan as well as refraining from sexual activities and any form of ingestion into the body^{2,3}. Several physiological changes such as changes in circadian rhythm, serum lipid and glucose levels as well as renal function markers and hematocrit levels, have been reported among observant Muslims during Ramadan⁴⁻⁶. In addition, Ramadan has been associated with exacerbation of several medical conditions such as diabetes mellitus, migraines, and chronic kidney disease⁷. Nevertheless, the effect of Ramadan on cardiovascular morbidity is not clear^{8,9}.

The change of dietary patterns and meal schedule is accompanied by changes in sleeping patterns¹⁰. This change in life-style, in terms of obtaining the daily calorie intake via two meals with alteration of medication schedule or reduction in sleep duration, might affect patients with Cardiovascular Diseases (CVD)¹¹. Fasting is obligatory on all adult

-
1. Assistant Professor of Cardiology
Chattogram Medical College Hospital, Chattogram.
 2. Associate Professor of Cardiology
Chattogram Medical College, Chattogram.
 3. Junior Consultant of Cardiology
Chattogram Medical College Hospital, Chattogram.
 4. Resident Physician of Cardiology
Chattogram Medical College Hospital, Chattogram.

*Correspondence: Dr. Anisul Awal

E-mail: anisul.awal@yahoo.com
Cell: 01977 26 69 43

Submitted on : 08.05.2019

Accepted on : 25.05.2019

Muslims, male and female except for individuals with medical conditions that prohibit them from fasting¹².

Physicians and religious scholars are getting closer in their approach to patients based on objective risk assessment¹³. While Muslim patients with acute or chronic medical conditions may be exempted from fasting, many do still choose to observe the fast. This may adversely affect their health if not addressed properly by evidence based recommendations¹⁴.

In a comprehensive literature search, research in this particular field was found to be scarce⁹. They recommend multinational prospective studies with sound methodology involving Muslim populations from different regions of the world in order to examine the association between fasting during the holy month of Ramadan and cardiovascular disease.

Bangladesh is a Muslim majority country and 90% of its population is Muslim. The understanding of Ramadan-associated cardiovascular disease morbidity may have profound impact on prevention of related morbidity and mortality, therefore, we sought to determine the proportion of cardiac patients who fasted and factors associated with breaking fast.

Materials and methods

This cross-sectional study was conducted during the month of Ramadan 2018 (17 May to 15 June) in the outdoor and indoor of Cardiology Department of Chattogram Medical College Hospital (CMCH) Chattogram, Bangladesh. CMCH is 1313 bedded tertiary care government hospital in southeastern part of Bangladesh with a very busy cardiology unit. Around 2000 patients attending the OPD and around 200 patients remained admitted in indoor daily with a bed occupancy rate of 200%. The study population were selected from the patients attending or admitted in Cardiology Department with various complaints during Ramadan month of 2018. Muslim patient, age above 18 years was included. Pregnant lady lactating mother and Non-Muslims patients were excluded. Moreover, female patients who broke their fast for religious reason (Like menstruation) were not included in the study. Data regarding age, sex, comorbid conditions, fasting status and reason for breaking fast if applicable were collected through

a case record form and cardio vascular condition was evaluated. Data were analyzed by SPSS version-23. Statistical significance will be defined as $p < 0.05$.

Results

A total of 221 patients were studied. Of them 121 (54.8%) consulted in indoor and 100 (45.2%) consulted in outdoor. Findings of the study are summarized in the following tables and graphs.

Majority of the patients were from 41-60 years in both male and female group (Fig 1). Mean (\pm SD) age of the male, female and total patients were 52.61 (\pm 12.14) 54.25 (\pm 12.29) and 53.48 (\pm 12.23) years respectively.

More than half of the patients had Hypertension (HTN) and the other prevalent risk factors were Diabetes Mellitus (DM) smoking in 40% and dyslipidemia (Fig 2).

Majority of the patients (73.3%) were fasting. There was no significant difference regarding practice of fasting between male and female patients in the study (Table I).

More than half of the patients (65.6%) had to break their fast and significantly higher number of female broke fast than male (Table II). It should be noted here that, we have excluded the pregnant lady, lactating mother and female patients having religious reasons for breaking fast (Like menstruation).

The aggravating symptoms for breaking fast are shown in Table III. It shows that chest pain was the most common symptom responsible for breaking fast. Besides symptoms aggravation, other causes of breaking fast were medication and diagnostic procedure (Not shown in results).

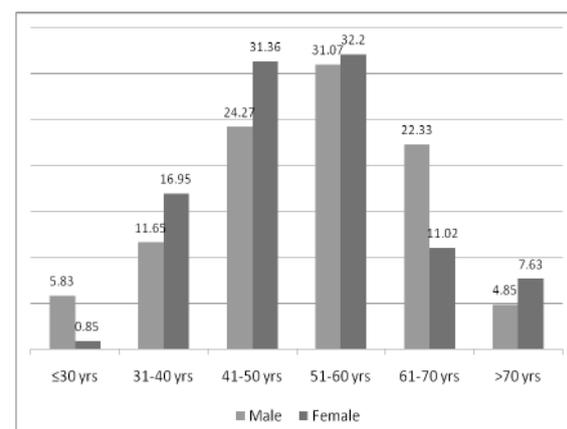


Fig 1: Age and sex distribution of the patients

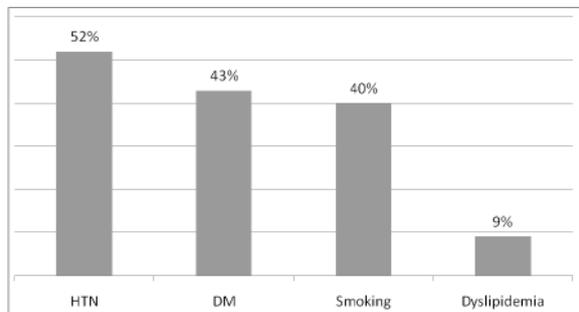


Fig 2: Distribution of the risk factors among patients

Table I : Comparison of the fasting practice between male & female patients

Sex	Fasting practice by the patients		p value
	Yes	No	
Male	76 (73.8%)	27 (26.2%)	0.879
Female	86 (72.9%)	32 (27.1%)	
Total	162 (73.3%)	69 (26.7%)	

Table II: Break of fast by the patients between male and female.

Sex	Break of fast by the fasting patients		p value
	Yes	No	
Male	41 (53.9%)	35(46.1%)	0.004*
Female	65(75.6%)	21(24.4%)	
Total	106(65.4%)	56(34.6%)	

Table III: Aggravating symptoms among the fasting patients (n=106)

Symptoms	Frequency	Percentage (%)
Chest pain	72	67.9
Breathlessness	17	16.1
Hypoglycemic attack	13	12.3
Chest pain & breathlessness	3	2.8

Discussion

Present study demonstrated that, most of the cardiac patients irrespective of the severity of the disease or stability tried to fast in the holly month of Ramadan. However, the prevalence of breaking fast was also high among them. Symptoms aggregation was the main reason for breaking fast. Pre-Ramadan evaluation and counseling might be responsible for this high prevalence of breaking fast. Medical checkup 1 month before Ramadan is warranted, particularly for those with chronic illnesses such as CVD, diabetes mellitus and renal disease. The decision whether the patient can fast or not is left to the discretion of the treating physician¹⁵. However, in resource limited settings like ours it is not usual practice.

Furthermore, we found higher prevalence of risk factors such as smoking, dyslipidemia, diabetes mellitus, and hypertension among our patients. These risk factors might also responsible for higher cardiac events in our patients. In a recent review of the Medline literature published between January 1980 and September 2012, Salim et al revealed that the effects of fasting during Ramadan on stable patients with cardiac disease are minimal, and that patients with stable cardiac illness are able to fast during Ramadan, provided they comply with the recommended dietary and medication regimens¹¹. In contrast to this findings we observed that, more than one third of our patients had to break their fast in the month of Ramadan. An interesting finding was that, significantly higher number of female broke fast than male patients. Chest pain was the predominant feature for breaking fast and admission in the hospital.

Limitation

The present study was a preliminary step to have an overview of the situation in our hospital. The major limitation of this study was the absence of comparison of the baseline and post Ramadan physical conditions of the cardiac patients. Moreover, the cardiac patients admitted in other wards of this hospital due to comorbidities were not included in this study. Finally, the enrolled subject might not be representative of the entire population with cardiovascular conditions as subjects were recruited from a single tertiary care hospital. However, result obtained from this study will be helpful in planning and developing of any future study and program aimed at prevention of Ramadan related complications in our cardiac patients.

Conclusion

From our study it was observed that though most of the Muslim cardiac patients fasted during Ramadan a significant number of them had to break their fast and chest pain was the predominant aggravating symptoms.

Considering our findings a pre-Ramadan assessment initiative should be introduced in our hospital, which will aim to provide education on the risks associated with fasting and to improve patients' self management of their condition, thus reducing potential health complications. Health related messages in printed media about care during Ramadan should be published regularly. Moreover, a prospective study should be carried out in

different health centers of our country to determine the actual scenario of Ramadan with respect to hospital burden and the incidence of patients presenting with different cardiovascular conditions in relation to fasting during Ramadan. An understanding of the various behaviors that promote or hinder health factors of people who fast can be used by practitioners and other health educators to improve public education.

Acknowledgments

The authors would also like to thank all survey participants for their involvement, as well as the Physicians of the outpatients and inpatients Department of Cardiology of CMCH for their collaboration and cooperation.

Contribution of authors

AA - Conception, design, acquisition of data, drafting and final approval.

NT - Design, drafting and final approval.

BB - Acquisition of data, critical revision and final approval.

PKD - Data analysis, critical revision and final approval.

AHS - Acquisition of data, drafting and final approval.

MSUS - Data analysis, critical revision and final approval.

SB - Acquisition of data, interpretation of data, drafting and final approval.

Disclosure

All authors declared no competing interest.

References

1. Trepanowski JF, Bloomer RJ. The impact of religious fasting on human health. *Nutrition Journal*. 2010;9(57):1-9.
2. Chamsi-Pasha M, Chamsi-Pasha H. The cardiac patient in Ramadan. *Avicenna Journal of Medicine*. 2016;6(2):33-38.
3. Abu-Salameh I, Plakht Y, Ifergane G. Migraine exacerbation during Ramadan fasting. *The Journal of Headache and Pain*. 2010;11(6):513-517.
4. Qasrawi SO, Pandi-Perumal SR, BaHammam AS. The effect of intermittent fasting during ramadan on sleep, sleepiness, cognitive function, and circadian rhythm. *Sleep Breath*. 2017;21(3):577-586.
5. Mazidi M, Rezaie P, Chaudhri O, Karimi E, Nematy M. The effect of Ramadan fasting on cardiometabolic risk factors and anthropometrics parameters: a systematic review. *Pakistan Journal of Medical Science*. 2015;31(5):1250-1255.

6. Trabelsi K, El Abed K, Trepanowski JF, Stannard SR, Ghilissi Z, Ghazzi H, Masmoudi L, Jammoussi K, Hakim A. Effects of Ramadan fasting on biochemical and anthropometric parameters in physically active men. *Asian Journal of Sports Medicine*. 2011;2(3):134-144.

7. NasrAllah MM, Osman NA. Fasting during the month of Ramadan among patients with chronic kidney disease: renal and cardiovascular outcomes. *Clinical Kidney Journal*. 2014;7(4): 348-353.

8. Almansori M, Cherif E. Impact of fasting on the presentation and outcome of myocardial infarction during the month of Ramadan. *Italian Journal of Medicine*. 2014;8(1):35-38.

9. Turin TC, Ahmed S, Shommu NS, Afzal AR, Al Mamun M, Qasqas M, Rumana N, Vaska M, Berka N. Ramadan fasting is not usually associated with the risk of cardiovascular events: A systematic review and meta-analysis. *Journal of Family Community Medicine*. 2016;23(2):73-81.

10. Norouzy A, Salehi M, Philippou E, Arabi H, Shiva F, Mehrnoosh S et al. Effect of fasting in Ramadan on body composition and nutritional intake: A prospective study. *Journal of Human Nutrition Diet*. 2013;26(Suppl 1):97-104.

11. Salim I, Al Suwaidi J, Ghadban W, Alkilani H, Salam AM. Impact of religious Ramadan fasting on cardiovascular disease: A systematic review of the literature. *Curr Med Res Opin*. 2013; 29(4): 343-354.

12. Al-Hilali MT, Khan MM. The Translation of the Meanings of the Noble Quran 2:185. Madina (KSA): King Fahd Complex for the Printing of the Holy Quran. 2005.

13. Beshyah SA. Fasting during the month of Ramadan for people with diabetes: Medicine and Fiqh united at last. *Ibnosina Journal of Medicine and Biomedical Sciences*. 2009, 1(2):58-60.

14. Sherif IH, Lakhdar AA. Ramadan fasting and the medical patient: Consensus is welcome but more evidence is needed. *Ibnosina Journal of Medicine and Biomedical Sciences*. 2010;2:237-910.

15. Chamsi-Pasha H. Islam and the cardiovascular patient-Pragmatism in practice. *British Journal of Cardiology*. 2013;20(3):1-2.