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Original Article

Influence of Fasting on Emergency Visits to A Tertiary Care Hospital by Fasting Diabetic Patients in Ramadan

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ABSTRACT

Background: Ramadan, a month of fasting for Muslims, significantly alters daily routines and dietary habits. Understanding how such changes affect diabetic patients, particularly in terms of emergency hospital visits, is crucial for effective healthcare planning and patient safety.

Objective: To evaluate the impact of Ramadan fasting on the frequency of emergency room visits by diabetic patients.

Methods: In this cross-sectional study, 200 diabetic patients visiting a tertiary care hospital's ER were monitored over three months: the month before Ramadan, during Ramadan, and the subsequent month. We assessed the frequency and trend of diabetic emergencies among these patients.

Results: The participants had a mean age of 45.85±9.19 years, with males comprising 52.5% (105) and females 47.5% (95). Overall, diabetic emergencies accounted for 26% of visits, with 59.6% (31) occurring a month before Ramadan, 23.1% (12) during Ramadan, and 17.3% (9) post-Ramadan, showing a downward trend.

Conclusion: Ramadan fasting does not adversely affect diabetic patients, showing no increase in the frequency of emergency visits due to diabetic emergencies, irrespective of diabetes type. This indicates that with proper management, fasting is safe for diabetic patients during Ramadan.

Keywords: Diabetes, Diabetic emergency, Emergency Room visits, Fasting, Ramadan, Tertiary care, Type I diabetes, Type II diabetes.

INTRODUCTION

Fasting during the sacred month of Ramadan, the ninth month of the Islamic calendar, is a practice of profound cultural and religious significance for Muslims worldwide. This period is marked by abstention from food and drink from sunrise to sunset, fostering spiritual growth, communal unity, and introspection. The evening meal, known as Iftar, signals the end of daily fasting (1). While fasting is a fundamental religious obligation for adult Muslims, integral to the Five Pillars of Islam, exceptions exist for individuals who are sick, pregnant, breastfeeding, or traveling, permitting them to abstain from the fast (4, 5).

Diabetes, a chronic metabolic disorder characterized by elevated glucose levels due to insufficient insulin production or ineffective insulin utilization, presents specific challenges for those observing Ramadan (7). Prolonged fasting can disrupt the delicate balance of blood glucose levels, potentially leading to severe complications such as hyperglycemia or hypoglycemia (8). Consequently, diabetic patients must undertake fasting under medical guidance to mitigate health risks. Despite exemptions in religious teachings, many diabetic individuals choose to fast, necessitating careful planning and management of their condition during this period.

Recent studies have highlighted increased incidents of hypoglycemia among insulin-treated diabetics during Ramadan compared to other months, contrasting with a higher rate of hospitalizations and occurrences of diabetic ketoacidosis due to prolonged fasting-induced acidosis (10). These observations indicate significant healthcare utilization changes and underscore the need for targeted educational and medical interventions.

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The objective of this study is to determine the variations in emergency department visits at a tertiary care hospital by fasting diabetic patients during Ramadan, compared to other months. This investigation will facilitate enhanced patient safety and comprehensive care by identifying and addressing gaps in knowledge and practice among diabetic patients observing Ramadan.

MATERIAL AND METHODS

A cross-sectional study was conducted at the Department of Medicine, Saidu Teaching Hospital, Swat, KPK, Pakistan, from September 2023 to February 2024. This study involved two hundred diabetic patients, confirmed by a random glucose fasting test, aged between 30 and 60 years, and included participants of any gender. The primary objective was to monitor the frequency of visits and the nature of diabetic emergencies in the emergency department. Observations were made for one month before Ramadan, during Ramadan, and for one month after Ramadan to capture any variations in the pattern of emergencies related to diabetic conditions.

Patients newly diagnosed with diabetes within one month prior to the initiation of the study were excluded to ensure a consistent study cohort. Data collection was systematically conducted using a pre-designed proforma, which facilitated the structured recording of all relevant patient interactions and outcomes during the specified periods.

Statistical analysis was performed using SPSS version 23. The Chi-Square test was employed to determine the association between the timing of emergency visits and various factors that could influence diabetic emergencies. A p-value of less than 0.05 was considered statistically significant, indicating a meaningful association between observed patterns and the periods of fasting. This rigorous approach aimed to ensure the reliability and validity of the findings, contributing to a clearer understanding of the impact of fasting on diabetic patients during Ramadan.

RESULTS

In the conducted study, a cohort of two hundred diabetic patients was examined, comprising 105 males (52.5%) and 95 females (47.5%), with an average age of 45.85 ± 9.19 years. The patients were primarily diagnosed with Type I diabetes (52.5%), while the remainder had Type II diabetes (47.5%). Over the three-month observation period—encompassing the month before Ramadan, during Ramadan, and the following month—the prevalence of diabetic emergencies was recorded at 26% (52 cases), whereas non-diabetic emergencies accounted for 74% (148 cases).

A more detailed temporal analysis revealed that the majority of diabetic emergencies occurred in the month preceding Ramadan, with 31 incidents (59.6%), compared to 12 (23.1%) during Ramadan and 9 (17.3%) in the month following. This distribution demonstrates a statistically significant decrease in diabetic emergencies during Ramadan (P = 0.0001). Among the diabetic emergencies, hyperglycemia was the most frequently encountered condition, affecting 37 patients (18.5%), while hypoglycemia was observed in 15 patients (7.5%).

Subgroup analysis focusing on demographic variables such as age and gender showed no significant associations with the incidence of diabetic emergencies. Similarly, the type of diabetes did not significantly correlate with the occurrence of emergencies during the observed periods. These findings suggest that while the timing of Ramadan influences the frequency of diabetic emergencies, demographic factors and diabetes type do not appear to alter the risk of such incidents significantly during these intervals.

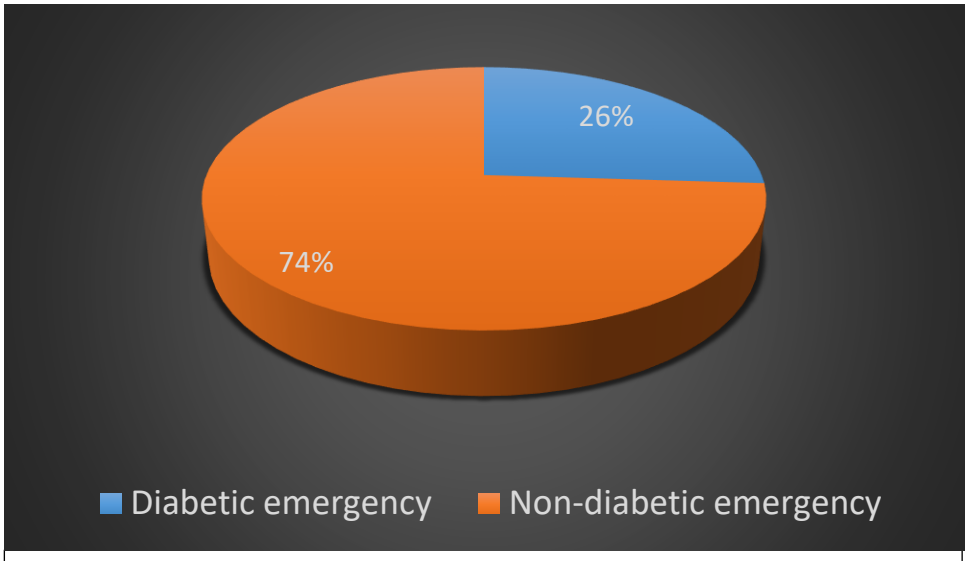

Figure 1 Emergency type

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Table 1 Distribution of emergency type during three months

		Months			Total	P value
		Month before Ramadan	During Ramadan	Subsequent month after Ramadan		
ER type	Diabetic emergency	31	12	9	52	0.04
		59.6%	23.1%	17.3%	100.0%	
	Non-diabetic emergency	60	41	47	148	
		40.5%	27.7%	31.8%	100.0%	
Total		91	53	56	200	
		45.5%	26.5%	28.0%	100.0%	

Table 2 Stratification of diabetic emergency with various parameters during three months

		Months						
		Month before Ramadan		During Ramadan		Subsequent month after Ramadan		P value
		N	%	N	%	N	%	
Gender	Male	17	65.4%	4	15.4%	5	19.2%	0.42
	Female	14	53.8%	8	30.8%	4	15.4%	
Type of diabetes	Type I	15	60.0%	4	16.0%	6	24.0%	0.31
	Type II	16	59.3%	8	29.6%	3	11.1%	
Diabetic emergency presentation	Hyperglycemia	24	64.9%	9	24.3%	4	10.8%	0.14
	Hypoglycemia	7	46.7%	3	20.0%	5	33.3%	
Age groups (Years)	30 to 40	9	64.3%	3	21.4%	2	14.3%	0.84
	41 to 50	8	53.3%	3	20.0%	4	26.7%	
	> 50	14	60.9%	6	26.1%	3	13.0%	

DISCUSSION

The significant shifts in daily routines during Ramadan, including changes in physical activity, sleep patterns, and dietary habits, have profound implications for diabetic patients. These alterations can escalate the risk of serious complications such as hypoglycemia, hyperglycemia, and diabetic ketoacidosis (DKA), thereby increasing hospital visits due to these conditions (11). Notably, the study by Elbarsha and colleagues reported a decrease in hospital admissions during Ramadan compared to the month of Dhu al-Qidah, highlighting the variability in health outcomes depending on the individual's adherence to fasting (12).

The influence of Ramadan on diabetic emergencies was further explored through our study of 200 diabetic patients. We observed a decrease in the number of emergency room visits for diabetic emergencies during Ramadan compared to the month preceding it. This pattern suggests an initial adjustment phase prior to Ramadan where patients might experience instability in managing their diabetes, potentially due to changes in their preparation for the fasting period (14). This finding aligns with other reports indicating that the management of diabetes during Ramadan requires significant adaptation by patients, which could lead to fewer emergencies as the fasting period progresses (9, 13).

Furthermore, our results showed no significant differences in emergency visits related to the type of diabetes, age, or gender. This implies a uniform challenge across these demographics, underscoring the need for comprehensive diabetes education and management strategies tailored for fasting periods. The fact that hyperglycemia was the most common emergency condition encountered reiterates the need for closer glucose monitoring and appropriate adjustments in medication during fasting (14-16).

This study's strengths include its focus on a well-defined population during a consistent and culturally significant fasting period, providing valuable insights into the healthcare needs and risks associated with diabetic patients during Ramadan. However,

limitations include the lack of detailed dietary and medication adherence data, which could affect the interpretation of the impact of fasting on diabetic management. Additionally, the study's setting in a single hospital might limit the generalizability of the findings to other regions or populations with different healthcare practices or cultural backgrounds(17-19).

The observed decrease in diabetic emergencies during Ramadan compared to the previous month highlights the potential benefits of rigorous pre-Ramadan education and medical review. This proactive approach could mitigate the initial spike in complications seen before Ramadan, enhancing overall patient safety and health during fasting. Future studies should aim to include more comprehensive data on patient adherence to prescribed dietary and medical recommendations, as well as longitudinal follow-up to assess long-term outcomes of fasting in diabetic patients. These efforts would further elucidate the complexities of diabetes management during fasting and help optimize care for this vulnerable population.

CONCLUSION

Our study concludes that Ramadan fasting does not adversely affect diabetic patients, regardless of whether they have Type I or Type II diabetes. A noticeable decline in emergency room visits for diabetic emergencies was observed from the month preceding Ramadan through to the month following it. This trend suggests that with appropriate medical guidance and careful management of their condition, diabetic patients can safely observe Ramadan fasting without increased risk of acute complications. It underscores the importance of targeted education and preemptive medical interventions to prepare diabetic individuals for the fasting period, thereby ensuring patient safety and minimizing healthcare utilization during this culturally significant time.

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