

# A survey of patients with type 2 diabetes and fasting outcomes during Ramadan 2016 in London: the East London Diabetes in Ramadan Survey

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## Abstract

**Aims:** Fasting in the summer months for Muslim people with diabetes during Ramadan is challenging, particularly in temperate climates where the duration of fasting is prolonged. We aimed to survey the experiences of patients with diabetes during Ramadan 2016 in East London.

**Methods:** A telephone survey of Muslim patients with type 2 diabetes in Tower Hamlets, London was carried out. Patients were surveyed on discussions with a health professional before Ramadan, whether they followed advice given, the number of fasts undertaken, alterations in medication and adverse events.

**Results:** Of 1,000 people contacted, 718 agreed to the survey. 396 (55.1%) were female, the median age was 52.1 years (range 31–84) and median diabetes duration 13.6 years (range 1–45). 36 (5%) were treated with diet alone, 428 (59.6%) with oral antidiabetic therapy and 254 (35.4%) were treated with insulin. 372 people (52%) discussed fasting with a health professional; 126 (33.8%) were advised not to fast, of whom 103 (81.7%) elected not to fast. 398 (55.4%) fasted at least once; the median number of days fasted was 16 (range 1–30). 327 patients (82.1%) made changes to their therapy. 24 patients (6%) reported episodes of hypoglycaemia, of whom two (0.3%) required third party assistance.

**Conclusions:** Significant numbers of patients did not discuss fasting with a health professional prior to Ramadan and some patients fasted despite medical advice. Despite the long duration, many patients fasted successfully for at least part of Ramadan, with few adverse outcomes.

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**Key words:** diabetes, Ramadan, fasting

## Introduction

Fasting during the month of Ramadan is an imperative for all adult Muslims who are well, and involves complete abstinence from food and fluids during daylight hours. As the Muslim calendar is lunar, the month of Ramadan comes forward by approximately 10 days each year. During summer the length of the fasts can be up to 20 hours in the UK. Islamic authorities state that health problems that are likely to worsen during fasting provide a clear exemption from fasting.<sup>1</sup> A number of guidelines exist to enable health professionals to advise Muslim patients on their risk of fasting, and how to manage their diet and diabetes medication whilst fasting.<sup>1,2</sup> Previous studies have looked at outcomes of fasting in patients predominantly in tropical climates where the duration of fasting is generally stable at around 12–14 hours.<sup>3,4</sup> In this study, we aimed to survey Muslim patients with diabetes in East London on their experience of fasting during summer 2016, a period when the duration of fasting was over 19 hours.

## Methods

The London Borough of Tower Hamlets is an area with a high prevalence of type 2 diabetes (T2D), with over 15,000 patients registered as having T2D.<sup>5</sup> The area has the highest number of Muslim residents in the UK. We undertook a telephone survey of Muslim patients with T2D in Tower Hamlets. Patients were identified from general practice registers randomly and surveyed during a 4-week period between July and August 2016, shortly after the end of Ramadan (6 June to 5 July 2016). Patients were questioned in English or Bengali about their discussion of fasting with a health professional before Ramadan, and whether they followed the advice given. If they had fasted, they were asked to recall how many fasts they had undertaken and whether they undertook any alterations in medication doses. They were asked about any adverse events including hypoglycaemia. Differences in demographic characteristics between fasting and non-fasting patients were tested using  $\chi^2$  analysis.

## Results

A total of 1,000 people were contacted and 718 agreed to participate in the survey, of which 396 (55.1%) were female.

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**Table 1** Demographic characteristics of patients who fasted compared with patients who did not fast during Ramadan 2016

|   | Fasting patients | Non-fasting patients | p value |
|---|------------------|----------------------|---------|
| <b>Number (%)</b>                               | 398 (55.4)       | 320 (44.6)           | –       |
| <b>Female, n (%)</b>                            | 218 (54.8)       | 180 (56.2)           | NS      |
| <b>Age, median (range), years</b>               | 51.3 (31–84)     | 52.8 (34–82)         | NS      |
| <b>Diabetes duration, median (range), years</b> | 12.6 (0.5–45)    | 13.2 (1–42)          | NS      |
| <b>Treatment regimen, n (%)</b>                 |                  |                      |         |
| <b>Diet only</b>                                | 23 (5.7)         | 13 (4)               | NS      |
| <b>Oral hypoglycaemic only</b>                  | 247 (62.0)       | 182 (56.8)           | NS      |
| <b>Insulin alone or with oral treatment</b>     | 128 (32.1)       | 125 (39.0)           | <0.05   |

Median age was 52.1 years (range 31–84) and median diabetes duration was 13.6 years (range 1–45). Thirty-six patients (5%) were treated with diet alone, 428 (59.6%) with oral antidiabetic therapy alone and 254 (35.4%) with insulin with or without tablets.

Of the 718 patients surveyed, 372 (52%) had discussed fasting with a health professional prior to Ramadan. Of these 372 patients, 126 (33.8%) were advised not to fast due to being at high risk of adverse effects. Of 126 patients advised not to fast, 103 (81.7%) elected not to fast at all while 23 patients elected to fast despite medical advice. Of the 23 patients who elected to fast despite medical advice, 15 of them were on insulin therapy and the remainder were on oral therapy. Of these patients, seven reported at least one episode of hypoglycaemia, one of which required third party assistance.

Of the 718 patients surveyed, 398 (55.4%) fasted at least one day during Ramadan 2016. There were no differences in the characteristics of patients who fasted and those who did not fast, although significantly fewer patients on insulin fasted (table 1). Among the 398 patients who fasted, the median number of days fasted was 16 (range 1–30). Most patients who fasted made changes to their therapy (n=327, 82.1%).

Among the 398 patients who fasted at least one day during Ramadan, 24 (6%) reported at least one episode of hypoglycaemia, of whom only two patients (0.3%) required third party assistance. No patients reported hospitalisation during Ramadan for any diabetes-related event.

## Discussion

Fasting for people with diabetes is challenging, more so in temperate climates during summer months when the duration of fasting is at its longest. Islam exempts people with illness from the duty of fasting, and most religious authorities suggest that

patients with diabetes who may encounter potential complications of fasting are exempt. Nevertheless, many Muslims with diabetes opt to fast despite advice not to do so from health professionals.

The Epidemiology of DIAbetes and Ramadan (EPIDIAR) study is to date the largest epidemiological study of fasting Muslims with diabetes during Ramadan.<sup>3</sup> The study surveyed over 13,000 patients with diabetes in 13 Muslim countries and demonstrated that 79% of patients with T2D fasted during Ramadan. The risk of severe hypoglycaemia increased 7.5-fold in patients with T2D (0.4–3 events per 100 persons per month). Smaller surveys have also suggested an increased frequency of hypoglycaemia,<sup>6</sup> whilst others have not shown increased hypoglycaemia in patients treated with oral therapies.<sup>7,8</sup>

The CREED study reported a multi-country retrospective observational survey of 3,250 patients from 13 countries with T2D and fasting in 2010.<sup>4</sup> Ninety-one patients in the study were from the UK. The survey found that 39.3% of patients had treatment modified before Ramadan, 64% fasted every day of Ramadan and 94.2% fasted for at least 15 days. In this survey, 8.8% of patients reported at least one episode of hypoglycaemia and 0.25% reported a diabetes-related hospitalisation during the month. Our data suggest that significantly fewer patients elected to fast during Ramadan 2016 in East London (52%). This may be due to the fact that the fast was so long during this period, and people with diabetes elected not to fast for safety reasons.

A number of guidelines have been published which suggest that, as part of a pre-Ramadan assessment, it is useful to stratify patients according to their risks of adverse events during Ramadan.<sup>2,9</sup> The Diabetes and Ramadan International Alliance (DAR) have published guidelines which provide clear guidance for health professionals and patients on the safety of fasting and changes in medication recommended for patients planning to fast.<sup>1</sup> The guidance states that patients at very high risk or high risk should be discouraged from fasting but that, if they insist, they should receive structured education and careful monitoring by the diabetes specialist team, monitor blood glucose regularly, adjust medication as per recommendations and be prepared to stop the fast if hypoglycaemia (glucose <3.9 mmol/L) or hyperglycaemia (glucose >16.7 mmol/L) occurs.

Outcome of fasting can be improved by attendance at Ramadan focused education.<sup>10</sup> In Tower Hamlets we have run pre-Ramadan focused education for patients with diabetes for a number of years.<sup>11</sup> Sessions are run in local community centres, health centres and places of worship, and are well attended. Patients with diabetes are given education about exemptions from fasting and individualised medication adjustment if they plan to fast. Whilst these sessions are well advertised and popular, they access only a small number of patients with diabetes who fast. In addition, we have run education for health professionals on the management of diabetes during Ramadan, and many health professionals in our area are proactive in asking patients with diabetes how they plan to manage their diabetes during Ramadan. Despite this, our data suggest that only 52%



## Key messages

- Diabetes is common amongst Muslim patients who fast in the UK and fasting is challenging, particularly in summer months
- There are few data on fasting outcomes in people with diabetes living in the UK
- In our survey, significant numbers of patients did not discuss fasting with a health professional prior to Ramadan
- Some patients fasted despite medical advice
- Despite the long duration, many patients fasted successfully for at least part of Ramadan, with few adverse outcomes

of patients surveyed discussed fasting with their health professional. A previous qualitative study from Manchester, UK suggests that some patients are reluctant to disclose fasting to their primary healthcare professional.<sup>12</sup> We are working on ways to try and improve this education gap, including possibly using care planning discussions which are embedded within our primary care diabetes service, to highlight Ramadan as an issue for all Muslims with diabetes.

Our data suggest that significant numbers of patients were advised not to fast during Ramadan and most – although not all – heeded this advice. This is encouraging, and suggests that people with diabetes understand that fasting is associated with an adverse risk which can lead to problems. Our data also suggest that adverse events were uncommon amongst our patients surveyed. Only two significant hypoglycaemic events occurred in the 398 patients who fasted, and no patient was hospitalised for diabetes-related problems.

In summary, we report a survey of outcomes of fasting amongst a large UK Muslim population with T2D. We have found that significant numbers of patients did not discuss fasting with a health professional prior to Ramadan, and some patients fasted despite medical advice. Despite the long duration, many patients fasted successfully for at least part of Ramadan with few adverse outcomes. This may suggest that targeted educa-

tion to those patients most at risk of adverse outcomes (patients on insulin or sulfonylurea) may be more cost effective.

**Conflict of interest** None

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