

# Type 2 diabetes patient's perspective on Ramadan fasting: a qualitative study

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## ABSTRACT

**Objective** We evaluated the beliefs, experience and diabetes management strategies of type 2 diabetes mellitus (T2DM) Muslim patients that chose to fast during Ramadan.

**Research design and methods** A semistructured focus group interview was conducted with 53 participants with T2DM. Participants were purposefully sampled and asked to share their perspective on Ramadan fasting. All interviews were audio recorded, transcribed verbatim and analyzed thematically.

**Results** Participants reported optimism towards fasting during Ramadan, as they believed that fasting was beneficial to their overall well-being, and a time for family bonding. Most participants made limited attempts to discuss with their doctors on the decision to fast and self-adjusted their medication based on experience and symptoms during this period. They also reported difficulty in managing their diet, due to fear of hypoglycaemia and the collective social aspect of fasting.

**Conclusion** Muslims are optimistic about their well-being when fasting during Ramadan. Many choose to fulfill their religious obligation despite being discouraged by their doctors. Collaboration with religious authorities should be explored to ensure patients receive adequate education before fasting during Ramadan.

**Trial registration number** NCT02189135; Results.

## INTRODUCTION

Fasting during the holy month of Ramadan is an important event for Muslims and considered one of the five pillars of Islam.<sup>1</sup> During this period, the Quran requires all healthy Muslims to abstain from food and drink throughout the day and eat during daybreak (sahur) and after sunset (iftar).<sup>2</sup> Ramadan is also a time for spiritual growth, relationship bonding with family and friends and reflecting on personal relationships.<sup>3,4</sup> Although the Quran exempts those who are diagnosed with illness from fasting, the majority of Muslim practitioners living with diabetes do not perceive themselves as sick and continue to fast.<sup>5,6</sup> A population-based study conducted in 13 Muslim populated country reported that as many as 78% of patients with type 2 diabetes mellitus (T2DM) will fast during the month of Ramadan.<sup>1</sup> Fasting for long period of time

## Key messages

- ▶ Muslims with diabetes who choose to fast during Ramadan have an increased risk of experiencing poor glycemic control and hypoglycaemia.
- ▶ Muslims with diabetes choose to fast due to an optimistic outlook on their health and well-being.
- ▶ Collaboration with religious authorities should be encouraged to ensure Muslims can have a safer fasting during Ramadan.

could potentially cause individuals living with diabetes to risk experiencing the effects of poor glycemic control, including hypoglycemia, hyperglycemia, ketoacidosis and dehydration.<sup>7-10</sup>

To date, a large number of guidelines and studies have been published to assist clinicians in managing patients with diabetes during Ramadan.<sup>6,8,9,11-22</sup> However, this needs to be complemented with an understanding of the patient's view of fasting and behavioural patterns during this period. Several recent studies have explored the patient's beliefs about diet and medication during Ramadan. In studies by Patel *et al* and Robinson and Raisler,<sup>10,23</sup> the authors noted that Muslims with diabetes who chose to fast altered their diet and medication and were generally positive in their fasting experience. However, there are no studies that have explored the patient's perspective on the health implication of fasting during Ramadan from a middle-income and Muslim majority country. This study aims to explore the beliefs, experience and diabetes management of Muslim people with diabetes who choose to fast during Ramadan in Malaysia.

## RESEARCH DESIGN AND METHODS

### Setting

This study was conducted in Malaysia a multi-ethnic and multi-cultural country with Islam being the most professed religion. The Malay community and Indian community



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predominantly professes Islam. As such, many will observe and fast during the holy month of Ramadan every year.

### Participants

This study reports the qualitative results of a mix-method study. Participants were recruited if they were aged 18–75 years, diagnosed with T2DM for at least 6 months, HbA1c between 7.5% and 11% with an intention to fast for at least 15 days during Ramadan. These participants were purposively sampled, according to their gender and age group. In addition, recruited participants were part of a quantitative study and were recruited by a researcher (JYL) who has been involved in the recruitment and follow-up of the previous study. In total, 53 participants agreed to participate in this focus group. Data collection took place between July 2014 to September 2014 and April 2015 to June 2015.

### Ethics

This study was approved by the Monash University Research Ethics Committee (CF14/1977-2014001016) and the National Medical Research Register (NMRR-14-177-19466). All participants provided informed consent to participate in this qualitative study.

### Conceptual framework

Our study used the UK Medical Research Council (MRC) framework for the Evaluation of complex Intervention as a guide to the development of this study.<sup>24</sup> A detailed description of the theoretical development of this study was reported previously.<sup>25</sup> The Health Belief Model (HBM) was used as the conceptual framework within which patient's health behavior was emphasized.<sup>26</sup> HBM explains patient's health behavior by examining perceptions and attitudes towards a disease and negative outcomes of certain actions and modifies these perceptions by implementing external factors including physical, social and cultural environment factors.<sup>27</sup>

### Methodological approach

We conducted focus group sessions to identify and explore the views of patients with T2DM on fasting during Ramadan. The use of in-depth interviews and focus group discussions allowed researchers to triangulate the data. An interview topic guide was developed based on literature review, expert opinion and was tested in our pilot study and themes were modified based on themes that emerged during the interviews. The topic guide developed explored on a range of beliefs regarding fasting during Ramadan including diet, self-management, beliefs and medication. As the majority of participants were from the Malay ethnic group, most interviews were conducted in the Malay language. Interviews were conducted in English where language barrier was not a concern. General probing was used during the interview sessions to facilitate questions (Can you explain further? What about your opinion on this? Can you further clarify...). Follow-up questions were used for clarification and participants were encouraged to narrate freely as much as possible. The interviews were

usually between 60 and 90 min and were audio recorded and transcribed verbatim. These sessions were conducted at a time and location that was convenient for participants and all participants were reimbursed for their time and travel.

All interviews were analyzed using a thematic approach.<sup>28</sup> This method allowed for patterns of responses to be captured within the data set. All the themes were derived inductively from the data where codes and theme development are directed by the content of the transcribed data. Evidence of data saturation was determined when no selective codes emerged from the data. Hence, data collection was discontinued when once saturation was achieved.

## RESULTS

Table 1 reports the characteristics of all participants included in this study. Most participants were of Malay ethnicity, with a mean age of participants was 51.6 years. The mean duration of diabetes was 7.1 years, with HbA1c of 8.3%. Most participants have secondary education, unemployed and married. Results from this study identified three main themes: (1) perception of Ramadan, (2) managing side effects during Ramadan, and (3) diet control during Ramadan. All participants are identified by their age, gender and ethnicity.

### Theme 1: Perception of Ramadan

Participants (32%) mentioned that they understood the challenges faced by Muslim who fast during Ramadan.

Actually yes you need time you know because you have been living with that habit for so long and then you want to change it. It gets discipline. [38/F, Malay]

Participants (28%) commented that fasting during Ramadan is difficult for those with diabetes due to the medicine regime and long periods without food.

During Ramadan is exceptionally difficult. Already we have to take medication, eat at five in the morning then we need to take medication after food and have to fast until the evening. Not possible. By twelve o'clock I feel hungry. Very difficult. [54/F, Malay]

During fasting month with diabetes its difficult you know. Too sweet or not sweet enough will feel weak. [54/F, Malay]

Participants (11%) also suggested that being diagnosed with diabetes affected their social lives during Ramadan, as they felt more lethargic during this period.

It affects our relationship with society la because we go out less. Also because we know we are weaker. We get tired climbing the stairs. We walk less so we mingle less. [55/M, Malay]

Some (7.5%) mentioned that they relied on their faith as the source of strength to overcome the challenges of fasting while some view that their current predicament was a challenge from 'Allah' and have chosen to accept it.

**Table 1** Baseline demographics of participants

	Total respondents (n=53)
Age, years (mean±SD)	51.6±9.6
Gender, n	
Male	21
Female	32
Weight, kg	74.5±14.8
Body mass index, kg/m <sup>2</sup>	29.8±6.1
Duration of diabetes, years (mean± SD)	7.1±6.1
Ethnicity, n	
Malay	51
Indian	2
Education level, n	
None	1
Primary	16
Secondary	23
Tertiary	13
Employment status, n	
Employed	23
Unemployed	30
Marital status, n	
Single	2
Married	49
Widowed	2
Medication used, (% of patients)	
Metformin	45
Sulphonylurea	26
Acarbose	4
Insulin	6
Fasting plasma glucose, mmol/L (mean ± SD)	7.7±2.4
Glycosylated haemoglobin, HbA1c % (mean±SD)	8.3±1.7

Prayer is ok. It helps us. [55/M, Malay]

No problem. Only I pray more. I continue to eat regularly and pray. [53/F, Malay]

We feel like these things are like tests from God and we will accept while at the same time try medication. [51/F, Malay]

Respondents (26%) suggested that fasting during Ramadan was beneficial for their health.

Fasting is good to control diabetes really. You don't eat sugar [59/F, Malay]

If we fast its better really because our stomach are empty its better. I don't really feel sick. With fasting it really is better. So now we know its because of our food intake really. [55/M, Malay]

We can see it for ourselves. When we fast during Ramadan our health is fantastic. [55/M, Malay]

No I'm ok. I feel during Ramadan it's even better can control glucose. [49/F, Malay]

Some (3.7%) have also suggested that it is good for overall health as the levels of cholesterol and weight are reduced.

Fasting month we fast controls food, sugar lose weight also. [58/F, Indian]

The fasting you will get everything less also. Sugar, your cholesterol, your everything so she was fasting so the sugar level all shows better [63/M, Indian]

However, one participant felt that a better blood glucose control during Ramadan is not extraordinary.

If your sugar is controlled when fasting it's considered you cheating. [34/M, Malay]

One participant viewed that fasting is a matter of personal choice but felt that it reflects ones willingness to do it.

It depends on people la some can stand without food some can't. It all depends on our will if we want to we can [59/M, Malay]

This diabetes doesn't have any bad effects. During fasting we fight the urge la like in the after noon I feel like sleeping but I don't. Even after breaking fast I fell like sleeping but I don't I stay awake by doing work that's all. [60/M, Malay]

In terms of education, participants (9.4%) felt that regular diabetes education given by their clinicians was more than sufficient and viewed that extra education classes were unnecessary.

To me whatever the doctor say lets say three or four months the doctor will explain and advice is sufficient for me. [63/M, Malay]

Actually these things we can figure out for ourselves. [62/F, Malay]

Self-adjustment of medication to avoid hypoglycemia was common among participants (17%). This often involved reducing a dose or not taking medication completely.

To me whatever the doctor say lets say three or four months the doctor will explain and advice is sufficient for me. [63/M, Malay]

Actually these things we can figure out for ourselves. [62/F, Malay]

Respondents (17%) often reported how they responded to fasting through medication dosage adjustment to avoid glycaemia, and these were typically done based on their previous experience when fasting during Ramadan.

I research la do my own research first. Doctor say I take one tablet morning and night la and I see if normal I take half then I see still ok so I take half la. [67/M, Malay]

One participant was adamant in adjusting their dosage despite opposition from their doctors.

I changed it myself even though the doctor said not to. He said if I'm afraid of hypo I should check first and if hypo should come back and reduce a bit. [56/M, Malay]

Only one participant consulted his doctor before making any adjustment towards his insulin dose in preparation for Ramadan.

Yes I did. My doctor changed it with me. Before forty (units). Morning forty at night twenty he told me. I discussed with my doctor because twenty was too much because I don't eat later I will become hypo [45/M, Malay]

### Theme 2: Managing side effects during Ramadan

Participants (43%) reported experiencing hypoglycemia symptoms during the course of the month of Ramadan. Reoccurring hypoglycemic symptoms that participants experienced during Ramadan includes shakiness and fainting.

Aunty if already shaking a lot aunty cannot continue aunty have to break fast. Break fast, check blood sugar levels ah too low have to drink or eat. Fasting this year I have relapsed a week because I feel like going to blackout and I break fast. [63/F, Malay].

When experiencing those symptoms I don't fast. If shaking all I get scared and start to have a drink. [54/F, Malay]

Like those cold sweating, shaking I will break fast. In that Ramadan month I've broke fast five to six times. [44/F, Malay]

Lethargy and sleepiness were symptoms reported by participants (6%) when fasting.

There are effects la. Sometimes we are tired but with this sickness like diabetes when we have high sugar levels we like to sleep. [55/M, Malay]

Side effects from prolonged fasting raised concerns among one participant about how patients with diabetes would be viewed at the work place.

At home at times you feel sleepy so we don't do any housework and we rest and so on but it's not the same at the work place. People don't know that you are sick and have difficulty walking and we don't take MC all the more people won't know. [59/F, Malay]

Participants (26%) mentioned that they were aware of the symptoms of hypoglycemia and will usually break their fast to prevent symptoms from escalating.

Too low it will show la. You'll feel giddy like you're going to drop so if when we get this kind of things its better to sit down. [63/M, Malay]

Because after break fast I don't eat much la so before I have to eat around four or five la. Eat usually I will eat la something sweet. [59/M, Malay]

Some participants (5.6%) took a wait-and-see approach when breaking fast and tried to remain fasting as long as possible.

I wait first. I look at my watch if it is three or three something and I can not break fast until seven can not I have to break fast because I can't stand for another

four more hours but if its another half an hour I will be patient. [45/M, Malay]

Some (5.6%) participants continued to fast despite having hypoglycemic symptoms.

I So what did you do when you had all those problems?

P No eating yeah I fast what

Although hypoglycemic symptoms were common, participants continued their daily activities including driving.

Sit down immediately that's what I learned la but I haven't got the headache but I have the giddiness but still can manage to drive [63/M, Malay]

The fear of hypoglycemia was reported among participants (13%) and led to anxiety and binge eating before fasting to avoid hypoglycemia during the day.

When I'm doing fasting I'm what you call this panic thing where I'm eating more than supposed because I need to cover twelve thirteen hours. [44/M, Malay]

Other participants (5.6%) viewed that binge eating is required to replenish their energy after a long day of fasting.

Ya I know at night I eat a lot. Yes eat a lot even though I should not. I got hypo three days you know. [45/M, Malay]

During fasting we can stand for fifteen hours but when we break fast we drink sugary drinks excessively because we want the energy back. [59/M, Malay]

Ya fasting you are very hungry so by the time you take food you not bother about your glucose anymore. You just eat anything and tell yourself it's alright prick myself later and wait and say oh no it's high that's it only. [35/F, Malay]

### Theme 3: Diet control during Ramadan

When asked regarding their diet during Ramadan, participants (11%) described that there were challenges to controlling diet as they wished not to be alienated from their family members and peers.

You can't get away with it right? People you see. When people starts to eat chocolate or eat nasi biryani (rice) and you sit there alone and you don't contribute of course you will be tempted to take some right? [38/F, Malay]

One participant who was on insulin found it difficult to control their food intake

I so very hard to control my food. Cannot because I'm taking the insulin. Insulin sometime very hungry you know. [63/M, Malay]

Maintaining family relationships were among the main reasons for participants to compromise with their diet relying on medication to control their blood glucose.

Overtime we're at home there are a lot of family members so it's difficult for us to control. So sometimes we eat too even though we know that will affect our sugar levels. But because of family we still eat because we are taking medication. [55/M, Malay]

## CONCLUSION

This study reports a large-scale qualitative analysis of participant's opinion and perception of diabetes management during Ramadan. Overall, participants have an optimistic view of Ramadan and consider the act of fasting to be beneficial for their health and well-being. The study also informs on how patients alter their medications and cope with the adverse effects of fasting including hypoglycemia. This view resonates with studies previously published by Patel *et al* as well as Robinson and Raisler<sup>10 23</sup> who reported similar findings from their focus group studies.

Findings from our focus group interviews clearly indicate that altering diet is an important area of concern for participants who fast during Ramadan. Studies have shown that diet control is an important factor in controlling glucose levels during the month of Ramadan.<sup>29 30</sup> However, our findings indicate that most patients are anxious and fearful of fasting during this period, for fear of hypoglycemia. As a result, participants consume large quantities of food with the belief that this will result in an avoidance of hypoglycemia as well as to replenish their energy after long hours of fasting.

The tendency for participants to self-adjustment of drugs among participants who fast is worrying. Only one participant (1.9%) consulted his doctor before altering his medication in preparation for Ramadan. Most participants expressed a high degree of autonomy about their decision-making and did not consult their doctors when altering their medication. Possible reasons for not seeking advice from doctors include the inconvenience of seeking advice, adjusting medication based on past experiences, fear of being told not to fast, and the perceived lack of understanding from doctors.<sup>10 23</sup>

Discussions with Imams (Muslim religious leaders) revealed that although the Quran exempts those who are sick from fasting but practitioners are encouraged to fast during Ramadan when the act of fasting does not cause any harm to the individual. However, the Imams also emphasized that practitioners should prioritize their doctor/healthcare professional's advice on their ability to fast during Ramadan. In the event that an individual is unable to fast due to their illness, the individual is required to pay 'Fidyah', a religious donation to their religious bodies.

Some practical advice given by the Imams to Muslim practitioner's who are worried of being stigmatized for not being pious in their faith include obtaining a formal letter of recommendation from their doctor or even an official exemption letter from the religious office. They also suggested that some collaboration between the healthcare educators and the local mosque to provide diabetes education before fasting during Ramadan to better educate their followers.

A recent review found that Ramadan-focused education is an effective tool to ensure patient safety during Ramadan as it can bridge the gap in knowledge by recognizing the spiritual needs of patients.<sup>31</sup> However,

our study suggests that most participants are not receptive to any educational initiative. To improve participant in diabetes education, several novel strategies could be implemented. For example, the educational materials could be developed through collaboration between healthcare professionals and religious authorities and include insights and endorsement from religious community and Imams.<sup>32</sup> In addition, these education materials can be placed in religious centers or mosques to allow easy access of information for Muslim's with diabetes who choose to fast. Alternatively, healthcare professionals can educate spiritual leaders in these religious communities on diabetes management during Ramadan and share this newly imparted knowledge with their followers prior to Ramadan.

Our study has some limitations. First, our study was culturally specific and was conducted in a mostly Malay ethnic group. As such, these views might not be representative of other ethnic groups who chose to fast. In addition, we did not interview patients with diabetes who chose not to fast during Ramadan. Hence, our study might not be generalisable to the broader Muslim community. As our interview was anonymous, we could not independently verify the symptoms of hypoglycemia against more objective measures such as blood glucose levels.

## Implications for future guidelines and research

Religion is a deeply personal matter, and its impact on illness is difficult to measure.<sup>33-35</sup> It provides hope and strength especially to those who are ill, which is why many with diabetes still choose to fulfill their religious obligations to fast during Ramadan despite experiencing difficulties from abstaining from food and suffering from symptoms of poor diabetes control. In our study, participants have reported that their faith in God provides them strength to overcome challenges when fasting during Ramadan.

It is important for healthcare practitioners to establish open communication with their patients to ensure good glycaemic control during Ramadan. However, one difficulty is to identify these patients, as some healthcare practitioners will want to avoid the stereotypical approach such as excluding certain ethnic groups or generalizing that all Muslims will fast during Ramadan.<sup>32</sup> Training and recruiting other healthcare practitioners such as nurses and pharmacists to assist in diabetes management during Ramadan may be a feasible strategy to improve patients knowledge on safe fasting practices should they choose to fast. In addition, caregivers can also be roped in to create a dialogue with patients by building rapport and empowering patients, which can assist in establishing a more satisfactory encounter when articulating information related to safe fasting.

In summary, results of this study report the importance of fasting in Ramadan for Muslim patients. Muslim patients with diabetes have an optimistic outlook when deciding to fast during Ramadan and believe that it is a time to foster relationships with friends and family and strengthen their

faith. To ensure safe fasting during Ramadan, healthcare professionals need to understand why those with diabetes continue to do so and collaborate with religious communities and scholars to reach out and educate these patients.

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