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Levels of health awareness in diabetic patients during Ramadan 2015: Focus group discussion in Riyadh, Saudi Arabia

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ABSTRACT

A qualitative study was carried out to explore the health status of people with diabetes during Ramadan. Fifteen patients participated in two focus group discussions. Most respondents reported lack of knowledge regarding their own conditions and do not follow the medical advice of not fasting during Ramadan. Barriers facing the patients seeking healthcare before and during Ramadan were the atmosphere, long distances to facilities, monthly appointments, and monthly prescribed medication. All respondents agreed on the importance of physical activity but their opinions varied on how to conduct it. Regarding the services, most respondents were unsatisfied due to the lack of health services provided in addition to the shortage of essential medication or laboratory investigations. Others blamed primary healthcare-center staff for the delay in laboratory investigation results and the unavailability of glycosylated hemoglobin (HbA1c). Respondents also claimed that self-check glucometer measurements are not as accurate as laboratory results. Doctors may be able to educate patients regarding the effects of fasting with diabetes whereas religious leaders may influence individuals to follow doctors' advice. Evaluation of the quality of healthcare services is necessary to identify defects in health services in order to ameliorate service quality, including availability of drugs and glucometers in pharmacies, and laboratory investigations, including HbA1c, to meet patient satisfaction.

1. Introduction

Almost two billion Muslims celebrate the holy month of Ramadan globally [1]. Fasting during Ramadan is a well-known worship. Muslims fast by stopping ingestion of food, beverages, and medication, from dawn to dusk and many other daily activities. They eat two main meals, one before sunrise (known as Suhur) and one after sunset (known as Eiftar), to fulfill their religious obligations [2,3]. Furthermore, a voluntary worship (Sunnah) of fasting extra days in particular months (Muharam and Shawal) or specific days throughout the year (Monday and Thursday) can be practiced in addition to the fasting during the holy month of Ramadan [4]. Fasting induces beneficial effects on young healthy individuals. However, it can promote detrimental effects in some patients who have long-lasting diseases. According to the EPIDAR study, during Ramadan people with diabetes who fast are more likely to develop hypoglycemia due to long periods of fasting, time of medication changed, and low physical activity [5]. Despite medical advice for those who could be vulnerable to harm from fasting, patients usually fast without disclosing this information to their doctor. Moreover, some may feel culturally and religiously offended when asked not to fast [6]. Women with presentational or gestational diabetes are strongly advised not to fast during Ramadan, because fasting may be associated with risks to both mother and fetus. However, many patients still fast even if suffering from other types of diabetes [7,8]. Counseling before Ramadan must be given to all patients planning to fast regarding alternate medication dosage and timing, dietary changes, patterns of physical activity, and the role of self-monitoring blood glucose, particularly during acute symptoms. Epidemiological studies show that individuals who are physically active have 30–50% lower risk of developing type 2 diabetes due to the preventive mechanisms of physical activity, including the regulation of body weight as well as the reduction of insulin resistance and hypertension. Therefore, diabetic patients should be counseled and be aware regarding this kind of information in order to improve their blood glucose level [9]. The READ study showed that Ramadan-focused education on diabetes can empower patients to change their lifestyles during Ramadan. Education leads to a minimized risk of hypoglycemic events and

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prevents weight gain during the holy month [10]. However, the majority of patients who aim to fast during Ramadan do not have counseling immediately before Ramadan because it is nonmandatory. Attending the clinic before Ramadan is important, therefore, authoritative exertion is essential in the clinic [11–13]. Treating patients with chronic disease during Ramadan is unlike other months. Therefore, when patients seek advice on fasting, physicians need to take into account the widely accepted compatibility standards for advice against fasting [13]. The specific topics covered by this study include assessing diabetic knowledge, attitude, and practices of patients regarding their condition and to explore health-seeking behaviors before, during, and after Ramadan. These will include opinions and experiences regarding social, cultural, and physical barriers in seeking healthcare. Also, this study focuses on discovering patient satisfaction with diabetic services. The aim of the study is to explore issues that adversely affect the health of diabetic patients during Ramadan. In addition, the study findings facilitate discussions with policy makers, health professionals, etc., regarding provisions dealing with diabetic healthcare improvement (See Table 1).

2. Materials and methods

This qualitative study is based on a focus group discussion carried out in Casablanca Health Center in Riyadh, Saudi Arabia. Fifteen diabetic patients were recruited. The sample included young, middle-, and old-aged participants to explore a variety of opinions. The participants were selected purposively from 10 primary healthcare centers (PHCCs) via Riyadh Health Affairs. The selection of participant was performed according to the following criteria.

2.1. Inclusion criteria

(1) Patients who were 18 years and older with Type 1 diabetes mellitus.
(2) Insulin-dependent Type 2 diabetes mellitus patients, diagnosed for >5 years.

All the above who fasted a minimum of 15 days during Ramadan and participants who had met the criteria and agreed to participate were assigned to each group according to sex, and were involved in the discussion.

Each focus group session was attended by three investigators; one acted as the facilitator and two as note takers. Participants were presented with a brief introduction describing the focus group process, the goals and objectives of the study, and informed that sessions would be taped but that participant-identity would remain anonymous. The purposive sample was collected in two different focus discussion groups.

A total of 15 participants were divided into one female group and one male group with a ratio of 8:7. The age range varied from 18 years to 73 years, with different educational levels and they were from various Arab countries (11 Saudi, 1 Yemeni, and 3 Syrian). Saudi patients represented different regions of Saudi Arabia (north, south, east, west, and central regions). In regards to treatment, type 1 diabetic patients were receiving insulin and type 2 were receiving oral antihyperglycemic drugs, insulin, or both. All participants fasted the last month of Ramadan irrespective of their age and duration of illness.

2.2. Data collection

Focus group discussion was conducted during Ramadan (2015) with diabetic patients attending PHC facilities and diabetic centers. The discussion was conducted separately for males and females. A written informed consent was taken from all participants, and they were assured that identity would be anonymous and confidential. Additionally, they were assured that declining to participate would not affect current and future treatment. Participants in the study were not given any monetary or compensatory benefits. The focus group discussion was led by a moderator who facilitated the discussion. The two sessions were conducted in Arabic and recorded with the moderator beginning with an introduction regarding the study and the expected outcomes of the discussion. Participants were assured no interventions or invasive tests would be taken. Institutional Review Board (IRB) approval was obtained from the Ministry of Health Research Department.

Table 1

"I fast the 30 days of Ramadan followed by the 6 days of Shawwal."
"I fast Ramadan and Mondays and Thursdays from other months."
"I will not follow physician advice because the physician will say not to fast."
"I will not follow the physician advice and will fast according to my case and ability."
"Insulin will break the fast because it enters into the body."
"I don't know if insulin will break fasting or not."
"Fasting is obligatory for every Muslim, male or female, and it is not a choice, all who can fast, must fast."
"She has to fast and not break the fast even if she feeds her baby because she is a Muslim."
"If sugar was controlled, let him fast because fasting is useful in reducing sugar."
"He should take the insulin before breaking the fast and Sahoor."
"Of course, he should take the medicine before Sahoor."
"Sport are the main factor in reducing sugar."
"Physical activity is performed in the kitchen before and after breaking fast."
"Of course, change will occur; we have it after Fatoor and Suhoor."
"Changing the dose is done according to the physician instructions"
"I eat a considerable amount and no harm is afflicted on me."
"Eat as much as I can."
"I will continue fasting and according to the activity because it depends on which time of the day I feel hypoglycemic."
"Health education: it is very important for patients with diabetes."
"I have been diabetic for 25 years so I consider diabetes a family friend."
"I visit the physician before Ramadan to instruct me about insulin doses in Ramadan."
"I am not satisfied; the problem is when I visit the physician, doctor takes the file and writes medications and does not tell me about my case."
"There are no medicines and you are told that they will reach out to you today; a week later they have not reached out and I have to buy medicines from outside; sometimes you are provided another medicine than what you use because the original is not available."
"The sugar devices measurements differ from ones we get from private dispensary."

2.3. Analysis

The transcribed tape recording was compared with notes taken by an assistant to fill in any missing words. The transcript was forward and backward translated into English for linguistic validity. Raw data were used to categorize, code the participant responses according to their contexts and relevance for the research question, and perform a thematic analysis. All authors were involved in the analysis with at least two authors reading each transcript and agreeing on coding categories and themes.

3. Results

This study helps to understand the beliefs and determine awareness levels of diabetics. Health authorities will refine their strategic plan for enhancing the quality of healthcare of diabetes management during Ramadan.

3.1. Knowledge, attitudes, and practices

The focus group discussion came out with a broad spectrum of possible answers. A total of 100% of participants stated that they fasted the whole month of Ramadan of the previous year and some of them pointed out that they also fast Sunnah days; either the 6 days of Shawal (Higri month after Ramadan) and/or Monday and Thursday from any week.

"I fast Ramadan and Mondays and Thursdays from other months."

"I fast the 30 days of Ramadan followed by the 6 days of Shawwal."

Most patients did not follow physician advice when asked not to fast. The main reason for not following advice as stated by respondents was either due to religious commands or according to their individual estimation of their own case and ability. However, four of the 15 respondents stated that their doctor never gave them advice regarding fasting.

The most common comments by patients were:

"I will not follow physician advice because the physician will say not to fast."

"I will not follow the physician advice and will fast according to my case and ability."

The majority of patients involved in the discussion believe that insulin injection will break fasting, whereas the minority of them (25%) did not know if insulin would break fasting or not.

"Insulin will break the fast because it enters into the body."

"I don't know if insulin will break fasting or not."

There were a variety of opinions when participants were asked if fasting is compulsory for diabetic patients or not; 12% answered that fasting is compulsory even if a woman is diabetic and pregnant; two said fasting is not compulsory and can be broken whereas the other two participants said they did not know.

"Fasting is obligatory for every Muslim, male or female, and it is not a choice, all who can fast, must fast."

Participants discussed opinions regarding pregnant woman with diabetes, breast feeding during their fast also, they discussed children and adults with controlled diabetes. The majority of participants reported that fasting is mandatory according to their religious belief (fasting is 1 of the pillars of Islam). The rest of the participants pointed out that fasting should be according to an individual's ability.

"She has to fast and not break the fast even if she feeds her baby because she is a Muslim."

"If sugar was controlled, let him fast because fasting is useful in reducing sugar."

When participants were asked regarding the time they take their medication, two-thirds of participants responded before Sahoor (the final meal before fasting starts) and before or immediately during breaking their fast at sunset, whereas one-third stated they took the medication after breaking their fast and after Sahoor.

"He should take the insulin before breaking the fast and Sahoor."

"Of course he should take the medicine before Sahoor."

Regarding eating sweets and fried foods in particular, all stated that they eat sweets; most of the patients ate sweets with limitations whereas a few of them ate sweets without limitations. Regarding fried foods, all the respondents ate them but some stated they bake food without oil.

All patients agreed regarding the importance of physical activity, although responses differed according to sex regarding timing and approach used to perform physical activity. Men have three different responses, one prefers to perform physical activity before breaking fast; the others perform physical activity after Taraweeh (night prayer in Ramadan) because they believe that physical activity before Maghrib prayer (the 4th prayer for Muslims, usually at sun set, the time for breaking fast) will break fasting. However, all females referred to physical activity before or after breaking fast as engaging in household chores, mainly in the kitchen.

"Sport is the main factor in reducing sugar."

"Physical activity is performed in the kitchen before and after breaking fast."

There is controversy between participants regarding medication schedule changing before and after Ramadan, which was categorized into physician-consultation or self-consultation.

"Of course, change will occur; we have it after Fatoor and Suhoor."

"Changing the dose is done according to the physician instructions"

Concerning eating extra food after Fatoor (first meal to breakfast) or Suhoor to control blood glucose levels, a large group of participants claimed eating regular meals. Respondents expressed the concern of controlling low blood sugar by eating extra amounts to compensate for the low level of blood sugar.

"I eat a considerable amount and no harm is afflicted on me." *"Eat as much as I can."*

Three themes appear to justify the breaking of the fast in case of hypoglycemia. The first theme (11/15 respondents) broke the fast and refasted again another day after Ramadan. The second theme (2/15) continued fasting even if the blood sugar level was low because they believe that it is mandatory to follow religious commands, whereas the third theme (2/15) did not respond to this question.

"I will continue fasting and according to the activity because it depends on which time of the day I feel hypoglycemic."

The frequency of participants measuring blood sugar before Ramadan (normal day) were categorized into five groups according to the frequencies of measurement: daily, weekly, monthly, only when symptoms are present, and never measuring. Those who did not measure frequently justified this with "the device gives inaccurate results." Patients' knowledge and perceptions on

hypoglycemic experiences were described as "symptoms such as dizziness and sweating occurring once every 2–3 months with home management by drinking juice or eating biscuits."

One participant described her experience with hypoglycemia once and described it as "dizziness, body jerking, terrible hunger, therefore I eat bread, bowl of soup, milk with sugar, then seek medical advice at hospital, rested for three hours, then discharged".

Regarding medical information on diabetes, the majority did not seek information from any source. However, 95% respondents agreed that health education regarding diabetes in Ramadan is important. Some of the participants stated that if they want any information regarding diabetes they will seek it from resources such as TV, leaflets, the internet, or other resources.

"Health education: it is very important for patients with diabetes."
"I have been diabetic for 25 years so I consider diabetes a family friend."

When we asked the respondents regarding the reason for consulting physicians before, during, and after Ramadan, almost all of them stated they only visit the physician if they run out of medication or if they have an appointment. Only one participant mentioned visiting the physician in the case he/she was not feeling well and symptoms were present.

Regarding the dose adjustment theme before Ramadan, a larger group of respondents do not adjust the dose unless the physician changes the dose. Most respondents justified their answers by "physicians know better" and others by "I can adjust my dose on my own." Two participants stated that they consulted the physician particularly to adjust the dose before Ramadan starts.

"I visit the physician before Ramadan to instruct me about insulin doses in Ramadan."

3.2. Health seeking behaviors

Regarding health seeking behaviors of diabetic patients before, during, and after Ramadan, participants showed similarities in responses regarding barriers before and after Ramadan, ranging from no barriers at all, to problems in the atmosphere, the unavailability of devices in the health centers, and the monthly scheduling for prescribing medication. Respondents who lived outside the city or far away from the PHCC were not satisfied with the monthly medication prescriptions due to the long distance from the PHCC. The situation for participants differed in Ramadan, as the main obstacles were change of meal timing, the general mood of the patients being affected (leading to intense nervousness, fatigue, lack of energy and sleep). To avoid the symptoms, patients tried to perform all their daily night activities.

3.3. Assessment of diet

Respondents were categorized into three groups according to their diet and timing of breakfast during a normal day. The first group ate breakfast after dawn prayer. The second group ate breakfast after sunrise, eating a variety of items such as wheat bread, beans, lentils, edam, yogurt, milk, tamis (Afghani bread), and sour cream. The third group woke up in the afternoon and ate their breakfast (brunch) after Duhr prayer. When patients were asked about breakfast during Ramadan, all agreed that fasting should be broken with dates, according to the prophet's Sunnah (Islamic traditions). A group of respondents ate a maximum of three dates, putting their health into consideration. The other group ate dates without considering the numbers. The majority of respondents concerned about their blood sugar controlled the quantity of honey eaten during Ramadan. However, two participants commented that they never ate honey. Participants responded that the main problem faced in diet control during/after Ramadan was meal invitations during or before Ramadan, as they cannot control the amount of food presented to them, especially carbohydrates, sweets, etc. Different themes appeared from participants and they suggested many solutions. One solution involved self-control during meal invitations or not accepting the invitation, whereas more strict solutions involved refraining from sweets and carbohydrates and making guidelines for proper and healthy food quality and quantity.

3.4. Physical activity

Concerning physical activity, participants indicated various levels of physical activity from low, moderate to vigorous levels. There were contradicting findings regarding physical activity during Ramadan, as some participants were more physically active before Ramadan, they indicated that physical activity takes place all the time, whereas some indicated physical activity levels are higher during Ramadan because sports activity increases. Those who indicated lower levels of activity attributed this to hot weather leading to fluid loss, laziness, and contrary to other participants, less access to sport facilities.

3.5. Capacity

Regarding satisfaction with quality of healthcare service, a large group of respondents were not satisfied with the service provided. The reasons behind that were shortages of medication, delay of the laboratory investigation results, unavailability of HbA1c in all PHCCs, and that self-check glucometer measurements are not considered as accurate as laboratory results.

"I am not satisfied; the problem is when I visit the physician, doctor takes the file and writes medications and does not tell me about my case." *"There are no medicines and you are told that they will reach out to you today; a week later they have not reached out and I have to buy medicines from outside; sometimes you are provided another medicine than what you use because the original is not available."* *"The sugar devices measurements differ from ones we get from private dispensary."*

All participants except two, stated that they never received any training in management of diabetes before or during Ramadan. However, these two participants stated that they received training by a group of physicians regarding diabetes treatment, diet, and foot care but they did not receive training regarding diabetes during Ramadan. The patients suggested the need for education and training awareness programs.

4. Discussion

This study helps to understand the beliefs and determine awareness levels of diabetics. Health authorities will refine their strategic plan for enhancing the quality of healthcare of diabetes management during Ramadan. A qualitative approach was used to learn about issues which directly affect the health of the diabetics during Ramadan. All themes were used to assess health seeking behavior that identified knowledge, attitude, and practices. Respondents following the Sheikh's advice more than physicians' reflects the obedience of such patients to religious mandate more than their health concerns. Diabetic patients must know that fasting during Ramadan may promote detrimental effects and increase vulnerability to harm from fasting [5,6]. Pregnant Muslim women showed a strong compassion for fasting despite the adverse effect in maternal health. Physicians should inform diabetic patients that

they are exempt from fasting taking into consideration religious commitments of patients in addition to their health awareness [14]. Healthcare providers in Saudi Arabia understand the Islamic belief system and how it plays a role in successful medical evaluation and treatment [15]. Healthcare providers are facing a great challenge to give medical advice and convince the patients because perception of healthcare and following the healthcare provider is influenced by health beliefs, as well as the decision to access and follow [16]. Muslims develop their guidance from the Quran (Muslim holy book), Sunna, (examples of the Prophet Mohammad), and Ijtihad (law of deductive logic) [17]. Medications that nullify fasting or that are not according to their administration route have demonstrated problematic, affecting patient medications schedules. This needs to be resolved and clarified to patients. Muslim jurists, scholars of religion, medical practitioners, pharmacologists, and specialists in other human sciences agree unanimously that some administration routes do not nullify fasting, such as drugs administered through injection into the skin, muscles, joints, or veins (with the exception of intravenous feeding) [3,18,19]. Therefore, given that participant responses indicate the belief that insulin injection nullifies fasting, physicians, participant educators, and religious leaders should clarify appropriate administration routes that do not constitute as nullification of fasting. This means that physicians must be aware of the routes that nullify fasting or not. Respondents showed a gap in their knowledge regarding the time of taking medication during meals with disregard to the type of meal (i.e., lunch, breakfast, Sahoor). Those who did not change their medication schedule indicated a lack of awareness regarding dosage adjustment according to the meal patterns. Consequently, physician counseling is important before and after Ramadan to plan for medication dose and timing, dietary changes, physical activity practices and the role of self-monitoring blood glucose, particularly during acute symptoms, to increase the level of diabetic awareness and to enhance knowledge regarding their individual case with fasting and how to deal with their own situation. Furthermore, physicians must try every possible method to bring every patient to the clinic before the beginning of fasting, as most patients planning to fast do not come willingly for consultation immediately before Ramadan [13,14]. Regarding eating sweets and fries, the majority of participants indicated the belief that sweets raise blood glucose levels. Additionally, one-third of respondents remarked that they eat fries only if it is boiled or oven baked whereas two-thirds of participants reported eating fries in all forms. It is important to increase the awareness regarding the avoidance of foods which contain high calorie carbohydrates. Promotion of a healthy balanced diet two to three times during non-fasting periods should take place to inhibit the hyperglycemia after meals [20].

The concept of self-monitoring at home of blood glucose levels is not well known by patients who do not regularly monitor their blood glucose at home, which may indicate there is deficient knowledge regarding the importance and benefits of home monitoring. This issue should be addressed by the treating doctor(s) and other health professionals. Additionally, based on participant responses, the majority indicated never experiencing hypoglycemia which may indicate a lack of knowledge regarding vital information on symptoms and signs of hypoglycemia-hyperglycemia. This implies that there is a gap between physicians and patients regarding the importance of follow-up and health education in this chronic disease. According to participant responses, this study cannot estimate whether patients reached the recommended amount of physical activity. Furthermore, although respondents were aware of the benefits of physical activity, they mentioned there was a need for facilitation to access healthcare and fitness centers, or even encouragement to walk in public walk-ways. Furthermore, certain terms should be explained to patients with concentration on increasing overall physical activity rather than exercise only. Patients should be educated by healthcare professionals that any energy expenditure as a result of bodily movement produced by skeletal muscle is known as physical activity; for instance, housework, gardening, and occupational activities may all be considered types of physical activity [21]. Furthermore, they should learn that the term "exercise" differs from "physical activity" because it is considered as a subcategory of physical activity characterized by planned, structured, and repetitive movements which result in the improvement and/or maintenance of one or more facets of physical fitness [22]. Therefore, all patients came to an agreement that after Ramadan they go back to their normal daily rhythm as they eat in well-organized periods and take their medication on time. Findings have emphasized that health can be influenced in the community through several ways such as brochures, newspaper, radio and TV shows as well as scheduled training programs every 3 months which can positively impact the health of diabetes inside the PHC setting. Educational sections should concentrate on very clear health messages and awareness strategies. Such training should be conducted regularly. Patient education and empowerment can take place through a more active role in self-management of diabetic diseases through informed decision making which is shared between the doctor and patient, this can improve the doctor–participant relationship. Implementation of the American Diabetes Association guidelines regarding the patient centered care approach will improve education and empower patient health. [22]. Conducting another study to assess the gaps between patient needs and satisfaction in comparison to the physicians who provided the health services is needed.

4.1. Strengths and limitations

The diverse range of respondents in terms of patient age, different periods of chronicity of diabetes, and selected PHCCs locations are strengthening factors. All respondents described the current situation with honesty, which reflects the magnitude of the problem. Limitations include that it was not possible to cover all aspects of this particular issue; also, this study did not explore in-depth the views of patients managed outside Riyadh. There were a limited number of participants due to the difficulties to encourage a range of people to participate in focus group situations which was one of the main reasons. Moreover, the acceptance of patients for such a new way of interview and to convince them to answer the questions, was difficult due to a variety of cultures and persuasion. Data analysis by identifying an individual opinion from the group opinion and their perception was challenging. Future research should investigate the views of physicians to identify further barriers to research participation.

4.2. Recommendations

Religious leaders should play an essential role in advising diabetic patients to follow doctor advice. Furthermore, efforts should focus on providing awareness to religious leaders regarding the detrimental effects of diabetes during Ramadan so as to gain support in convincing diabetic patients to follow doctors' instructions. In other words, the idea that people with chronic disease are exempted from fasting should be strengthened. There is a need for empowering patients with the correct information regarding diet and physical activity which should be available in both readable and audible formats. PHCC staff need fundamental training. Authorities should improve the quality of laboratory investigation, medication, self-monitoring blood glucose meters, and flexible appointments.

Conflicts of interest

The authors have no conflicts of interest to declare.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.jegh.2018.04.004.

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