

## Diabetic Fasting in the Month of Ramadan

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### ABSTRACT

Certain religious traditions and practices sometimes run counter-culture to modern day medicine practices. While it is important for religious individuals to practice their faith, it is equally important that they receive the proper medical care and treatment for their health. For Muslim individuals, fasting during Ramadan is considered an important practice within their faith, and many, regardless of medical circumstances wish to participate. However, the practice of fasting for diabetic Muslims can prove harmful towards their health. This paper previews the ways that Muslims and their physician can create personalized health programs including diet and medications such that diabetic Muslims can properly take care of their diabetes during the month of Ramadan. Physicians should take note of their Muslim patients and do their best to support both their religious practice and medical care in such a way that the two do not contradict.

Keywords: Muslim, diabetes, Ramadan, healthcare, fasting, medicine

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There are 5 pillars of Islam that are central to the Islamic faith. These pillars are: the declaration of faith, the daily prayer, charity, fasting, and the pilgrimage to Mecca<sup>2</sup>. Muslims utilize these pillars to map out the larger, more important rituals and beliefs of their faith. One of these pillars, fasting, is completed during the ninth month of the lunar calendar known as Ramadan. It is a month, typically 29-30 days, where Muslims abstain from food, drink, oral medication, sexual activities and negative thoughts towards others from dawn to sunset<sup>3</sup>. Ramadan is typically perceived as a joyous and spiritual time for many Muslims as it is a period for great reflection with an emphasis on community. Muslims begin their day with a prayer and a morning meal called the *suhour*, and they typically break their fast at night with an *iftar*, a meal taken after prayer in communion with others.<sup>4</sup> These fasts can range from 11-18 hours at a time depending on the geographical location of the fast<sup>5</sup>. The *iftars* provide time for social gatherings; multiple families might meet at each other's homes to pray and then break their fast with a large

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<sup>2</sup> Ahmed M. Abdel-Khalek (2011) Islam and mental health: A few speculations, *Mental Health, Religion & Culture*, 14:2, 87-92, DOI: 10.1080/13674676.2010.544867

<sup>3</sup> Kelly Grindrod and Waseam Alsabbagh. "Managing Medications during Ramadan Fasting." *Canadian Pharmacists Journal* 150, no. 3 (2017): 146

<sup>4</sup> Ibid

<sup>5</sup> Fereidoun Azizi, "Islamic Fasting and Health." *Annals of Nutrition and Metabolism* 56, no 4(2010): 273-282

meal or attend prayers at a mosque and eat a communal meal with the rest of their community.

Ramadan serves as a spirituality important time not only for Muslim individuals but also the Muslim community at large. As a result, there is a great desire to participate in the festivities and rituals.

The prophet Muhammad, the founder of Islam, was known to fast and encouraged other to do so therefore the Muslim community takes the practice of fasting very seriously.<sup>6</sup> The practices of fasting are meant to assist Muslims in developing self-control, attain closeness to God, and encourage charity or generosity.<sup>7</sup> While a very personal endeavor, fasting has a communal aspect which builds strong ties of solidarity and kinship. Because the obligations of Ramadan are demanding, there are individuals who are exempt from the practice. Prepubescent children, the elderly, pregnant or nursing women, and the ill or traveling are not required to fast due to their delicate physical state.<sup>8</sup> As a result of this exemption, it might be assumed that Muslims who are chronically ill or have such physical conditions that require them to take daily medication might void themselves of the responsibility of fasting; however, this is often not the case. Ramadan is the largest, most important Muslim celebration of the year. Consequentially, even individuals with chronic illness are compelled to partake in the practice.<sup>9, 10</sup> For individuals with diabetes, the treatment plan consists of medications that decrease blood glucose in

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<sup>6</sup> Sunnah Sahih al-Bukhari 1893. Book 30, Hadith 3

<sup>7</sup> Fereidoun Azizi, "Islamic Fasting and Health." *Annals of Nutrition & Metabolism* 56, no. 4 (06, 2010): 273-82. doi:<http://dx.doi.org/10.1159/000295848>. <https://search.proquest.com/docview/645071953?accountid=14512>.

<sup>8</sup> Ibid. p. 273

<sup>9</sup> Babineaux, SM, D. Toaima, KS Boye, A. Zagar, A. Tahbaz, A. Jabar, and M. Hassnein. "Multi-Country Retrospective Observational Study of the Management and Outcomes of Patients with Type 2 Diabetes during Ramadan in 2010 (CREED)." *Diabetic Medicine* 32, no. 6 (2015): 819-828.

<sup>10</sup> Zainudin, Sueziani B., Abu Bakar, Kjalishah Nadhirah B, Salmiah B. Abdullah, and Aslena B. Hussain. "Diabetes Education and Medication Adjustment in Ramadan (DEAR) Program Prepares for Self-Management during Fasting with Tele-Health Support from Pre-Ramadan to Post-Ramadan." *Therapeutic Advances in Endocrinology and Metabolism* 9, no. 8 (2018): 231-240.

anticipation of the individual eating three meals a day, thereby balancing the glucose levels in the bloodstream. A diabetic treatment plan becomes medically unsafe during Ramadan because fasting halts the intake of food but continues medications that cause hypoglycemia, leading to a loss of consciousness or, in some cases, death. Unfortunately, a lack of medical provider education about the importance and practice of Ramadan, coupled with a lack of patient communication leads to unhealthy fasting practices during the month of Ramadan. However, studies have shown that it is possible for many individuals to maintain a fast while suffering from many different chronic illnesses if specific guidance has been provided by a general practitioner.<sup>11</sup> These health guidelines would allow for safe fasting during the month of Ramadan. Due to the precarious nature of many chronic illnesses, it is critical that patients and health care providers discuss the patient's state of physical health and create a personalized care plan for the month of Ramadan such that the patient's physical health is not at risk as a result of their religious practices.

Diabetes is a severe chronic illness that according to the World Health Organization affects 8.5% of the world population, roughly 422 million adults.<sup>12</sup> Diabetes is categorized as a chronic disease which is "characterized by elevated levels of blood glucose."<sup>13</sup> There are two different types of diabetes that involve insulin, the hormone utilized to break down carbohydrates, to maintain safe glucose levels in the body. Type 1 diabetes, commonly known as juvenile diabetes, occurs when an individual's body fails to make enough insulin to properly regulate the glucose in their bloodstream.<sup>14</sup> Individuals with type 1 diabetes require daily

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<sup>11</sup> Ibid.

<sup>12</sup> *Global Report on Diabetes*. Report. World Health Organization. Geneva, Switzerland: World Health Organization Press, 2016. 1-88

<sup>13</sup> Ibid. p.11

<sup>14</sup> Ibid. p.11

injections or administrations of insulin such that the glucose in their blood can be regulated.

Type 2 diabetes occurs when the body cannot effectively use the insulin it produces to optimally regulate sugar in the bloodstream.<sup>15</sup> Type 2 diabetes encompasses the largest percentage of diabetics in the world with similar symptoms to type 1 diabetes. Treatment for type 2 diabetics ranges from a combination of diet, physical activity and medication. Individuals with type 1 and 2 diabetes are required to constantly monitor their blood sugar levels to ensure that they are not becoming hypoglycemic or hyperglycemic.<sup>16</sup> Prolonged levels of high or low or high blood sugar can result in seizures or a loss of consciousness. When experiencing hypoglycemia, individuals suffer from shakes, anxiousness, sweatiness or chills, weakness, headaches and overall feelings of nausea. If blood glucose levels stay low for prolonged periods of time such that the brain does not receive adequate glucose, it stops functioning properly. This can then “lead to blurred vision, difficulty concentrating, confused thinking, slurred speech, numbness, and drowsiness.”<sup>17</sup> Sustained periods of time without treatment can cause damage to the “heart, blood vessels, eyes, kidneys nerves and increase risk of heart disease and stroke.”<sup>18</sup> When left for too long of a period of time, hypoglycemia can lead to “seizures, a coma, and very rarely death.”<sup>19</sup> Due to the severe outcomes of diabetes, it is crucial that Muslims speak with their primary care physician if they plan on fasting throughout the day.

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<sup>15</sup> Ibid. p.11

<sup>16</sup> Hypoglycemia occurs when an individual’s blood sugar is lower than normal.

<sup>17</sup> “Hypoglycemia (Low Blood Glucose).” American Diabetes Association. Accessed March 17, 2019. <http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>.

<sup>18</sup> “Hypoglycemia (Low Blood Glucose).” American Diabetes Association. Accessed March 17, 2019. <http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>.

<sup>19</sup> Ibid.

While many Muslims recognize the exemption from fasting, they do not always take the exemption, or they create reasons and explanations for why they fast anyway. “The Epidemiology of Diabetes and Ramadan (EPIDIAR) study performed in 2001 found that 42.8% and 78.7% of patients with Type 1 or Type 2 diabetes mellitus (T1DM/T2DM), respectively, fasted for at least 15 days during Ramadan. More recently, the CREED study reported that 94.2% of T2DM patients fasted for at least 15 days and 63.6% fasted every day.”<sup>20, 21</sup> Their feelings of obligation towards fasting, even while chronically ill, stem from: a sense of religious duty that should be filled, the notion that fasting during Ramadan provides them with happiness and energy, and or feelings of strength and resilience from Allah during Ramadan.<sup>22</sup> Participants from a study done in Greater Manchester, England, stated that regardless of their health conditions, many of them would still choose to fast.<sup>23</sup> “For Muslim people, it is vital to fast. Yes I am ill but my faith keeps me strong and if I am going to get worse health-wise I am going to get worse no matter what.”<sup>24</sup> This response from a type 2 diabetic, 43-year-old female captures how some Muslims feel that fasting is part of their identity. While Islamic teachings convey that those who are ill are exempt from fasting, there is no consensus on what appropriately qualifies as an illness. The range of acceptable illnesses that would allow a Muslim to forgo fasting differs depending on the juristic body that a particular Muslim adheres to and who the Muslim receives

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<sup>20</sup> Salti, I., E. Benard, B. Detourmay, M. Bianchi-Biscay, C. Le Brigand, C. Voinet, A. Jabbar, EPIDAR study group. “A Population- Based Study of Diabetes and its Characteristics during the Fasting Month of Ramadan 13 Countries-Results of the Epidemiology of Diabetes and Ramadan 1422/2001 (EPIDIAR) Study.” *Diabetes Care* 27, no. 10 (2004): 2306-2311.

<sup>21</sup> Babineaux, SM, D. Toaima, KS Boye, A. Zagar, A. Tahbaz, A. Jabar, and M. Hassnein. “Multi-Country Retrospective Observational Study of the Management and Outcomes of Patients with Type 2 Diabetes during Ramadan in 2010 (CREED).” *Diabetic Medicine* 32, no. 6 (2015): 819-828.

<sup>22</sup> Patel, NR, A. Kennedy, C. Blickem, A. Rogers, D. Reeves, and C. Chew-Graham. “Having Diabetes and having to Fast: A Qualitative Study of British Muslims with Diabetes.” *Health Expectations* 18, no. 5 (2015): 1698-1708.

<sup>23</sup> Ibid.

<sup>24</sup> Ibid

their fatwas from.<sup>25</sup> In addition to the religious benefit, many Muslims wish to fast because of the social and communal importance of Ramadan. “We meet each other, we support each other, and you find plates of food are being exchanged in the streets [laughs] from Muslim to non-Muslim...we all eat at the same time.... We all walk to the mosque and open fast there, my husband he likes that. We have lots of visitors I love Ramadan!”<sup>26</sup> Muslims, on top of the spiritual gain, participate in the social culture of Ramadan as well. Muslims gather together through daily prayers and *iftars*, resulting in a great sense of community. For these reasons, many Muslims choose to fast during the month of Ramadan regardless of their physical well-being. These Muslims stated confidence in their ability to control their diabetes while fasting without any advice from their general practitioner. They felt confident in their understanding of diabetes to properly manage and adjust their insulin while also planning what they should be eating at *suhoor* and *iftar*.<sup>27</sup> This confidence leads to many Muslims failing to disclose with their general practitioner that they are fasting due to a fear of being told not to fast.<sup>28</sup> Muslims thereby attempt to manage their health without expert advice from a medical professional.

While some Muslims quote that the strength of *Allah* will guide them through their fast, many still recognize the need for medical care. However, few Muslims choose to speak with their physician, instead choosing to meet with their imam who usually holds little to no knowledge regarding the health risks associated with fasting for the diabetic worshippers. When Muslims do meet with their physician, many Muslims fail to comply with their healthcare

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<sup>25</sup> Fatwas being a non-obligatory ruling on Muslim law provided by an educated Muslim scholar.

<sup>26</sup> Patel, NR, A. Kennedy, C. Blickem, A. Rogers, D. Reeves, and C. Chew-Graham. “Having Diabetes and having to Fast: A Qualitative Study of British Muslims with Diabetes.” *Health Expectations* 18, no. 5 (2015): 1698-1708.

<sup>27</sup> Ibid

<sup>28</sup> Ibid

provider's advice, because they feel that their physician does not comprehend the religious significance of fasting during Ramadan. This sense of miscommunication between patient and physician can lead to ethical conflicts in the treatment of fasting Muslims during the month of Ramadan.<sup>29</sup> Many physicians, without adequate education on the practice of fasting during Ramadan, view the ritual as dangerous to their diabetic patients. Patients expecting their doctors to immediately advise against fasting neglect to tell their physician of their practice.<sup>30</sup> As a result of these ethical conflicts, many Muslims avoid their doctors during the month of Ramadan, as they suspect their doctor will not respect their religious practice and will forbid them from continuing their fast.

In a study performed by Gaborit et al., a group of 101 general practitioners were surveyed regarding their opinions towards Ramadan and the advice that they handed out to their patients. It was noted that of the 85% of these general practitioners who spoke with their Muslim diabetic patients about fasting: 54% advised their patients not to fast, 44% answered that fasting is harmful to patients' health, 25% replied that diabetes is an exemption from fasting according to the Koran, and 16% said that they had discussed the risk of fasting with their patients.<sup>31</sup> However, most general practitioners lack the medical knowledge needed to properly formulate a care plan for their diabetic Muslim patients during Ramadan. This problem was further exacerbated when physicians who were educated about the safe nature of fasting during Ramadan still worried that the patients could not be trusted to manage their diabetes without

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<sup>29</sup> Ilkilic I and Ertin H. Ethical conflicts in the treatment of fasting Muslim patients with diabetes during Ramadan. *Med Health Care Philos* 2017; 20: 561-570.

<sup>30</sup> Patel, NR, A. Kennedy, C. Blickem, A. Rogers, D. Reeves, and C. Chew-Graham. "Having Diabetes and having to Fast: A Qualitative Study of British Muslims with Diabetes." *Health Expectations* 18, no. 5 (2015): 1698-1708.

<sup>31</sup> Gaborit, B., O. Dutour, O. Ronsin, C. Atlan, P. Darmon, R. Gharsalli, V. Pradel, F. Dadoun, and A. Dutour. "Ramadan Fasting with Diabetes: An Interview Study of Inpatients' and General Practitioners' Attitudes in the South of France." *Diabetes & Metabolism* 37, no. 5 (2011): 395-402

strict round the clock care therefore leading them to prescribe against fasting.<sup>32</sup> Due to this apprehension towards and doubt of their physician, many Muslims do not speak with their health practitioner or any doctor about fasting during Ramadan, because they recognize that many doctors would consider fasting unsafe and prescribe against it. This calls for education and greater awareness of the treatment for diabetes during Ramadan on the behalf of physicians and a call for Muslims to work together with their physicians to create goal-oriented health care plans for themselves. These health care plans can then properly treat an individual's glucose levels before, during and after Ramadan. This will not only allow Muslims to feel in greater control of their spiritual practices in relation with their healthcare, but will further familiarize them with their diabetic needs in general. But, even after medical advice is given, many Muslims continue their search for religious guidance regarding their health.<sup>33</sup>

Within Islam, an imam takes on the role of a spiritual leader who guides congregations of Muslims through prayers; however, as with many religious factions, the spiritual leader's role goes beyond religious services.<sup>34</sup> Imams have been observed to approach healthcare through four different roles: "encouraging health behaviors through scripture-based messages in sermons; performing religious rituals around life events and illnesses; advocating for Muslim patients and delivering culturally sensitive training in hospitals; and assisting in healthcare decision for Muslims."<sup>35</sup> These actions showcase Muslims' utilization of their religious beliefs to guide their healthcare decisions. By "encouraging health behaviors through scripture-based messages in

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<sup>32</sup> Ibid. pg 399.

<sup>33</sup> Ibid, pg 397

<sup>34</sup> Padela, Aasim I., Amal Killawi, Michele Heisler, Sonya Demonner, and Michael D. Feters, "The Role of Imams in American Muslim Health: Perspectives of Muslim Community Leaders in Southeast Michigan." *Journal of Religion and Health* 50, no. 2 (2011): 359-373.

<sup>35</sup> Ibid. pg 360.

sermons” imams are picking up on the important role that Muslims place upon integrating their religion within their daily life and are exhibiting their willingness to advise their congregation beyond the mosque.<sup>36</sup> Due to the integrative nature of Islamic values with cultural norms and practices, Islamic beliefs shape “patients’ notions of health and illness, influence...adherence to doctors’ recommendations, guide medical-decision making, and influence health outcomes.”<sup>37</sup> As a result of this integration, it is crucial that imams assist Muslims in their healthcare decisions. Many Muslims purposely seek out their imam regarding medical advice such that their decision will adhere to their religious obligations.

Imams are therefore placed in a position of medical power because many Muslims, even after receiving medical advice from their doctor, wish to also receive religious advice. This situates the imam in a tough position where they are forced to “try and close the gap between physician and family.”<sup>38</sup> These decisions become difficult for imams because, while they can “serve as religious consults, helping both patients and healthcare workers to make decision in-line with Islamic law and ethics,” they will not always understand the medical situation that the patient is undergoing.<sup>39</sup> As a result, their advice, while accurate within religious doctrine, might lead imams to guide Muslims to medical decisions that are not in the best interest of their physical health. Imams, noting this gap in their knowledge base, might therefore feel uncertain when stepping into the healthcare world out of fear for risking the patient’s health. This leaves Muslims in a strange place of limbo where their religious leader cannot make educated

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<sup>36</sup> Padela, Aasim I., Amal Killawi, Michele Heisler, Sonya Demonner, and Michael D. Fetters, “The Role of Imams in American Muslim Health: Perspectives of Muslim Community Leaders in Southeast Michigan.” *Journal of Religion and Health* 50, no. 2 (2011): 360.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid. Pg 367.

<sup>39</sup> Ibid.

recommendations for their physical well-being but their doctor might not respect or understand their religious obligations. This calls for an integrative approach for Muslims to work together with an imam and physician, such that their healthcare plan properly caters to both their religious and physical well-being.

When Muslims fail to receive any medical advice, many Muslims will self-adjust their medications and try to change their eating habits to accommodate for Ramadan.<sup>40</sup> However, without adequate medical surveillance and a constant measurement of their blood sugar levels, many Muslims fall into a state of hypoglycemia or hyperglycemia. This state of hypoglycemia or hyperglycemia can have both short and long term effects on their health. In what is referred to as the EPIDIAR study, 12,243 participants were recruited to participate in a study that was meant to observe the diabetic Muslims fasting habits and health levels before and during Ramadan without any medical advice.<sup>41</sup> “Physical activity, sleep duration, food intake, fluid intake, and sugar intake were unchanged in approximately one-half of the study population” from before to during Ramadan.<sup>42</sup> “Among the overall population, the number of severe hypoglycemic episodes per month and per patient was significantly higher during Ramadan than during the preceding year for patients with type 1 diabetes as well as for patients with type 2 diabetes. In addition, the number of severe hyperglycemia episodes with/without ketoacidosis per month showed a significant difference between Ramadan and the preceding year only for patients with type 2

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<sup>40</sup> Salti, I., E. Benard, B. Detourmay, M. Bianchi-Biscay, C. Le Brigand, C. Voinet, A. Jabbar, EPIDAR study group. “A Population- Based Study of Diabetes and its Characteristics during the Fasting Month of Ramadan 13 Countries-Results of the Epidemiology of Diabetes and Ramadan 1422/2001 (EPIDIAR) Study.” *Diabetes Care* 27, no. 10 (2004): 2306-2311.

<sup>41</sup> Ibid.

<sup>42</sup> Salti, I., E. Benard, B. Detourmay, M. Bianchi-Biscay, C. Le Brigand, C. Voinet, A. Jabbar, EPIDAR study group. “A Population- Based Study of Diabetes and its Characteristics during the Fasting Month of Ramadan 13 Countries-Results of the Epidemiology of Diabetes and Ramadan 1422/2001 (EPIDIAR) Study.” *Diabetes Care* 27, no. 10 (2004): 2306-2311.

diabetes.”<sup>43</sup> This study illustrates how, without medical advice or a treatment plan during the month of Ramadan, Muslims are at greater risk for hypoglycemic/hyperglycemic episodes during Ramadan in contrast to other months. Patients who did change their lifestyle in efforts to combat the nature of hypoglycemia or weight gain typically decreased their levels of physical activity, sleep duration, and or food, sugar and fluid intake.<sup>44</sup> While doctors may prescribe changes such as these, without sufficient familiarity of their healthcare needs, Muslims might be making changes without adequate foresight of which factors they need to change and how. Due to the dangerous nature of hypoglycemia, it is important that Muslims acknowledge this tendency and take action to work together with their physician to create a healthcare plan to diminish the probability that they experience any health problems.

Due to possible health risks, Muslims should be encouraged to speak with their general health practitioner about their decision to fast, so that the patient and primary care physician together might come up with a specialized treatment plan for the patient. This would allow for a safe and controlled fast during Ramadan such that the patient would not experience any negative, physical harm as a result of their fast. Together, physicians and patients can adjust medications, create a special diet, adjust sleeping patterns, or set new physical activity guidelines that will serve to lower the chances for hypoglycemia or hyperglycemia. A pre-planned care regime could allow for the avoidance of the potential hazards of fasting. If a patient were to attempt to fast without the guidance of a physician in regards to their physical health, the diabetic Muslim could experience swings in glucose control and weight gain. For individuals with type 2 diabetes, weight gain can prove serious health problems because weight gain makes blood sugar levels

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<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

even harder to control. Some forms of type 2 diabetes are best controlled by a combination of weight loss and exercise, so weight gain during Ramadan might put some Muslims at a health disadvantage.<sup>45</sup> Due to the severe outcomes that can stem from hypoglycemia and weight gain, two health risks that arise from fasting during Ramadan, it is critical that Muslims take care of their physical health and consult a physician before fasting during Ramadan.

While it first appears daunting to create a goal-oriented healthcare plan for the care of diabetic Muslims during the course of Ramadan, studies have been completed, showing the success that arises when physicians and patients work together to create a healthcare plan for Ramadan. The DEAR study enrolled 29 participants to work with a physician who personally created a healthcare plan for the period before and during Ramadan so the patient could practice adjusting their medication or lifestyle according to their health needs.<sup>46</sup> It should be noted that 93.1% of the participants had type 2 diabetes, which is an easier type of diabetes to control, but this should not serve to negate the positive results found from the study.<sup>47</sup> Participants performed a pre-Ramadan visit 2-6 weeks before Ramadan to create a wellness profile that consisted of an assessment of their metabolic profile, risk category for hypoglycemia and a health plan for optimization of glycemic control and medication adjustments. They also completed a workshop with religious personnel who presented discussions on glucose monitoring during fasting. During these 2-6 weeks before Ramadan and during the month of fasting, participants recorded their glucose levels 4-5 times a day and kept a log of their food intake, activity levels and other

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<sup>45</sup> “Weight and Diabetes (for Parents).” KidsHealth. February 2018. Accessed March 17, 2019. <https://kidshealth.org/en/parents/weight-diabetes.html>.

<sup>46</sup> Remaining Paragraph referencing the DEAR study until noted: Zainudin, Sueziani B., Abu Bakar, Kjalishah Nadhirah B, Salmiah B. Abdullah, and Aslena B. Hussain. “Diabetes Education and Medication Adjustment in Ramadan (DEAR) Progam Prepares for Self-Management during Fasting with Tele-Health Support from Pre-Ramadan to Post-Ramadan.” *Therapeutic Advances in Endocrinology and Metabolsim* 9, no. 8 (2018): 231-240.

<sup>47</sup> Ibid.

diabetic complications. The patients relayed information on their health status via tele-monitoring, which is a way for physicians to track a patient's health from afar, therefore providing a method for 24/7 updates on a patient's glucose levels. If any medical problems occurred, quick action was taken to resolve all complications. Once the month of Ramadan was over, the participants were again enrolled in another clinic, were given feedback based upon the data collected regarding their glucose levels during the month of Ramadan, and were provided further instructions on how to improve their practice of fasting during Ramadan. This method of learning supported safe fasting during Ramadan and encouraged dialogue between physicians and their patients regarding the practice of fasting while diabetic. Overall, the patients noticed improved glycemic control and reduced diabetic complications after enrollment in the study, suggesting that, with monitored and assisted medical aid, safe fasting can be practiced by diabetics.

The importance of diabetic education during Ramadan is emphasized by the findings of the EPIDIAR study who, rather than educating Muslims about safe fasting, chose to merely observe their practices during the month of Ramadan.<sup>48</sup> The EPIDIAR study failed to provide any education to their participants and found that "severe hypoglycemia was more frequent during Ramadan than during the preceding year and [was] associated with changes in treatment regimens and physical activity during Ramadan."<sup>49</sup> Their study showed that there are more Muslim diabetics who experience hyperglycemia during Ramadan than any other month, probably due to unsafe health practices that were made up by the patient rather than were

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<sup>48</sup> Salti, I., E. Benard, B. Detournay, M. Bianchi-Biscay, C. Le Brigand, C. Voinet, A. Jabbar, EPIDAR study group. "A Population- Based Study of Diabetes and its Characteristics during the Fasting Month of Ramadan 13 Countries-Results of the Epidemiology of Diabetes and Ramadan 1422/2001 (EPIDIAR) Study." *Diabetes Care* 27, no. 10 (2004): 2306-2311.

<sup>49</sup> Ibid.

prescribed by the doctor. Many of the individuals in the EPIDIAR study refrained from discussing their fasting practices with a physician, and this might have resulted in many of them making uneducated changes to their healthcare regime. The DEAR study, in comparison to the EPIDIAR study, exhibits how, with adequate education, Muslims can successfully and safely fast during Ramadan. Healthy fasting can be practiced by an adjustment of medication dosages or the type of medication, a change in activity levels, and/or changes in diet.<sup>50</sup> With close physician monitoring and regular glucose checks, Muslims can properly adhere to their religious beliefs while taking care of their health needs as well.

In order for physicians to adequately assist their diabetic Muslim patients during the month of Ramadan, they must adequately prepare themselves to discuss fasting and religious beliefs with their patients. One of the most commonly cited reasons for not discussing religious fasting with their physician was the fear that the physician would either not understand the importance of fasting to the believer and or completely eliminate the concept of a safe fast.<sup>51</sup> However, it is critical that physicians educate themselves on the practice of Ramadan and its importance to Muslims as a sacred tenant of their faith so they might properly treat their Muslim patients with an open mind. Once physicians are accustomed to the practice of fasting, it is crucial that they familiarize themselves with the different medications that only require dosages of 1-2 times a day such that they fit within a daily fasting schedule. This knowledge allows physicians to work with their patient to create a care plan for treatment before and during Ramadan, thereby optimizing health outcomes of the patient. For the safety of their patient,

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<sup>50</sup> Grindrod, Kelly and Waseam Alsabbagh. "Managing Medications during Ramadan Fasting." *Canadian Pharmacists Journal* 150, no. 3 (2017): 146

<sup>51</sup> Patel, NR, A. Kennedy, C. Blickem, A. Rogers, D. Reeves, and C. Chew-Graham. "Having Diabetes and having to Fast: A Qualitative Study of British Muslims with Diabetes." *Health Expectations* 18, no. 5 (2015): 1698-1708.

physicians should encourage close monitoring of glucose levels throughout the day, and, if patients are unsure if this will break their fast, should encourage dialogue with an imam regarding the practice.<sup>52</sup> Many imams dictate that glucose monitoring does not break one's fast, and this reassurance from a patient's religious leader working with their physician will strengthen the patient's bond with both their physician and religious leader.<sup>53</sup> Together, Muslims and their physician can create concrete plans for a safe fast.

While all this planning appears beneficial, some might say that it is not the doctor's job to consider their patient's religious orientation when prescribing medication or treating them for their health. However, this argument lacks consideration of the concept of holistic healthcare. When physicians gain their medical license, they take either the Hippocratic or Osteopathic oath. These two oaths swear in physicians as guardians of health. The Hippocratic oath appropriately states that the physician "will apply, for the benefit of the sick, all measures [that] are required" therefore promising that they will protect their patient's health to the best of their ability.<sup>54</sup> Likewise, the Osteopathic oath promises to "be mindful always of my [the physician's] great responsibility to preserve the health and the life of my patients" as the core premise of their vocation.<sup>55</sup> Essentially, when doctors take their oath to become a physician, they are assuming the responsibility of taking care of the whole person. Depending on how someone interprets the whole person, it might be understood that someone's religion is a part of their holistic

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<sup>52</sup> Gaborit, B., O. Dutour, O. Ronsin, C. Atlan, P. Darmon, R. Gharsalli, V. Pradel, F. Dadoun, and A. Dutour. "Ramadan Fasting with Diabetes: An Interview Study of Inpatients' and General Practitioners' Attitudes in the South of France." *Diabetes & Metabolism* 37, no. 5 (2011): 395-402

<sup>53</sup> Ibrahim, Mahmoud, Megahed Abu Al Magd, Firas A. Annabi, Samir Assaad- Khalil, Ebtesam M. Ba-Essa, Ibtihal Fahdil, Sehnaz Karadeniz, et al. "Recommendations for Management of Diabetes during Ramadan: Update 2015." *BMJ Open Diabetes Research & Care* 3, no. 1(2015): e000108.

<sup>54</sup> Various Physicians Oaths. Accessed March 17, 2019. <http://www.aapsonline.org/ethics/oaths.htm#bears>. A Modern Hippocratic Oath by Dr. Louis Lasagna

<sup>55</sup> "Osteopathic Oath." American Osteopathic Association. Accessed March 17, 2019. <https://osteopathic.org/about/leadership/aoa-governance-documents/osteopathic-oath/>.

well-being. As we have seen, the Muslim population derives their understanding of illness through their faith such that their health care requires familiarity of their religious beliefs. The physician must assume the responsibility of not just the biomedical health of the person but of total well-being. This includes their religious well-being as well as their physical well-being. Currently, hospitals are working to greater lengths to put proper consideration into their patient's religious health by providing inter-faith chaplains who can visit patients in the hospital along with interfaith prayer spaces. The University of Pennsylvania has especially taken a lead on this by writing up a religious diversity guide for practical points in health care.<sup>56</sup> In order for physicians to fulfill their oath and take proper care of the well-being and health of their patients, they must also cater to their patient's religious beliefs. Just as physicians respect a Jehovah Witness's refusal of blood, they must cater to a Muslim's desire to fast. This sentiment is echoed by the many Muslims surveyed in the DEAR, EPIDIAR and CREED studies where Muslims stated that they wished their physicians would respect and cater to their religious beliefs. It is not that Muslims wish to refuse medical aid during their fast but, rather, that they do not believe their physicians would approve or facilitate this sort of care. Educated physicians might alleviate this hesitation, allowing for greater dialogue between physicians and their patients.

Fasting during the month of Ramadan is an important tenant of Islam that many believers hold very seriously. This proves difficult for Muslims with diabetes, who are constantly monitoring their glucose levels and controlling it with either medication or food intake. While fasting with diabetes is typically discouraged by physicians due to the risks of weight gain and hypoglycemia, studies have proven that it can be a safe practice for many Muslims suffering

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<sup>56</sup> Ehman, John. *Religious Diversity: Practical Points for Health Care Providers*. Philadelphia, PA: Hospital of the University of Pennsylvania and Penn Presbyterian Medical Center, 2012.

from diabetes. In order to provide this safe fasting practice, teamwork between the physician and patient must be implemented such that, together, they can create a health care plan that allows for religious adherence while still protecting patient health.

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