

**The Role of Culture and Social Structures on Bengali Adults with Type 2 Diabetes  
in Managing Their Health Condition**

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### Abstract

**Objective:** The purpose of this study is to better understand the effects of culture and social structures on Bengali adults with type 2 diabetes mellitus in managing their health condition and treatment regimens.

**Design and Sample:** In a qualitative approach and semi-structured individual interviews, researchers recruited 6 Bengali adults with type 2 diabetes from New York City.

**Measures:** Guided by the Sunrise Model (Leininger & McFarland, 2002) from Leininger's Theory of Cultural Diversity and Universality, researchers asked participants semi-structured questions related to the 7 categories in the model. The principal investigator, who also speaks the same language as the participants, audio recorded the interviews, translated and then transcribed interviews. Themes developed through content analysis and they were categorized using the Sunrise model.

**Results:** Several themes emerged from each of the categories, such as different meaning of diabetes and fear of consequences of diabetes in Bengali adults. Religious factors that influenced participants included strong belief that Allah is in control of everything, such as giving and curing diseases. We also found out that many of the participants do not check their blood glucose regularly. There are also differences in family support and number of visits with primary care provider (PCP) for male and female. In addition, participants explained the difficulties they had communicating in English. However, they did not perceive this as a barrier because they feel supported by the Bengali community. The perception of physical activity and diets differed from what the participants actually have daily. Participants also described different barriers to physical activity.

**Conclusions:** The findings of the research study can help nurses and other health care

professionals to provide culturally congruent care to immigrant Bengali adults with type 2 diabetes.

*Keywords:* Diabetes or NIDDM, Bengali or Bangladeshi, cultural factors, social factors

### **Background**

Chronic conditions are increasing and it has been a challenge to the health care system due to increasing aging populations, food consumption patterns and changing lifestyle behaviors (Handley, Pullon & Gifford, 2010). According to Center for Disease Control and Prevention (2010), every year 7 out of 10 adults suffer from chronic conditions. Thus, chronic conditions have major impact in the society.

Among other chronic conditions, diabetes is one of the most common types of chronic illness. Every year, there are an estimated 1.9 million people newly diagnosed with non-insulin dependent diabetes mellitus (NIDDM) or most commonly known as type 2 diabetes and among these individuals African Americans, Hispanics, and Asian Americans count among the highest (American Diabetes Association, 2012). This represents the increasing burden diabetes has in the United States and it is an issue that needs closer attention in all population.

NIDDM and the way it affects people from different ethnic backgrounds has been studied intensely. However, much less focus has been given to Bengali, also known as Bangladeshi, people living with this condition in the United States. Over the past decade the Bengali population living in New York City has been increasing drastically by 119% from 2000 to 2010. In fact, the Bengali community is now the second largest growing Asian population in NYC (Asian American Federation, 2012). With the rapid growth in this population, there has also been an escalation in number of adults in this community with diabetes. In 2008, 9.2% of male and 9.2% of female from Bangladesh had diabetes compared 7.9% male and 5.8% female in 1980 (Weber, Oza-Frank, Staimez, Ali, & Narayan, 2012). Overall, in the U.S South Asian immigrants are 7 times more likely to have type 2 diabetes than the general population (NYU Langone Medical Center, 2012). The rapid growth in Bengali people in the U.S. with diabetes is

both concerning and something that needs more attention.

In many health care settings, both acute and community, nurses often care for patients with NIDDM from South Asian backgrounds, especially in the NYC area. It is therefore important for them to understand the effect of cultural beliefs they may carry, as some people consider their diabetes is due to fate (Macaden & Clarke, 2010), in order to provide better care to patient.

### **Review of the Literature**

Reviewing the literature to find appropriate articles related to my topic of research has been a challenge since there is not a lot of research done on the Bengali population. I used search phrases such as: “type 2 diabetes and South Asian”, “type 2 diabetes and Bangladeshi”, and “living with diabetes” to narrow my search in both PubMed and Google search. There were varieties of articles; most of which were not directly related to my topic. Consequently, I limited the unnecessary articles by reading the title and abstract to obtainable articles that are most useful for my research. While I was reading the articles, I read recommended articles in the same websites. There were over 27 articles that were relevant to my research topic, from which I selected the most suitable ones.

According to Rhodes and Nocon (2003), compared to other South Asian communities the Bengali community has been found to experience poorer health. Among many other explanations for this are income, employment and poverty rate of Bengali community in the United States. In 2010, one out of three Bengali lived in poverty, and unemployment rate was the highest in this group compared to other Asian groups. Besides economical difficulty, it is possible that the reason behind poor health is that many Bengali people do not know about the causes, prevention or management of diabetes (Osman & Curzio, 2012).

### **Impact of Cultural Values and Beliefs**

Beyond basic knowledge of diabetes management, some Bengali people have deep cultural beliefs about diabetes. For example, they believe that the absence of sweating and hard labor are origins of diabetes as well as immigration to a Western country (Greenhalgh, Helman, & Chowdhury, 1998). In their perspective, Western cultures influence their lifestyle, and therefore is the cause of diabetes. Other investigators have reported that South Asians use belief

in supernatural forces and fatalism in their self-management of diabetes (Meetoo & Meetoo, 2005). These beliefs may impede people from accessing treatment or delay starting it (Choudhury, Brophy, & Williams, 2009).

Perez and Cha (2008) concluded, based on their study, that the Hmong community from Southeast Asia has difficulty communicating with health care providers due to the language barrier. These immigrants are unable to communicate and learn about their health condition from the health care team due to the language barrier. This creates a barrier to accessing essential health care resources for diabetes management.

Holt (2012) described the importance of religion for South Asian people in managing their health condition. She explains, “These people believe that Allah will determine their lifespan and this cannot be influenced by adopting healthier lifestyles. They believe that Allah has given them diabetes and its associated complications and that there is nothing that they can do about it” (p. 44). So religion plays an important social role in South Asian people when making decisions about their health.

### **Exercise, Weight & Body Perception, and Diet**

Aside from cultural misconceptions, Hayes et al. (2002) found that “Europeans were found to be more physically active than Indians, Pakistanis or Bangladeshis ... 52 percent of European men did not meet current guidelines for participation in physical activity compared to 87 percent Bangladeshi” (p. 170). In Bengali and other ethnic communities physical inactivity is among the highest contributing factors in chronic conditions such as NIDDM. Much of this research focus on differences in physical activity among different population, but only few of these studies explore how lifestyle choices affect self-health management. Therefore, it is relevant to understand factors that inhibit or facilitate physical activity and management of

diabetic conditions in the Bengali population.

In a study of South Asians with obesity-related diseases, investigators show that South Asians are at higher risk than Caucasians for the development of obesity and obesity-related diseases such as NIDDM. The prevalence of NIDDM is higher in urban settings than in rural areas (Misra & Khurana, 2011). In a study done by Tang et al. (2012), 76% of participants (South Asian) were overweight or obese; 40% of overweight participants and 12% of obese participants perceived themselves to be normal weight or underweight. Participants stated that their physical problems were associated with their weight. However, only a few connected their weight with risk for chronic diseases. Interestingly, a comparable study found that Bangladeshi participants associated medium or large body sizes with good health and saw thinness as less healthy (Grace, 2011). South Asian Americans underestimated their weight and the affect it has on their risk for chronic diseases, such as NIDDM. There appears to be a connection between these perceptions of South Asians about their weight, their exercise pattern, and how they manage their health conditions.

The dietary preferences of South Asian people are diverse. For example, people from northern India and Bangladesh commonly use ghee. They consume traditional foods like ghee despite moving into westernized countries because they believe traditional food is a great source of strength. Likewise, people of Islamic culture in South Asia believe sweets are ‘good’ for the body and are considered a cure for all diseases, including diabetes (Holt, 2012). In contrary, some Bangladeshi people even believe that sugar and western diet are the source of their diabetes as well as physical and psychological stress as causes (Greenhalgh et al., 1998). Having knowledge about what foods are important to specific cultural groups is essential in understanding how they use these foods in their diet to manage diabetes. Nurses can then use



dietary knowledge to provide culturally appropriate dietary guidelines, and find ways to accommodate patient's needs with traditional foods that are healthy.

### **Education**

Lawton, Ahmad, Hanna, Douglas, and Hallowell (2006) observed that diabetes is common in South Asian populations and that “education may play a role in physical activity promotion; however, health promoters may need to work with cultural norms and individuals perceptions” (p. 43). Hawthorne and Tomlinson (2001) describe a similar issue in Pakistani adults in UK. In their study, women who cannot read in this population are more likely to have poorer glycemic control and may find it more difficult to learn how to apply their knowledge to daily life than women who can read. This explains the importance of education as a social factor that determines how people manage diabetes. This information also allows nurses to assess the level of patient teaching necessary.

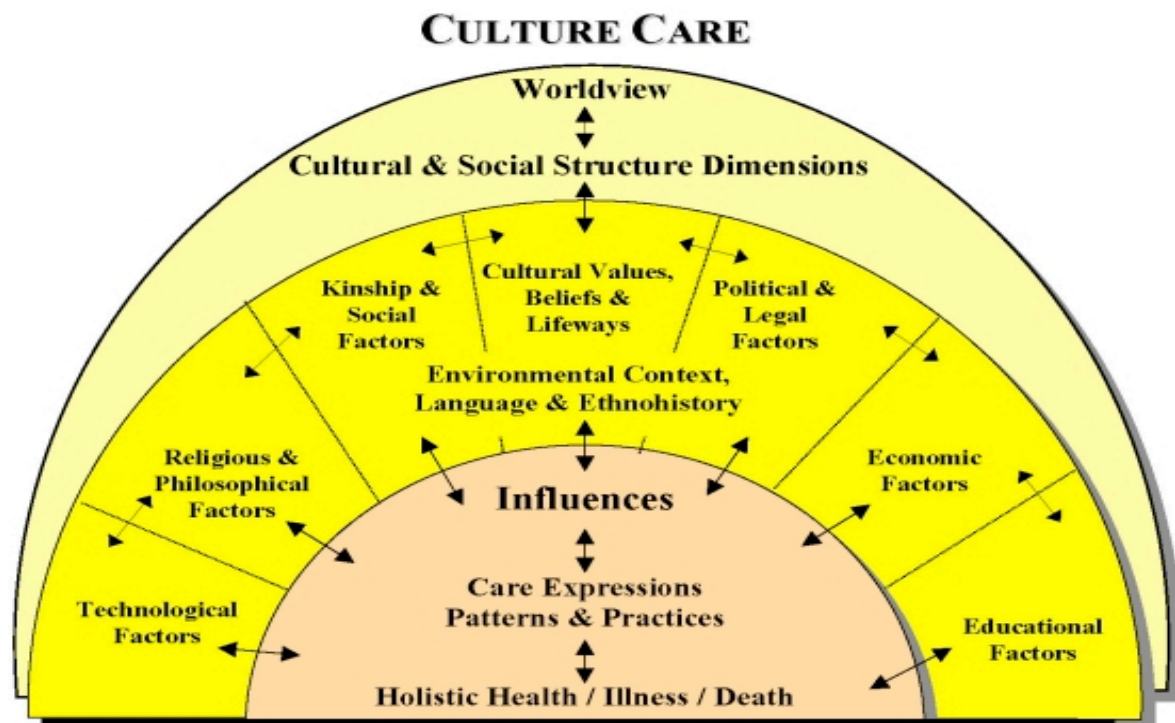
Education is not the only factor that determines how people take care of their diabetic conditions, nor is physical activity or its perception the determinant of how individuals manage their health condition. Rather, a wide variety of cultural and social factors, such as economy, religion, politics and other factors, determine an individual's health and well-being. Although, many of these research studies exposed different factors that influence the way people manage their diabetes; only a few of these studies offered a comprehensive and multifactorial analysis of issues that affects how a given community of people manage their diabetes. The importance of a multifactorial analysis is to have an in-depth understanding of the different aspects of people's life that are related to self-health care management.

### **Theoretical Framework**

Many researchers have explained different aspects of people's life that influence their behaviors.

Yet, very few of them have used theoretical frameworks to guide their research. Theories can be used to guide researchers to focus on what is germane to the study. Leininger's Sunrise Model (Leininger & McFarland, 2002) from the Theory of Cultural Care Diversity and Universality can be useful for understanding the multifactorial effects of culture and social structures in the management of NIDDM in Bengali adults.

### Leininger's Sunrise Model



(F.A. Davis Company, 2007)

Researchers using Leininger's theory are "interested in obtaining information about a culture from the people within that culture" (Morgan, 2002).

The Sunrise Model (Leininger & McFarland, 2002) was developed to describe the importance of understanding people's culture and social structures as influencers of their behaviors. Leininger described seven components of the Model, which are 1) cultural values and

lifeways, 2) kinship and social factors, 3) religious and philosophical factors, 4) economic factors, 5) educational factors, 6) political and legal factors and 7) technological factors (Morgan, 2002).

In the Sunrise Model (Leininger & McFarland, 2002), cultural values and lifeway refer to how cultural beliefs and values determine certain behaviors. Kinship and social factors refers to the level of support from family and friends concerning the condition patient have been experiencing. Religious factors mean spiritual beliefs that guide or allow decision making; for example, religious codes of how to treat a health condition that the individual might accept. Economical factor refers to different financial situation that may alleviate or aggravate the person's health and well-being. Education means level and type of literacy as a determinant of the person's ability to understand and utilize resources provided to manage health (Morgan, 2002). This study is not limited to only these 7 categories of influencers, but augment other social factors such as diet and physical activity.

The Sunrise Model (Leininger & McFarland, 2002) is relevant to this study in understanding the culture of Bengali adults and how each of the social factors mentioned influence diabetes self-care management. Ultimately, the analysis of the influencing factors can provides nurses and other health care professionals with information beneficial for taking care of Bengali adults with NIDDM.

### **Research Questions**

Little is known from the literature of how these cultural and social elements jointly influence health of Bengali adults specifically. The aim of this study is to better understand the role that culture and social structures play in managing health conditions of adults with type 2 diabetes. Since South Asian experiences with diabetes have only recently been studied, this study

will serve as a pilot to help the investigators gain greater knowledge of how cultural and health-related aspects of immigrants from Bangladesh influence the onset and management of diabetes, including treatment regimen management and self-care. Nurses can benefit by using this information to provide more culturally relevant care for their patients from Bangladesh.

## **Method**

### **Design, Sample and Setting**

This was a descriptive qualitative study that utilized a convenience sample of adults from Bangladesh who are immigrants to the U.S. There were a total of six participants interviewed in this study. All participants were from New York City area.

### **Exclusion Criteria**

Participants who were not type 2 diabetic, were less than 18 years of age, non-Bengali, who could not read, write, speak or understand minimal English or Bengali and those who were cognitively disabled were excluded from participating in the study.

### **Approach and Measures**

Recruitment process occurred by using the snowball approach starting with family acquaintance. Recruitment flyers were given to family acquaintances and initial participants, who then shared the information with potential participants to facilitate the recruitment process.

The investigator for this research approached individuals who were referred with the information about the purpose of the study. If they were interested in the study, participants were given a Bengali and English written informed consent and the researcher went through the informed consent process to maximize their understanding of the study. Then each participant signed an IRB approved consent form before the interview.

The principal investigator then set up an appointment for the interview using a semi-structured interview method. Using the semi-structured interview has allowed flexibility so that new questions were brought up during the interview as a result of what the interviewee already said. All the interviews had taken places where the participants felt most comfortable, undisturbed and ensured privacy. There was a list of questions covering the seven topics from

Leininger's Sunrise Model (Leininger & McFarland, 2002) : cultural values, education, economy, politic/legality, social/kinship, religion, and technology related to diabetes self-care management. Additional non-Sunrise Model-driven questions were also used, covering diet and physical activity. The primary researcher was Bengali so the interviews were done in Bengali, which is the participants' native language.

Participants were assigned a number before starting the interviews. All interviews were audio recorded and access to data was granted only to the research team for maintaining participants' privacy and confidentiality. The audio recordings were translated from Bengali to English by the principal researcher on meanings rather than literal translation. After that, the translation was transcribed into English in word document. Participants were allowed to answer questions being asked and make any additional comments. Participants were told that they could withdraw from the interview at any time.

### **Analytic Strategy**

The English versions of the transcribed data were analyzed using the NVivo 9 qualitative analysis software. Data were gathered to generate themes that were sorted into categories using Leininger's Sunrise Model (Leininger & McFarland, 2002). Researchers reviewed participants' responses into categories based on the Sunrise Model while being open to potential comments that might not fit into prearranged categories. The two researchers reviewed all the transcripts and analyzed themes independently and compared to ensure inter-coder reliability. Based on comparison, themes were revised before final themes were selected. To ensure participants' confidentiality and safety, there were password protections for both researchers so that no one else has access to the information, and audio recordings were always kept separately from transcripts and data. The password-protected files were placed in secure location using UVM

network and on 2 flash drives.

## Results

### Participant Demographic Information

| Participant | Sex | Age (years) | Number yrs living in U.S. | Length of time with DM II | Occupation                          |
|-------------|-----|-------------|---------------------------|---------------------------|-------------------------------------|
| 1           | M   | 75          | 2.5                       | 7 months                  | Retired, unemployed                 |
| 2           | F   | 57          | 2.5                       | 12 years                  | Not employed outside the home       |
| 3           | M   | 45          | 15                        | 12 years                  | Self-employed (grocery store owner) |
| 4           | M   | 46          | 22                        | 8 years                   | Cab driver                          |
| 5           | F   | 64          | 5                         | 5 years                   | Not employed outside the home       |
| 6           | F   | 70          | 5                         | 5 years                   | Not employed outside the home       |

The participants' responses about management of NIDDM are presented according to the Sunrise Model (Leininger & McFarland, 2002) with concepts or themes that emerged from each of the categories of the model. Categories from the sunrise model are bolded and concepts or themes are italicized.

### Cultural Values, Beliefs and Lifeways

#### *Different meaning of diabetes:*

During the interview participants expressed different meaning of diabetes in the Bengali culture. Four of the six participants described diabetes as a "*bohomitro rog*." The meaning of *bohomitro rog* varied. Participants used this Bengali phrase to describe the disease as "peeing frequently" and "weakness." One participant said, "diabetes in Bengali means *bohomitro rog* (incurable chronic disease). In diabetes body becomes weak. Diabetes gives birth to other

diseases” (Participant 2).

Differing from this perspective, another participant said, “diabetes means high sugar in blood. Sugar blocks blood vessels and causes problem. Walking helps lower sugar level in blood because blood moves faster and the block goes away” (Participant 1).

*Feel unaffected by diabetes now, but fear for future consequences of diabetes:*

Majority of the participants said that they did not feel diabetes have been affecting them physically both in the past and present. They described their diabetes as “under control” and that is the reason they are feeling healthy. Such as this participant, “I don’t actually feel much because I am busy working. So I don’t feel like I have diabetes. I don’t feel like I have high or low sugar” (Participant 4). However, these participants also explained their concerns about future health problems that may occur as a result of diabetes.

When I think of the future and I read about diabetes related things in books, I feel bad because it can happen to me. Like legs being cut off, eye damage, kidney damage, heart problem. Then I feel scared and think about ways I can be safe...

(Participant 3)

### **Religious and Philosophical Factors**

*Allah is in charge of everything:*

Religion is very important in the Bengali community. All participants had strong belief that Allah is in charge of everything in the world. One female participant explained:

...Medicine doesn’t cure me. The medicine I take doesn’t get me better. Medicine sits in our throat and calls for Allah and says hey Allah, should I cure this person from the disease? If Allah says yes cure, then with the grace of Allah we feel better. Allah can make us better on his own. But he uses medicine as a way to help us. People in this world have many diseases. Allah gave both the disease and the medicine to cure the disease. Allah gave the knowledge the doctors have about medicine...

(Participant 6)

*Praying is like exercising:*



Participants said that religious rituals help them manage their diabetes. They explained that when they *namaz* [pray] five times a day as part of the Islamic religion, they are also moving their body parts. The person praying usually murmurs different *sura* [words from the Quran] while standing, bowing and kneeling head down to the ground several times during the prayer. Hence, the movement is considered a type of exercise to these participants.

...And praying, people were told, is one kind of exercise. Right now even scientists agree with this. It was said that if someone pray 5 times a day regularly there is no need of more exercise. Right now we see in many physical therapy that they tell us to do some type of movement certain ways. When we stand to pray our body does the same type of movement 5 times a day. Daily 30 minutes of exercise that the doctor tells people to do is actually done during the prayer. Some doctors say that people who pray during the month of Ramadan don't really need to exercise during the day because praying is like exercising...

(Participant 3)

*Ramadan and diabetes have no connection:*

During the holy month of Ramadan, many Bengali adults who are Muslim fast from sunrise till sunset everyday for 1 month. This also includes people who have diabetes and other health conditions. Since it is an important month for Muslims, most participants said they fast during Ramadan because there is no connection between diabetes and fasting. One participant said:

...I used to take medication in the morning and at night. During Ramadan, I take medicine after Iftari [when fast is broken] and early morning (4 am) during sehri [meal consumed before fast begins]. It's the same thing. There is no connection between diabetes and Ramadan.

(Participant 1)

Participants said that they continue to take their medicine during Ramadan by changing the time they take these medicines. "Islamic scholars say that it's ok to use insulin for diabetes during fasting. Insulin doesn't break my fast. But they said to take the tablet for diabetes after Iftari" (Participant 2). There were different guidelines on fasting during Ramadan for a diabetic

based on what participants believed to be true. The exact guidelines are unknown.

### **Technological Factors**

#### *Irregularly checked blood glucose:*

When participants were asked to explain how they use a glucometer and insulin, all participants successfully demonstrated how they use these devices. However, when participants were asked about how often they monitor their blood glucose the answers varied. One participant said, “sometime I check and sometime I don’t. Sometime 4 days a week, sometime 5 days. I don’t have a regular schedule for that. If I feel suspicious then I check my blood glucose” (Participant 5). Participants were also asked about how frequently they check their blood glucose during the month of Ramadan. Many stated that they don’t check their blood glucose during the month of Ramadan. A female participant said:

...I don’t check it regularly unless my blood glucose has increased...Usually I check my blood glucose every other day or every 2 days. Now during Ramadan I don’t really check it. The last time my blood glucose was 115, basically in control...

(Participant 6)

#### *Management of high and low blood glucose:*

Some of the participants were knowledgeable about how to manage high and low blood glucose. There were a few participants who made statements, such as “It’s [blood glucose] usually not too high and so I don’t do anything about” (participant 1). Another participant said, “Usually my sugar is high after eating lunch. But then I take my medicine. It takes time to work. My eyes feel uncomfortable and I feel dizzy. When it’s high I walk around and it gets better” (participant 4). Participants also mentioned how they manage their low blood glucose. One participant explained, “...When it’s [blood glucose] low I feel shaky. Right away I eat something sugary, like rice if I am home. If I am outside in the store then I eat a candy or soft drink, like Snapple...” (Participant 3).

### **Kinship/Social Factors**

*Diabetes is a common disease, my family does not worry:*

For many of these participants diabetes is a common disease. Although they are worried about future health from diabetes, they are not worried now as they are not experiencing visible physical symptoms from diabetes at the moment. Interestingly, participants described their family members having similar perception. Their belief is that diabetes is a common disease, everyone has it and there is nothing to worry about.

There is no family nowadays that doesn't have someone with diabetes. Now we share more about diabetes. Talk openly about it. Now everybody says I have diabetes, I take this medicine, do this. It's common. So my family doesn't worry about my diabetes.

(Participant 3)

*Differences in family support for male and female:*

Although families of the participants do not worry about diabetes, they however give advice to the participants about how to eat well and manage diabetes. Interestingly, there are differences between the amounts of support a male receives versus a female. One male participant said:

...Everyone does everything on their own in the family. I go to the doctor on my own...I get the medicine on my own from the pharmacy. It's written and I read the direction and take the medicine on my own. I do everything on my own...

(Participant 1)

In contrast, a female participant said, "...My daughter or my husband takes me to the doctor...When I was in Bangladesh my son, youngest daughter or my brother would take me to the hospital." When the same participant was asked about whether or not she needs assistant with medication, she said, "...My daughter told me to take one in the morning for all of them. My daughter wrote it down for me" (Participant 6).

### **Economic Factors**

*Visits to PCP and specialists:*

All the participants said they receive free health insurance based on their income. When they were asked if their primary care physician (PCP) is a diabetes specialist, all participants denied. Most of these participants said they visit their PCP every two to three months or only when it is necessary, such as this participant, “I usually visit my doctor every 2-3 months. I don’t go unless I have a health problem” (Participant 1).

Although all the participants have a PCP, most do not have specialists for diabetes-related care (e.g. podiatrist). There were two participants, of the six participants, who were referred to eye or foot specialists. Of these two participants, one participant said he visits a specialist 1-2 times a year. The other participant said, “...He gives me a referral for an eye and foot doctor once a year. But I don’t feel anything so I don’t go. I went to a specialist two times in the past 8 years. I don’t have any eye or foot problem...” (Participant 4).

### **Educational Factors**

#### *Difficulty communicating in English:*

Four of the six participants had education high school or less in Bangladesh. Many of these participants said they didn’t learn English back home in Bangladesh because Bengali is their primary language. They only learned and communicated in Bengali back in their home country because they are literate in their native language. Family members usually go to the doctor with them and help them with translation. Some participants have Bengali doctors for diabetes and therefore they have less difficulty communicating. However, they expressed difficulty communicating in English elsewhere.

...The education is helping me a little, not too much. When I go to the cardiology doctor, I am unable to communicate because he is American. I was able to answer a few questions in English... not knowing English is hard...

(Participant 2)

#### *Knowledge about diabetes and management of DM:*

Most of the participants were knowledgeable about symptoms of diabetes and food that

are healthy versus unhealthy for a diabetic person. However, these participants did not know causes of diabetes and pathological processes of diabetes. One participant explained that diabetes means blood becomes watery. Another participant said sugar clogs in blood vessels in diabetes. When a participant was asked to explain cause of diabetes, she said, “This, Allah knows. We don’t know” (Participant 6).

### **Physical Activity**

#### *Differences in perception and actual performance of physical activity:*

All participants shared a common belief that it is important to be physically active in order to manage their diabetes. In fact, these participants stated that exercising, eating healthy food and taking medicine timely helps keep their diabetes under control. One participant said, “...I think some exercise and diet is important and some people don’t have this [Diabetes] disease...If I exercise and eat well my diabetes will surely be under control...” (Participant 3). However, when the same participant was asked about whether or not he participates in physical activity, he said:

...Actually I don’t do any exercise. But I walk around. But my walking is not exercise. If I walk a little fast then I can say its exercise. I don’t do the amount of exercise doctor tells me to. In average I walk about 1 mile, but that’s not enough...

(Participant 3)

#### *Barriers to physical activity:*

Five of the six participants said that they do not exercise as recommended. There were two main barriers of physical activity for these participants. The first barrier was poor health condition from another disease condition. Two female participants said they were not able to do exercise due to their poor health condition. One individual had chest pain and the other individual said she had pain in her legs. “...When my leg pain increases I can’t walk. My housework doesn’t bother me. I have to work because I am the only one in the house. It’s my leg

pain...” (Participant 5). The second barrier was the lack of time to do physical activity due to busy work schedule. For example, this male participant explained:

...I don't have any free time. To stay here [America], I have to drive cab and I don't have time. I work minimum of 10 hours and maximum of 12 hours a day. Straight driving. I walk around a little, you know getting a cup of coffee or standing and talking to someone. I have thousand of works beside my cab job. Like going outside to have a meeting, doing work at home...”

(Participant 4)

There were also participants who said they do not have any barriers and that they just don't exercise. Some of the participants, especially the female participants, said that walking up and down the stairs and working at home is enough exercise.

### **Diet**

*Sweet/sugary food is not good for a diabetic person:*

Many participants successfully explained the type of food that is healthy versus unhealthy. They also explained those foods that are sweet and sugary, such as mishti [rolled sugary dessert], are not good for a diabetic person. “...Balanced diet of fruits, milk, roti [chapatti] is good for a diabetic person, and sugary food like sweet biscuit, mishti are not good for a diabetic. Have to eat less fruits that are sugary...” (Participant 1).

*Differences in perception of healthy eating, and actual eating habit:*

All the participants stated that they eat healthy food. For example, a male participant said: ...My body won't work without food. Definitely, I eat healthy since I don't have to take vitamins. My age people usually take vitamins. People who have diabetes or people who control diabetes too much take vitamins. But I don't take any. So far healthy.

(Participant 4)

However, when the same participant was asked about the type of food he eats, he said:

...When I am outside I eat pizza, or go to a restaurant, sit and eat something. In the restaurant I eat different type of food. It depends... I mostly go to Bengali restaurants. Sometime Italian, Mexican, Chinese. Whatever I feel like eating...Bengali and western mixed. If I go to Chinese restaurant I eat rice. If I go to an Indian or Bengali restaurant I

eat naan roti [leavened, oven-baked flatbread] with curry. Sometime I go to restaurant to eat fried chicken. Italian restaurant lasagna. But very little...I don't eat beef. Mostly, chicken and lamb...

(Participant 4)

Some of these participants said they eat healthy and gave examples of the healthy food they eat. However, half of the participants' statement showed differences between their perception of healthy eating and their actual eating habits. Many of these Bengali participants eat homemade food, such as white rice over chicken curry and side dish of vegetables. It is common in Bengali culture to eat a plate of rice twice a day.

### **Additional Themes**

#### *Misconceptions about diabetes:*

Many of the participants had different misconceptions about diabetes. During the interview a participant explained physiological process in a diabetic person. "Diabetes makes people's blood watery. You lose strength, feel weak and that's what happens. Later people die. That's how my husband died. He died from getting injections [insulin] over and over"

(Participant 6). Some of the participants thought that eating sour food helps them keep their diabetes under control by cutting down fat, as this participant "...Candies are not good for people like us, but if I feel like eating a candy I eat little. That increases diabetes because it's sweet type of food. But food that are spicy and sour are good for diabetics" (Participant 5).

#### *American lifestyle worsened my health condition:*

Four of the participants said that they feel their health condition was better back home [Bangladesh]. One participant said that her health condition became worse after moving to the United States:

Back in Bangladesh I used to walk around, cook, pray and do things all day long. I didn't

have so much health problems there. Everything became worse after coming to America. I don't go outside or do things like I used to back home. My husband is 20 years older than me and he is fit and able to do everything...

(Participant 2)

Another participant shared a very interesting perspective of why American lifestyle worsened his health condition. He said:

...The days when I don't have work I rest all day. Here, there is no routine. We make all the schedules around our work. But back in our country, it's not like that. If I work that's fine. Leave for work at around 8 and then come back from work 4 in the afternoon. You have the rest of the afternoon off to walk around, play in the field, and do things basically. Also, there isn't a lot of transportation back home. But here, there is subway, bus or your own car. You can't live without transportation. But having it is also a big problem. It affects a diabetic person. Here people have transportation so they have to walk less. But back home there is less transportation so people walk a lot...back home I was better because the food is natural there. In here, nothing is natural. For example, single food like egg. If you want to buy an organic egg it's \$3.99 dozen and regular [non-organic] is \$.99 a dozen. In our country everything is organic. Meat is even organic. You are swimming in the pond there. Swimming is one of the biggest exercises there. Here in Brooklyn you have a swimming pool and you have to be a member and all that stuff. Back home everything is open and free...

(Participant 4)



### Discussion

The results show various factors that influence diabetes management in Bengali adults. Participants shared their cultural values and beliefs about diabetes. Many of the participants mentioned that they don't feel anything from diabetes right now. The rationale behind their comments is that they are not experiencing visible physical symptoms from their diabetes and therefore they feel that at the moment diabetes is not harmful. That is a common misperception that many people have and it is important for health care professionals to educate their patients on how diabetes affects them even though they may not be experiencing any visible health issue at the moment. Although these participants were not concerned about impact of diabetes at the moment, similar to Grace, Begum, Subhani, Kopelman, and Greenhalgh's (2008) study, they were afraid that diabetes would eventually lead to far worse health problems in the future. Fear, for some participants, originated from not being able to do things the way they used, such as being able walk or eat certain food.

All participants had strong religious beliefs that guided their lives. Participants believed that fasting during Ramadan does not influence their diabetes self-care management. They take their medicine everyday by changing the time they take their medicine from day to night. During Ramadan since eating time is short because they are allowed to eat only during nighttime, participants are only able to take their medicine [insulin, tablets] within that short period of time [from 8pm-4am], which may be problematic for a diabetic person who needs to have well managed blood glucose throughout the day.

Participants also believed that Allah [God] is in charge of everything. They shared personal experiences as examples of how meaningful Allah is in their lives. Interestingly, many participants explained that Allah gives disease [diabetes] and therefore He will make decision

about curing the disease. Such religious belief might be an important factor that influences these adults in making certain decision about diabetes management. In this case, participants strongly believed human cannot do anything about diabetes because Allah decides for them. So they may believe Allah will look after them and therefore they do not need to be concerned about management of diabetes. This belief may either positively influence diabetes management or hinder them from getting proper health care. This finding is consistent with the finding from a study by Holt (2012). However, health care professionals should not see this type of belief as the only barrier to proper education to Bengali adults. Instead of making general assumptions, health care professionals should construct culturally appropriate care.

Participants also believed that praying five times daily help them manage their diabetes because it provides them an opportunity to move their body. This, in turn, helps control blood glucose and diabetes. Although it is useful that participants are aware of these physical activities they are participating daily, this belief may also make Bengali adults think that they are doing enough exercise during prayer so that there is no need for additional physical activity to manage their diabetes. This finding is similar to the finding from (Grace, 2011; Grace et al., 2008). So *praying is like exercising* can influence their decision about physical activity in a positive or negative way.

Based on statements made by participants, there was noticeable irregularity in blood glucose checkup. Participants said that they check blood glucose in their PCP's office every 2-3 months and at home it varies from every other day to sometime every 6 months. The reason for lack of blood glucose checkups on a regular basis may be due to their belief that they are not experiencing any physical health problems from diabetes. They may believe that their blood glucose is well managed and therefore it is not necessary to check it as often. Again, health care

professionals need to ensure that these patients are aware of the importance of checking blood glucose at a regular basis, since in diabetes blood glucose fluctuates for numerous reasons.

When participants were asked about how they manage their high or low blood glucose if they experience any; most of the participants showed an understanding of what they have to do in these two situations. Participants successfully explained that they needed to eat something sugary quickly if they were to have low blood glucose. However, some of the participants were confused about management of high blood glucose. Some mentioned that they take their medicine and walk around. Others mentioned they didn't know what to do. One important teaching point in here for these participants is that they need to contact their care provider if their blood glucose is higher or lower than their expected normal range of blood glucose.

Our findings also show that the female participants have more family support compared to the male participants. Part of this is due to the role of females in the Bengali culture, which is to stay home, take care of children, cook and clean. Moreover, the female participants live in a city where they are unable to travel on their own to visit the doctor and unable to communicate with people who do not speak Bengali. So their family members help them when they need to visit the doctor. On the other side, the male participants do not have much support because their role in the Bengali culture allows them to travel and navigate on their own. For the female participants, their role as Bengali women, and their lack of knowledge about transportation/directions, and language barriers together may impede them from visiting the doctor and seeking health care whenever necessary.

As anticipated, although these participants have primary care physicians, they do not all have a diabetes specialist. Treatment regimens and guidance for diabetes and other health conditions, such as a common cold, are all received from their PCP. Some of the participants

thought their PCP are their diabetes specialists just because they are knowledgeable about diabetes and treat them for diabetes. Some of the participants lack an understanding that diabetes specialists, endocrinologists, or podiatrists exist for diabetes-related care, and that they are not the same as a PCP. However, two participants were aware of these specialists and they were referred to ophthalmologists and podiatrists. Nevertheless, one of the participants said he went to such specialists only two times in 8 years because he didn't feel the need to go as he doesn't see any eye or foot problem. This common belief may prevent them from seeking help from a diabetes specialist for preventive measures and better management of their condition.

Most participants were knowledgeable about healthy food for diabetics, the importance of physical activity, and management of low blood glucose, which is similar to a study done by Grace et al. (2008). However, some of the participants had limited knowledge about what diabetes is. They knew that blood glucose increases in diabetes and the symptoms. However, they had misconceptions or did not know about the actual causes and pathophysiology of diabetes. This finding was also seen studies done by Choudhury et al. (2009) and Greenhalgh et al. (1998). A reason for this could be that they never received correct information about what diabetes is from their provider or other health care professionals. Those participants who said they knew actually explained the pathophysiological process of diabetes incorrectly. It is pertinent that health care professionals fill this gap because having this knowledge would allow these people to control their health and be able to manage their diabetes better.

Some of the participants spoke about their difficulty communicating in English. Some have Bengali PCPs and so they are able to communicate easily. However, they are able to communicate minimally in English with others, such as people from the pharmacy. Of the six participants, two were educated to 10<sup>th</sup> grade level and another two were educated up to 4<sup>th</sup> grade

level in Bangladesh and learned very little English since English is not the primary language in Bangladesh. Moreover, they have arrived in the United States very recently, which is one of the reasons they are unable to communicate proficiently in English. The language barrier prevents them from receiving information and seeking help from someone other than their PCP. In fact, some of the participants said that they do not receive any information about diabetes management other than prescribed medicine from their PCP. Those participants who do not have a Bengali PCP have to rely on family members for routine visits to the doctor's office and help them with translation, which may be inaccurate if the family member is not educated or is underage, as was also found in Rhodes et al.'s (2003) study. Lack of education may cause them to not question their health care provider about treatment options, seek information to improve their health, and therefore receive better health care.

Physical activity is important for diabetes management in the participants' perspectives. However, five of the six participants said that they do not participate in physical activity. For the female participants, either physical condition (e.g. chest pain) or housework (e.g. cooking, taking care of the house and grandchildren) like a typical Bengali female adult inhibits them from going outside for a walk. This finding is similar to findings from Grace et al.'s (2008) and Greenhalgh et al.'s (1998) study. For the male participants, lack of time is the main barrier to physical barrier. Most of the male participants work long hours and do not feel they have the time to exercise. In a typical Bengali family the males are the breadwinners and work outside long hour and the females stay home to take care of the housework. Sometime this culturally prearranged role inhibits these participants from going outside to participate in physically activity. It is important for health professionals to understand the cultural roles and help these patients find ways to include physical activities in their lives without changing their traditional role, as

advocated by Capell, Dean, and Veenstra (2008) and Grace et al. (2008).

Participants were knowledgeable about healthy and unhealthy diet for diabetic persons and they believed that they eat healthy. They said that sweet and sugary food is bad for a diabetic person and a wide variety of food is healthy. However, the type of food they described that they usually eat seems somewhat inconsistent with this perspective. During a typical day, participants said their diet include a plate of white rice with curry dish of fish, meat or vegetables for lunch and dinner. For breakfast they drink milk and eat roti [chapatti] with curry dish. Participants may not be aware that most of these foods they consume daily, such as white rice, are simple carbohydrate that can easily boost up their blood glucose compared to complex carbohydrate (MedlinePlus, 2012). Moreover, they are unaware that food they eat at Iftari during the month of Ramadan, such as fried pakoras [deep fried meat or vegetable fritters], and very sugary fruits such as khajur [sweet fruit], are unhealthy (The Global Diabetes Community, 2013). Some of the participants said in addition to Bengali food, they also eat outside due to busy work schedule. Some of the food these individuals described are also unhealthy if eaten at a regular basis. The lack of knowledge about a complete list of food categories that can affect their blood glucose negatively can lead to many health issues. The findings are similar to the some of the findings from studies done by Greenhalgh et al. (1998) and Holt (2012). Many times health care professionals give a list of healthy American foods to people from another country, such as Bangladesh. The problem is that they don't always consume dishes such as steamed broccoli. So, it's pertinent to ask these people what type of food they usually consume at home, and then direct them to eat food that are both healthy and culturally appropriate.

One participant believed that American lifestyle and the fact that she is unable to move around here aggravated her health condition. Many of the Bengali immigrants who move to the

United States come from rural villages or open living spaces. They were physically more active because most of the works they did there daily, such as getting water from the pond, required a lot of energy. However, when they moved to the United States, especially in a big and unknown city like NYC where they don't know the transportation system or the people surrounding them, different barriers prevented them from seeking help or taking control of their health. This finding is very similar to findings from Greenhalgh et al. (1998) study on Bengali adults. Many of the participants said that back home they were physically active and they had the time. But coming to the United States limited such opportunities, as work and surviving became more important. Also, the proximity of the public transportation system in NYC makes it unnecessary for people to walk too far to get to their destination. In Bangladesh, purchasing vegetables and fruits is cheaper because many people are surrounded by agriculture and some grow their own. Conversely, it's more expensive to buy healthy, fresh and organic vegetables in the United States. As a result, Bengali immigrants use the transportation and food systems here because they have to worry about how much they are spending.

### **Limitations**

This study was qualitative and exploratory; therefore generalizability was not the goal. Nonetheless, our findings were based on interviews from six participants. The small sample limits the perspectives that might be offered by other Bengali adults. The study only includes Bengali adults living in NYC; hence, the findings are not applicable to other ethnic groups or to Bengali adults living in other geographic regions. It is also not necessarily relevant to non-immigrant Bengali adults living in the United States.

Even though the goal of the interviews was to have flexibility so participants share as much as they wanted, the participants mostly answered the questions briefly and directly in

response to the questions posed. This limited that knowledge we could have potentially gained if participants had shared more. A more sociable interview process may be implemented to encourage greater elaboration on themes.

The principal researcher who speaks English fluently translated all the interviews. A final limitation was that there was no opportunity to back translate or have a second translator to confirm the accuracy of the translation and transcriptions.

### **Implications**

Nurses and other health professionals can use the findings to improve their cultural competency skills and better care for patients who are type 2 diabetic from Bangladesh. They can find ways to accommodate patient's need while respecting their cultural values and beliefs (Osman & Curzio, 2012). Many of the participants lacked knowledge about cause of diabetes, nutrition facts and variety of things that health care professionals can educate them about. Health care professionals should not make assumptions about cultural beliefs that Bengali adults hold and they should not see individuals as a uniform product of culture (Csordas, 2002). Nurses and other health care professionals should assess patient's level of knowledge about diabetes management, their life style, cultural values and beliefs, and overall social structures in order to provide individualized and culturally congruently care (Fleming & Gillibrand, 2009).

Health care providers can provide more information to patients about management of diabetes and other health conditions so that they are aware of their condition and make correct decisions, since four of the six participants said they did not receive any information about diabetes. They can provide these adults with nutritional information about traditional healthy diet, instead of general diet information, so that patients can make use of the information. For example, health care professionals could ask patients what type of vegetables they consume in



their culture and suggest that they have culturally appropriate and healthy foods. They can provide simple guidance about physical activities Bengali adults could do while accepting the cultural norms and lifestyle structures they live within (Grace et al., 2008). The health care system can also provide interpreters for the Bengali adults who speak minimal English. In addition, Rozario (2005) and Grace et al. (2008) suggested that one way the Bengali community could be educated about diabetes and its management is by involving religious leaders, such as an Imam because they are seen as trusted sources of information and support. Future studies could compare other ethnic groups with type 2 diabetic Bengali adults to see whether or not factors that influence diabetes management are similar in both cultures. Further research could also aim to understand other factors that influence diabetes management by Bengali adults that were not covered in this study.

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