

**Bridging the Gap in Knowledge Deficit in Type-2 Diabetes Among Hmong Americans**

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### **Abstract**

The Hmong from Laos are among the most recent groups to seek refuge in the United States, with Catawba County of North Carolina becoming home to the fourth-largest Hmong resettlement. However, in adopting the western lifestyle, their traditional meals are being frequently replaced by fast food, and this has led to a higher percentage of persons with at-risk body mass index (BMI) and therefore an increased risk for diabetes among the Hmong Americans. Their current at-risk BMI prevalence is higher than Caucasian Americans and other Asian Americans. There is a lack of diabetes education and support programs for this English as a Second Language (ESL) population. To improve their quality of life and provide them with the necessary support and education required to prevent the complications associated with type 2 diabetes (T2DM), a culturally dynamic Hmong diabetes self-management and support program was designed. The results reveal that after participating in the program, the participants' diabetic knowledge improved, and they had fewer unhealthy days than before program implementation.

*Keywords:* Hmong, type 2 diabetes, quality of life, diabetes education, diabetes self-management

### **Bridging the Gap in Knowledge Deficit in Type-2 Diabetes among Hmong Americans**

Type 2 Diabetes Mellitus (T2DM) is a health condition resulting in excess blood sugar due to insulin resistance and decreased production of insulin over time (Centers for Disease Control and Prevention [CDC], 2019). Insulin, a hormone made by the pancreas, is key in moving sugar into cells. However, if faced with significant resistance, insulin cannot transport the sugar, and this results in high-level blood sugar in the body (CDC, 2019). Diabetes is a progressive condition with no specific cure (Brundisini et al., 2015). It causes several short-term and long-term complications such as diabetic eye disease, cardiovascular disease, kidney disease, nerve damage, vascular damage, diabetic foot complications, and diabetic-related pregnancy complications (International Diabetes Federation [IDF], 2019). Preventing complications necessitates continuous patient and provider collaboration (Brundisini et al., 2015).

When the blood sugar is higher than normal but not in the range of T2DM, a person is diagnosed with prediabetes (CDC, 2019). Currently, one out of three people is diagnosed with prediabetes in the United States (CDC, 2019). More than 34 million Americans are affected by diabetes, with 90–95% of them having T2DM (CDC, 2019). Globally, 6.28% or 462 million individuals are living with diabetes (Khan et al., 2020). In 2030, it is predicted there will be 578 million adults living with diabetes (IDF, 2019).

The current annual global cost of diabetic care is 760 billion USD, with 50% of the direct cost focused on treating complications such as the management of diabetic ketoacidosis (DKA) (IDF, 2019). When glucose in the blood rises to a dangerous level, it causes a medical emergency called DKA which requires hospitalization (CDC, 2021). The other medical expenditures include prescription medications, diabetes supplies, and physician office visits (American Diabetes Association [ADA], 2018).

Body mass index (BMI) is a measurement system used to provide an approximation of body fat or measure of weight compared to height. In the Asian American communities, the standard for an at-risk BMI is 23 kg/m<sup>2</sup> linking obesity to pre-diabetes and diabetes (Stewart et al., 2016). Asian Americans including Chinese, Vietnamese, Hmong, and Korean Americans are commonly above this cutting point; Hmong are 80% over the cutting point when compared to the rest, who are about 50% over the BMI of 23 (Stewart et al., 2016). They are also at a higher risk of T2DM when compared to Caucasian Americans; the total incidence of T2DM in the Hmong American population is over 11%, whereas it is about 6% in Caucasian Americans (Thao et al., 2015). Moreover, the total prevalence of diabetes in Hmong adult patients is 19.1% and compared to only 7.8% in Caucasian patients (Thao et al., 2015). Hmong Americans are at a higher risk for prediabetes or T2DM due to factors such as obesity (Stewart et al., 2016). In light of this, lifestyle promotional interventions such as diabetic preventive programs are beneficial to reduce weight-related risk factors of T2DM among Asian American communities (Stewart et al., 2016).

## **Literature Review**

### **Hmong American Background**

North Carolina's Catawba County has the fourth-largest Hmong population in the United States (DIGITALNC, (n.d.); Observer News Enterprise (n.d.)). Originally an Asian ethnic group from southern China, the Hmong migrated to the northern regions of Laos, Vietnam, and Thailand (Lor, 2017). Hmong Americans, primarily from Laos, served alongside the United States (US) Central Intelligence Agency (CIA) during the Vietnam War in the Secret War (Hamilton-Merritt, 1999). The Secret War was aimed to prevent the Vietnamese on the north from traveling and providing supplies to the south by going through Laos (Hamilton-Merritt,

1999). In 1975, after the Vietnam War, faced with genocide and political persecution many Hmong fled Laos seeking refuge in Thailand and subsequently, came to the United States as immigrants (Hamilton-Merritt, 1999; Stratis Heath, 2020).

The Hmong immigrants are one of the recent ethnic groups to take refuge in the United States, and the anticipated assimilation rate estimated in this group of refugees were unexpectedly slower than of normal rate due to the initial culture shock, subsistence, and agrarian background (Dentice, 2015). However, as part of adopting the western lifestyle, fast food has frequently replaced traditional Hmong meals (Stratis Health, 2020). Moreover, the Hmong people regularly practice their cultural rituals and celebrations, and for them it is a custom, as guests, to consume a large amount of food as a form of respect to their hosts, a practice that can lead to higher percentage of the Hmong Americans having an increased BMI, putting them at risk for diabetes (Stewart et al., 2016; Stratis Health, 2020). Many Hmong are currently in the process of developing a distinct Hmong American culture, but the preservation of language and traditions remains important (Ali et al., 2020).

### **Demographic and Social Determinants of Health**

According to the 2010 census, there are currently 260,073 Hmong Americans, with most of them concentrated and residing in California, Minnesota, and Wisconsin (Hmong National Development Inc., 2013). The median household income for Hmong families was reported to be \$45,776, whereas it was \$66,201 for Asian American households (Southeast Asia Resource Action Center 2011). Moreover, compared to 80% of Asian Americans, only 24.9% of Hmong Americans have their high school diploma (US Census Bureau Public Information 2011). A recent health literacy study indicated that about half of the Hmong participants only have very little understanding of health information and low health literacy (Khuu, Lee, & Zhou, 2018).

The 2010 census reported that 87% of Hmong Americans speak English less than very well in comparison to the general Asian American population reported at 60% (Ali et al., 2020). Current social determinants of health for the Hmong population contribute to an increased risk for poor health conditions in general (Ali et al., 2020).

### **Cultural Aspects of Healthcare Beliefs and Conception About Illnesses**

Compared to other Asian Americans, Hmong Americans are less likely to pursue treatment for chronic disease management (Ali et al., 2020). Their perception of illness is based on the state of their spiritual and physical health, and healthcare decisions are mainly decided according to their religious preference (Stratis Health, 2020). A blend of faith-based value systems of Animism and Shamanism form the traditional Hmong religion, and although many Hmong people are associated with Christianity, some practice a blend of both, while others may not practice any faith at all (Ali et al., 2020; Stratis Health, 2020).

Animism does not associate with a particular religion. Animists acknowledge that the universe is alive with spirits and believe there is an integrated system between human and spirits (Helander-Renvall, 2009). Furthermore, an animist spirituality maintains a focus on the addressment of practical exigencies (Animism, 2021). In the Shamanism, it is a belief that sickness can be the cause by a departure of an ancestral spirit, or if a person encounters a wild or wandering spirit which during its past life had suffered an illness (Ali et al., 2020). This better explains why the Hmong people believe that illness is the result of a separation of the physical body and spiritual soul and not the result of the physiologic or biological process (Ali et al., 2020). Because of their belief system, many Hmong predominately choose to avoid western medicine and instead are treated by the traditional healer known as a shaman (Ali et al., 2020).

A shaman or a religious leader plays a role similar to a psychologist, a doctor, and a minister (Ali et al., 2020). A shaman may be invited for spiritual healing ceremonies when an illness is considered to stem from spiritual weakness (Stratis Health, 2020). The shaman, in a spiritual activity called soul-calling, is believed to ensure contact between the physical and spiritual world (Ali et al., 2020). When soul-calling fails to recall the lost soul, the Hmong believe that the disease process may worsen and even lead to death (Ali et al., 2020). Due to this belief, they have a difficult time understanding the physiologic or biologic transmission of diseases (Ali et al., 2020). The importance of medicine is acknowledged among the Hmong communities, but the Hmong prefer home remedies, herbal treatments, and spiritual treatments as first line therapies (Ali et al., 2020).

### **Barriers to Obtaining Healthcare**

In healthcare, a barrier is considered anything that may restrict or limit the use of the service. Barriers may cause difficulty for some individuals to use, access, or benefit from necessary care. The health risks for T2DM in the Hmong population are similar to the common diabetes health risks in any culture including overweight, family history, high cholesterol, and decreased activity (Apidechkul, 2018). However, when compared to prior generations of farmers with plant-based diets, the Hmong community's health risks are exacerbated due to lifestyle and dietary intake and other factors including poor health literacy, social factors, prevailing misconceptions, religious implications, and language barriers (Apidechkul, 2018; Sohal et al., 2015; Visram, 2013). Renfrew et al., (2013) found that even with translator services healthcare providers continue to express major challenges concerning diabetes treatment and management due to the language barrier and the patients' low literacy.

Furthermore, misconceptions about diabetes such as being a form of kidney disease or caused by a malfunctioning heart, liver, and kidney have been reported in this population (Mitchell-Brown et al., 2016). Claydon-Platt et al., (2013) interviewed ESL patients and most of the participants were not able to explain diabetes and the complications of uncontrolled diabetes; even with an average of seven years of diabetes diagnosis, only a basic knowledge of diabetes was observed. Multiple barriers including lack of knowledge, prevailing misconceptions, and lack of cultural-specific management remain a challenge (Sohal et al., 2015).

### **Facilitators**

To properly assist and manage Hmong patients living with diabetes, an open approach must be utilized including using language assistance, cultural competency, and appropriate cultural education (Mitchell-Brown et al., 2016). Healthcare providers must study and be open to different cultural backgrounds and take a multidisciplinary approach such as utilizing a healthcare professional such as a certified diabetes educator for patient assistance and support (Renfrew et al., 2013). For enhanced diabetes management, a diabetes management program that includes culture-specific strategies and measures to improve communication and address prevailing misconceptions is ideal (Sohal et al., 2015; Visram 2013). Helpful tools such as medication boxes and insulin sliding scale cards ease the management and medication compliance (Claydon-Platt et al., 2013).

For a chronic condition like T2DM, being knowledgeable about the disease is the first step in proper management (Mitchell-Brown et al., 2016). However, minority groups with limited English are unable to receive proper education about their disease and management of the disease (Apidechkul 2018; Claydon-Platt et al., 2013; Mitchell-Brown et al., 2016; Renfrew et al., 2013; Sohal et al., 2015; Visram, 2013). Diabetes education is an important key to diabetes

management (Mitchell-Brown et al., 2016). Therefore, providing language assistance for better communication, addressing misconceptions, and acknowledging culture are necessary for proper management (Sohal et al., 2015).

Diabetes self-management education and support programs contribute to cost-effective diabetes health care and lower the risk of diabetic complications and promotes self-awareness, knowledge, and diabetes self-care (Powers et al., 2015). Moreover, a strong patient-provider relationship is crucial and can be achieved by recognizing the patients' cultural differences and respecting their values and beliefs (Ali et al., 2020).

### **Purpose of the Project**

To provide the necessary support and education in preventing the complications associated with T2DM, it is necessary to involve the community (Santos et al., 2014). A Quality Improvement (QI) project was designed using the National Standards for Diabetes Self-Management Education (DSME) guidelines and criteria from the American Diabetes Association (Powers et al., 2015). It was designed and guided by the theories of Leininger to preserve the cultural aspect, accommodate cultural requirements, and promote understanding of the cultural lifestyle changes (Betancourt, 2016; Leininger, 2008). Implementing the cultural aspects in the self-management project enhances cultural understanding and improves lifestyle modification among this community.

The DSME is considered a necessary critical element to improve patient outcomes for everyone with and at risk for diabetes (Haas et al., 2014). Therefore, to improve clinical outcomes, health status, and quality of life, the DSME aims to provide support in the form of decision-making, self-care behaviors, problem-solving and active collaboration with the health care team (Haas et al., 2014). The support system was designed to include Hmong language

assistance for improving communication, acknowledging cultural differences, and addressing misconceptions. Moreover, tools to aid medication compliance were introduced. The primary aim of this QI project was to provide diabetes education and support in a language that this population will understand and to improve diabetes knowledge and quality of life for the Hmong population living with T2DM. The secondary aim of the project was to seek out feedback from the participants to identify common themes.

### **Methods**

The project was reviewed and approved by the Lenoir-Rhyne University Institutional Review Boards. All interventional educational content was provided in the Hmong language; the translation was completed by bilingual health care professionals including a pharmacist and nurse practitioner.

#### **Diabetic Educator Training**

A meeting between the diabetes educator and coordinator was held to plan the project. The discussion included diabetic education topics and the program outline. The subject of cultural awareness was acknowledged and emphasized. All the educational power points, videos, and printouts were sent to the educator by email. The program schedule was set by the educator to best fit the participants' and educator's schedule.

#### **Participants and Recruitment**

To recruit participants, flyers about the project were posted in local Hmong stores and an announcement was made at the local community church. Demographic criteria included Hmong ethnicity, of age 18 year or above, active diagnose of T2DM, and limited English skills.

**Setting and Design**

The setting was a community-based location at a local Hmong church. Being self-funded, no medical cost was necessary. This was a six-week prospective Quality Improvement (QI) project that implemented the Hmong diabetes self-management and support program. The program implementation was completed by a bilingual volunteer member of the church who is a PharmD pharmacist. All participants were given a copy of a non-signature consent during the first meeting. The meeting consisted of three educational meetings that offered evidence-based education on T2DM, and diabetes self-management based on the Hmong culture. The topics included pathology, diabetes healthcare management care plans, medication, common Hmong food items, and healthy lifestyle modifications. The meetings were two weeks apart for a total of six weeks. All the educational content was presented in Hmong language. The videos, which were in English, were translated verbally by a diabetic educator after every sentence to promote accurate translations. The program followed CDC COVID-19 social distancing regulations by requiring masks and maintaining six feet distances at all meetings.

**Project Implementation****Program Curriculum and Delivery**

The Hmong diabetes self-management and support program was an evidence-based health and wellness diabetic educational program based on Hmong cultural awareness. It consisted of three 50-minute educational meetings that provided T2DM and diabetic self-management and support education. The meetings were conducted two weeks apart for a total of six weeks. All the meetings had a post-discussion question time to clarify and answer participants' doubts and questions. This was followed by a ten-minute experience sharing time for participants who were interested in sharing their diabetes experience. The classes were

scheduled on the first and third Saturday of each month. All the participants were given the choice to opt-out at any time. No financial compensation, at any point of the program, was given.

### **Data Collection and Measures**

The health-related quality of life (HRQOL) instrument used was the Centers for Disease Control and Prevention Health-Related Quality-of-Life 14-item Measure (CDC HRQOL-14), and diabetic knowledge test use was Michigan Diabetes Knowledge Test (DKT). These tools were provided and completed on the first meeting and at the last meeting. A six-week follow-up and a qualitative telephone questionnaire using open-ended questions was conducted via telephone (see table 1). All scores and results were transferred to the project coordinator after collected by the diabetes educator.

### **Participants' Diabetes Knowledge Test**

The test provides a quick and low-cost method to assess for general knowledge of diabetes and diabetes self-care (Fitzgerald et al., 2016). The DKT had been validated, and it demonstrated reliability and validity in past studies (Fitzgerald et al., 2016). Testing takes approximately 15-minutes to complete. The utilized true/false version of the DKT consist of 20 diabetes statements of which 18 are appropriate for people who does not use insulin and the other two includes insulin knowledge statements (Elizabeth Weiser Caswell Diabetes Institute, 2021). The true/false form of the test was utilized to minimize miscommunication. To decrease any language barrier, the questions were verbalized to the participant group in Hmong and any doubts or misunderstandings were clarified before moving on to the next question.

### **Participants' Quality of Life**

The HRQOL-14 was developed by the CDC for measuring patient reported quality of life outcomes (CDC, 2021). The instrument provides key data health disparities, tracking population

trends, and builds broad coalitions around the measure of population health and remains recognizable at the national level (CDC, 2021). The CDC HRQOL-14 was used for this project and focuses on physical and psychological health impairments that may prevent a person from experiencing healthy daily activities over the most recent 30 days (CDC, 2021). Multiple studies have validated the validity, reliability, and responsiveness of the CDC HRQOL-14 (CDC, 2021). This survey was relayed like the DKT. All questions were read out loud in Hmong, and any misunderstandings or doubts were clarified.

### **Participants' Qualitative Telephone Questionnaire**

The qualitative telephone questionnaire was conducted by the project coordinator, who recorded and translated the data into English.

### **Data Analysis**

For statistical analysis, a mixed-methods approach was utilized.

### **Quantitative Data**

All the data were collected and re-entered into Intellectus Statistics®, and the mean values in each category including the DKT scores, total reported unhealthy and healthy days were produced. The mean values of each before and after implementation category results were compared using a Two-Tailed Wilcoxon Signed Rank Test.

### **Qualitative Telephone Questionnaire**

The participants were interviewed individually. The interview was recorded and translated into English. Content analysis was used to determine the common emerging themes among the participants' responses.

## Results

A total of seven patient participated in the program but only six consented to the qualitative telephone questionnaire. All patients participated in the program and completed the DKT and the CDC HRQOL-14 as required.

### Quantitative Results

The results of the two-tailed Wilcoxon signed rank test to compare diabetes knowledge pre- and post-implementation were significant based on an alpha value of 0.05,  $V = 0.00$ ,  $z = -2.39$ ,  $p = .017$ . This indicates that the differences between pre-knowledge score and post-knowledge score are not likely due to random variation. The median of pre-knowledge score ( $Mdn = 50.00$ ) was significantly lower than the median of post-knowledge score ( $Mdn = 80.00$ ). Figure 1 presents a boxplot of the ranked values.

The results of the two-tailed Wilcoxon signed rank test that examined differences in the number of unhealthy days were also significant based on an alpha value of 0.05,  $V = 27.00$ ,  $z = -2.21$ ,  $p = .027$ . This indicates that the differences between pre-unhealthy days and post-unhealthy days are not likely due to random variation. The median of pre-unhealthy days ( $Mdn = 8.00$ ) was significantly larger than the median of post-unhealthy days ( $Mdn = 5.00$ ). Figure 2 presents a boxplot of the ranked values.

### Qualitative Result

#### *Telephone Questionnaire*

It is traditional Hmong cultural practice that one generation teaches the next by oral teaching and storytelling, and the Hmong has carried out this custom for generations (Hmong Museum, n.d.). Oral tradition remain highly value and continue to convey the values and beliefs in the Hmong community (PBS North Carolina, n.d.). To honor cultural competence of the

Hmong, the oral tradition of storytelling was utilized during the interview. Participants were encouraged to speak freely in answering the questions.

The common themes that emerged included the following: a language barrier that prevents educational opportunities, understanding and adapting to western medicine, understanding chronic diseases and their relationship between genetically linked diseases, and a desire/an interest for more of such programs. The participants stressed the importance of breaking down the language barrier that prevents them from learning about how western medicine works. One participant expressed that his language barrier prevented him from learning more about diabetes:

I came to the United States as an adult so learning English is very hard. I still don't understand English well, and when my doctor told me I have high blood sugar, I didn't understand where I could have caught it from. The diabetic educator helped me understand that this disease is not contagious and that it may be related to diet, lifestyle, and genetics. She explained to me that with the difference in lifestyle from here and Laos my parents may not experience diabetes. When we lived in Laos, we didn't have healthcare, so I don't know any genetic disease my parents or sibling might have had (Anonymous, 2020).

Another participant expressed his post-intervention understanding of medication compliance:

We Hmong usually use herbal medication as a first-line treatment for physical sickness and use prayer or shaman ritual to heal our spirits from lost or sick. This program helped me understand why it's important to take my medication that my doctor order me. The diabetic educator helped me understand that diabetes was not like the common cold or the flu. It may stay with me for the rest of my life and that is why I may need to take my

medication for the rest of my life. My medication will help my blood sugar to stay low and help prevent me from having more complications from high blood sugar

(Anonymous, 2020).

When asked for suggestions regarding the program, a participant expressed that other similar program should be made available to the Hmong community:

I feel that programs like this one should be more available to the Hmong culture. When we go to the doctor visit, they don't have the time to explain to us about our diagnosis and this make me nervous to take the medication they order. I feel more comfortable after learning about the medication. We Hmong don't have the healthcare or education in Laos to help explain to us about diseases like high blood sugar. In America, there is high levels of education and healthcare but, for people like me that don't understand English, it's hard for me to understand my diagnosis or disease. I'm grateful to have a diabetic educator that understands my cultural background. It makes me more comfortable asking questions when I don't understand (Anonymous, 2020).

### **Discussion**

The QI strategies implemented included diabetes educator training, translation of diabetes educations including pathology, diabetic healthcare management care plans, medication, common Hmong food items, and healthy lifestyle modifications into the Hmong language, and organization of multiple points of contact and types of educational modalities. Evidence-based guidelines and protocols were organized and utilized to promote satisfaction with diabetes education, enhance knowledge, increase confidence, and monitor outcomes among the Hmong population living with T2DM. The QI strategies assisted in translating evidence-based guidelines into evidence-based care.

**Interpretation**

The Hmong Diabetes self-care management and support program was well received and accepted by the Hmong participants. In addition, the DKT scores increased significantly, and the CDC HRQOL-14 reported a significantly decreased number of unhealthy days after participating in the program. Furthermore, the qualitative telephone questionnaire provided positive feedback from the participants. These results suggested that the QI project was a successful and is a feasible program to help assist and improve diabetes knowledge and quality of life in the Hmong Americans living with T2DM. Diabetes self-management education is considered a necessary and critical element to improve patient outcomes for everyone with and those at risk for diabetes (Haas et al., 2014). In their systematic review Begashaw et al. (2021) noted that the DSME had a 85% effectiveness at reducing patients with T2DMs' glycated hemoglobin (HbA1c) level. Mikhael et al., (2020) found that DSME programs provide highly effective results in the improvement of glycemic control, lipid profile, BMI, and improving blood pressure, and a significant improvement was noted in the patient diabetes knowledge, diabetes self-management, adherence to medications, self-efficacy, and quality of life.

According to the story that was told by the participants, storytelling remains highly valued by the Hmong culture and provide them with satisfaction when it comes to the concept of teaching and learning. Healthcare providers must be willing to accept and learn about the different cultural backgrounds (Renfrew et al., 2013). The perception of healthcare providers undervaluing oral tradition, such as storytelling, leads to less visits with healthcare providers and dissatisfaction among Hmong patients (Lor et al., 2020). The emerging common themes identified were a language barrier that prevents educational opportunities, understanding and adapting to western medicine, understanding chronic diseases and their relationship between

genetically linked diseases, and a desire/an interest for more of such programs. All participants voiced their gratitude and were very pleased by the program.

### **Limitations**

The small sample size of the project is due to the population being a minority group and could be a limitation, as it may project a biased point of view. Since about the 1600s, due to persecution, the Hmong language was lost, and no written instances of it have been noted until the late 1960s; moreover, the Hmong language has few medical terms (Stratis Health, 2020). This may limit the translation of some English medical terms into Hmong. In addition, the six-week time frame does not provide a long-term outcome even though it showed improvement initially in short term.

### **Recommendations**

For similar projects in the future, the time frame may be extended to at least six months or longer for long-term outcomes. A similar program could be provided in a more populated area, such as California, Wisconsin, or Minnesota, where a higher number of Hmong people reside for a larger sample size. It is estimated that 89 % of Hmong refugees settle in California, Wisconsin, Minnesota, and Michigan due to their nature of kinship patterns and collectivist nature they congregated in areas where settlement was already accomplished (Dentice, 2015).

### **Conclusion**

According to the most recent evidence-based practice guidelines from the ADA, a DSME is beneficial for the management of T2DM (Haas et al., 2014). As the results of this study suggested, the Hmong population benefited from improved knowledge as well as improved quality of life. Though the Hmong culture is different and has limitations when dealing with western medicine, with clarification and guidance, their quality of life as they live with diabetes

has improve according to the results from the interventions conducted. Moreover, continuous collaboration among patients and providers must be maintained to prevent the complication of diabetes. Although during the six weeks of observation the participants provided improved results, evidence of long-term improvement would be more indicative to the overall success of this project. For patients with language barriers like the Hmong, the implementation of a support system, one that includes language assistance for communication improvement, addressing misconceptions, and acknowledging cultural differences, one that offers improved knowledge and quality of life, is paramount. Healthcare provider should be willing to accept cultural competence, and for the Hmong, allowing storytelling during the process of clinical visits maybe of importance to providing them with confident and satisfaction in western medicine.

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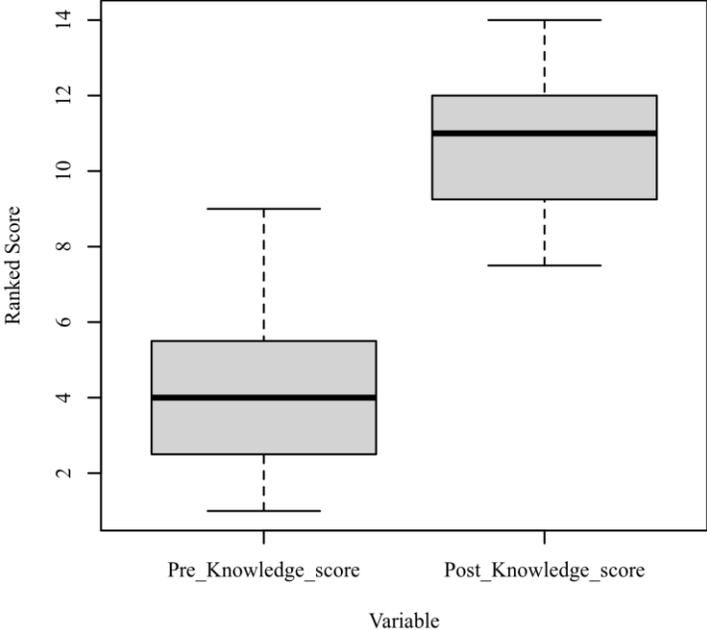
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**Table 1****Qualitative Telephone Questionnaire**

1. Do you feel like the Hmong diabetic self-management and support program has improved your quality of life with diabetes management? If so, please explain.
2. Do you have any ideas or opinions on how to improve this program in a way that will make it more culturally compliant to the Hmong culture?
3. Do you feel that you have gained knowledge of type 2 diabetes and on how to maintain and improve your outcome living with it? If so, please explain.
4. Would you recommend a program like this one to your friends and family diagnosed with type 2 diabetes?

**Figure 1**

*Ranked values of Pre\_Knowledge\_score and Post\_Knowledge\_score*



**Figure 2**

*Ranked values of Pre\_Unhealthy\_Days and Post\_Unhealthy\_Days*

