Diabetes Mellitus and the Hmong: A Scoping Review of the Literature

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Abstract

Background and Purpose: Upon immigration to the US, the Hmong people transition to a more industrialized society which places them at an increased risk for diabetes. Hmong Americans are at increasing risk for developing diabetes. This article scopes research literature on the prevalence of diabetes and factors affecting diabetes care in the Hmong population. **Methods:** The literature was systematically scoped using four databases to search for studies examining factors that influence diabetes care in the Hmong. **Results:** A total of ten studies were retrieved. Key findings suggest that those living with diabetes have limited knowledge of the disease, and the Hmong possess cultural characteristics that ultimately affect diabetes care. **Conclusion**: This review revealed that there are limited published studies of diabetes in Hmong Americans and future research is needed to address these knowledge gaps in this population. Language, religion, and cultural beliefs are also significant factors to consider in diabetes care of the Hmong.

Introduction

In 2012, an estimated 29.1 million people in the United States (US) had diabetes, an increased figure from 2010 by 3.3 million (American Diabetes Association, 2014, a). Of the 29.1 million, approximately 21.0 million were diagnosed and approximately 8.1 million were undiagnosed (American Diabetes Association, 2014, a). Diabetes risk is growing in Hmong Americans, and this is a public health challenge because ethnic minorities have a higher prevalence of diabetes and bear a disproportionate burden of the disease in the US. The Hmong who migrated to the US is an Asian population that is very vulnerable to developing type 2 diabetes (Candib, 2008; Her & Mundt, 2005; Thao, Arndt, Tandias, & Hanrahan, 2015). The age, sex, and basal metabolic rate-adjusted prevalence is 60% higher in Asians than in non-Hispanic white Americans (McNeely & Boyko, 2005).

Hmong living in the United States are twenty times more likely to develop diabetes than Hmong living in Thailand (Her & Mundt, 2005). Thao and colleagues (2015) reported that the prevalence of diabetes in a sample of Hmong individuals living in Wisconsin was 3.3 times higher than their non-Hispanic white counterparts. Wu and colleagues (2011) also found that of the four Asian groups (Chinese, Filipino, Hmong and Vietnamese, and Hmong), the Hmong participants had the highest BMI, were most likely to have glycemic index >126mg/dl, and were most likely to report a diagnosis of diabetes. In a sample of diverse middle school children (Hmong, white, non-Asian, and non-White) in northern California, significantly more Hmong children reported that cost was a barrier to fruit and vegetable availability at home, and fewer Hmong children reported meeting the recommended guideline for physical activity. Hmong children also believed that being physically active every day was unimportant to their family (Carter, Goto, Schuldberg, & Wolff, 2007; Peek, Cargill, & Huang, 2007).

The Hmong originated in China, but, because of persecution, they were forced to migrate southward (Littman, Kristal, & White, 2005). During many years of persecution in China, the Hmong's language was lost, and it was not until

the 1950's that Christian missionaries designed the Hmong's writing system (Pao Lee & Pfeifer, 2006). Hmong Americans are a unique ethnic minority group that has suffered from war and displacement. During the Vietnam War, Hmong were recruited to help the US soldiers fight (Christian, Low Moua, & Vogeler, 2008-2009). After the war, the government in Laos sought to annihilate the Hmong. Many were killed; the remaining fled and sought refuge in Thailand where they lived in refugee camps (Culhane-Pera et al., 2003). From refugee camps, the Hmong then migrated to western countries such as the US. The US received its first wave of Hmong immigrants in the late 1970's (Christian et al., 2008-2009).

Approximately 260,000 Hmong live in the US with the greatest concentration in California, Minnesota, and Wisconsin (Pfeifer & Thao, 2013). In the US, the Hmong are vulnerable to diabetes due to high poverty rate, high rate of unemployment, low educational attainment, and a language barrier (Pfeifer & Thao, 2013). Cultural differences, linguistic isolation and economic challenges create barriers for the Hmong in navigating through the complex medical systems in the US. The religion of shamanism has its traditional role in the Hmong culture (Culhane-Pera et al., 2003).   In shamanism, there is the belief that illness is associated with a spiritual problem. Approximately 70% of Hmong in the US follow this traditional religion (Pao Lee & Pfeifer, 2006). In addition to shamanism, many Hmong use herbs to treat disease. Living in the US, the Hmong do not readily seek western medical care and often do so only as last resort (Her, 2012).

The Present Study
This scoping review serves to inform practice and invite discussions in the scientific work of Hmong Americans with diabetes that could contribute to positive diabetes outcomes in this population. This scoping methodology was used to explore the current research literature to identify the extent, range, and nature of diabetes in adult Hmong Americans.
This purpose of this paper is to review and synthesize the published literature on the prevalence of diabetes and factors affecting

diabetes care in Hmong Americans in order to identify gaps in research studies as well as to identify factors that influence diabetes care that is observed in the literature. Guiding this scoping review is the following research question: "What is known from the existing literature about the prevalence of diabetes and factors affecting diabetes care in the Hmong American population?"

Methods

A scoping study is a systematic approach to reviewing literature that serves to quickly identify the extent, range, and nature of research activity on a topic, thus providing a better understanding of the current state of knowledge and clarity of the evidence (Arksey & O'Malley, 2005; Davis, Drey, & Gould, 2009). This method of review provides an efficient way to identify as much evidence as possible and to map the result. A scoping review usually aims for greater breadth; and necessitates having a broader research aim (Chambers et al., 2013).

This scoping review was undertaken by the framework outlined by Arksey and O'Malley (2005). Steps of this process include the following: identifying the research question; identifying pertinent articles; study selection; charting the data; and collating, summarizing, and reporting the results.

Eligibility Criteria
This literature review included studies published as long ago as 2004, because of the scant research in this population. The eligibility criteria included studies addressing diabetes mellitus in adult Hmong in the United States. Additionally, studies that include Hmong as a study population and provided some level of analysis that resulted in data specific to the Hmong population were also included. Adults were defined as 18 years and older. The author decided to use the broad term, *diabetes mellitus*, because there was a suspicion that there were limited studies conducted on the Hmong with diabetes mellitus. Gestational diabetes was, however, an exclusion criterion.

Search Strategies and Study Selection

The search was conducted in January 2014 and again in January 2015 by the first author to yield relevant articles about diabetes in Hmong Americans. The electronic search was conducted using four databases: CINAHL, PubMed, PSYCHINFO, and Google Scholar. These databases included articles relevant to medical/health science, psychology and social science. The search strategy included the following key word searches: *diabetes, sweet blood, ntshav qab zib/ nsthaav qab zib (Hmong translation for diabetes), chronic illness, and diabetes mellitus.* These search terms were combined with *Hmong* and *Hmong Americans.* Although the author was interested in English only articles, no articles in a foreign language were found. All studies selected were published in peer-reviewed journals.

Review
The studies that included the search terms were reviewed by the first author. The abstract was initially reviewed to decide if the study met the eligibility criteria. Articles that did not meet the inclusion criteria were removed along with duplicates that were identified. If there was uncertainty about inclusion/exclusion criteria the article was reviewed in its entirety by the first author. If the article met the inclusion criteria it went to the data extraction stage.

Screening
The initial literature search yielded 3, 617 studies. Articles that were listed twice were removed, which reduced the number to 3, 020. Articles were excluded based on title and abstract screening, reducing the number to 55. Forty articles were excluded based on the inclusion and exclusion criteria. Fifteen articles were identified for full review. A total of 10 articles appropriately met the inclusion criteria and were thus, included in this scoping review.

Data Extraction
The first author read each study in its entirety and extracted and organized relevant data using a table. The extracted data included the author(s) and date of publication, where the study was conducted, study purpose/research question, sample size, sample description, sample setting, study design, data collection methods, and results along with a comment column.

Results

Three thousand six hundred and seventeen studies on diabetes prevalence and diabetes care were identified from this search. After title, abstract screening, and screening for the inclusion and exclusion criteria, 15 articles were identified for full text review, from which ten studies were selected for final analysis.

Sample and Subjects
The sample sizes of the studies ranged from 5-144 participants. Of the 10 studies, seven were qualitative and three were quantitative (See Table 1). Examination of the demographic information revealed that there were more female participants across all 10 studies. Two studies (Culhane-Pera, Her, & Her, 2007; Perez & Cha, 2007) provided the English proficiency and education level of participants. Of 39 participants, 90% had none or poor English proficiency and 56% had no form of education (Culhane-Pera et al., 2007). Perez and Cha (2007) reported that of the 33 participants in their study, 76% did not understand English and only 3% completed high school and college. Pfeifer (2013) reported that 92% of Hmong age 5 and older spoke another language besides English in the home.

Table 1.

Research Studies of Hmong Americans with Diabetes

Study	Design/Method	Sample Size	Theory Used	Study Location	Authors
A Hmong cultural model of diabetes	Qualitative study Group Visits and group discussion	n=39	None	Minnesota	(Culhane-Pera, Her, & Her, 2007)
Group visits for Hmong with diabetes: A pre-post analysis	Quantitative study Pre-Post Analysis	n=39	None	Minnesota	(Culhane-Pera et al., 2005)
Focus groups of 4 ethnic groups with Diabetes	Qualitative study-phenomenology Focus group interviews	n=80	None	Minnesota	(Devlin, Roberts, Okaya, & Xiong, 2006)
Chronic illness among Hmong Shaman	Qualitative study Home Interviews	n=11	None	California	(Helsel, Mochel, & Bauer, 2005)
Risk prevalence for type 2 diabetes	Quantitative study Cross-sectional prevalence survey	n=144	None	Wisconsin	(Her & Mundt, 2005)
Diabetes knowledge, beliefs and treatments	Qualitative study Focus group interviews	n=33	None	California	(Perez & Cha, 2007)
Understanding barriers to prevention of *ntshav qab zib/ nsthaav qab zib*	Qualitative study Photovoice	n=10	None	California	(Perez & Thao, 2009)
The prevalence of type 2 diabetes Mellitus in a Wisconsin Hmong patient population	Quantitative study-risk prevalence	n=504,799	None	Wisconsin	(Thao, Arndt, Tandias, & Hanrahan, 2015
Perspective from the Hmong population on type 2 diabetes	Qualitative study-phenomenology design Focus group interviews	n=9	None	Minnesota	(Xiong & Westberg, 2012)
Hmong American women living with diabetes	Qualitative study Home interviews	n=9	Margaret Newman's Theory of Health as an Expanding Consciousness	North Carolina	(Yang, Xiong, Vang, & Pharris, 2009)

Analysis of the seven qualitative studies resulted in the generation of themes from data extracted across studies. Key themes identified in all of the qualitative studies were that Hmong Americans living with diabetes have a knowledge deficit about this chronic illness, and that cultural differences such as shamanism and the use of medicinal herbs, significantly influence their care (Culhane-Pera et al., 2007; Devlin, Roberts, Okaya, & Xiong, 2006; Helsel, Mochel, & Bauer, 2005; Perez & Cha, 2007; Perez & Thao, 2009; Xiong & Westberg, 2012). Additional themes identified across these studies include sense of loss, mistrust, and barriers to care. Results are organized and presented by themes in the following sections: knowledge deficits, cultural characteristics, sense of loss, mistrust, barriers to care, and risk factors for diabetes in Hmong Americans

Knowledge Deficits
Five studies revealed that the Hmong have inadequate knowledge about diabetes along with misunderstandings and misconceptions about the disease (Culhane-Pera et al., 2007; Helsel et al., 2005; Perez & Cha, 2007; Xiong & Westberg, 2012; Yang, Xiong, Vang, & Pharris, 2009a). This review reveals that the majority of Hmong participants could not verbalize the meaning of diabetes, some had no knowledge of the disease (Helsel et al., 2005; Perez & Cha, 2007; Xiong & Westberg, 2012), and some participants even expressed confusion as to when to take their medications (Helsel et al., 2005). Some participants believed that they developed diabetes due to their refugees status and living in refugee camps in Thailand (Culhane-Pera et al., 2007; Helsel et al., 2005), and others believed that fertilizers and chemicals cause their diabetes (Culhane-Pera et al., 2007; Devlin et al., 2006; Yang et al., 2009a). Although some participants

acknowledged that diabetes is an illness for which that they would typically not seek spiritual medicines (Devlin et al., 2006; Helsel et al., 2005), others acknowledged the use of herbs to treat their diabetes (Perez & Cha, 2007).

Cultural Characteristics
Shamanism. Central to the Hmong culture is shamanism (Pinzon-Perez, Moua, & Perez, 2005). When confronted with an illness, the Hmong is more likely to see a shaman first before a medical doctor (Kalantari, 2012). Pinzon-Perez and colleagues (2005) reported that in a study with 115 participants, 49% saw a physician when they became ill as opposed to 54% who consulted with a shaman or traditional healer. Fifty four percent of participants were very satisfied with the services received from the shaman (Pinzon-Perez et al., 2005). Shamanism involves interaction with a spiritual healer (shaman) who undergoes various levels of consciousness to interact with the evil spirits that cause illnesses (Castillo, 2014). In shamanism, illness is not treated as it would be in the western world; rather, the shamanic role becomes very important during this time. The shaman heals the sick by negotiation with the demons that cause illnesses. Shamanic ceremonies are private and held in the shaman's home and they can include drums, chanting, and ritual killing of animals (Castillo, 2014).

Generally, the Hmong trust shamans, Perez and Cha (2007), reported that 94% of participants identified shamanism as their religion. Helsel et al., (2005) sought to study Hmong shamans' understanding of the nature, effects, and management of a chronic illness. Of the 11 participants, six were being treated for non-insulin dependent diabetes, three for hypertension and two for hypertension and diabetes. It was reported that Hmong shamans do not have adequate understanding of chronic illnesses and the potential complications (Helsel et al., 2005). Because of their limited understanding of factors affecting the management of diabetes, dietary and evidenced based medical regimens were not always followed (Helsel et al., 2005).

Use of Medicinal Herbs. Common to the Hmong culture is the use of herbal medicine. Herbs and herbal experts are a common sight at Hmong festivals, such as Hmong's' New Year. Hmong all over the world use modern biomedicine, medicinal herbs, and some shamanic rituals to ensure good health (Cha, 2010). In keeping with cultural values, Hmong patients with diabetes might take herbal medicines for treatment. Helsel et al. (2005) reported that nine out of eleven participants in their study were taking herbs, Two other studies Perez and Cha reported that the majority of the participants in their study used traditional herbal medicine to treat diabetes mellitus, felt that Hmong herbs is fitting for Hmong people and had tried herbal medicine (Culhane-Pera et al., 2007; Perez & Cha, 2007). In summary, cultural characteristics such as consultation with shaman when afflicted with an illness, and the use of medicinal herbs to cure diseases, are important factors to consider when Hmong Americans with diabetes enters the health care system.

Sense of Loss
In three studies participants expressed a sense of loss (Culhane-Pera et al., 2007; Devlin et al., 2006; Yang, Xiong, Vang, & Pharris, 2009b). A sense of loss is defined as the deprivation of culture, tradition, language, and healthy habits experienced by immigrants living in America. The study by Devlin and colleagues (2006) included 12 focus groups, with four different ethnic groups: African Americans, American Indians, Hispanic/Latino and Hmong Americans, and explored the health related beliefs of all four groups. The Hmong participants expressed that the American lifestyle contributes to a loss of health, and a loss of the value of spirituality. The Hmong participants stated that "In Laos, we could work and sweat; we had places to be active, and we could eat anything" (Devlin et al., 2006, p. 50). In two other studies, a sense of loss was expressed in terms of homeland, lifestyle, and language (Culhane-Pera et al., 2007; Devlin et al., 2006; Yang et al., 2009a). With this loss, is a sense of "not fitting in," in the US in several ways, such as food, activity, weather, and community (Culhane-Pera et al., 2007, p. 182). This sense of loss is understandable seeing that

the Hmong people are inherently exiled, they have no country to return to and no homeland to help preserve who they are, and this can be stressful for some.

Mistrust

Three studies reported some level of mistrust (Devlin et al., 2006; Xiong & Westberg, 2012; Yang et al., 2009b). Respondents reported a lack of confidence and dissatisfaction with health care providers and mistrust in the medical system in the US (Devlin et al., 2006). A few participants believed that there are medicines to cure diabetes but these are not made available to them (Xiong & Westberg, 2012). Some participants even believed that Western providers prescribed too many medicines (Yang et al., 2009b). Their history as a marginalized people fleeing persecution as war refugees have taught the Hmong people to mistrust outsiders and this could create a barrier in seeking health care in this population.

Barriers to Care

Four studies reported environmental and language barriers to diabetes care (Culhane-Pera et al., 2007; Perez & Cha, 2007; Perez & Thao, 2009; Yang et al., 2009b). Perez and Thao (2009) used photovoice to document barriers in diabetes care of the Hmong in Fresno, California. Some of the barriers identified by the participants were lack of opportunities for physical activity, personal choices, habits, lifestyle, unsafe neighborhoods, unhealthy snacks, and easy access to vending machines (Perez & Thao, 2009), all are factors that can contribute to an unhealthy weight. Another barrier identified was language difficulty (Culhane-Pera et al., 2007; Perez & Cha, 2007; Yang et al., 2009a). Environmental and language barriers are important considerations that have an impact on adherence to medical treatment, acquiring chronic illnesses and health outcomes in the Hmong.

Risk Factors for Diabetes in Hmong Americans

Thao and colleagues (2015) compared the prevalence of diabetes between Hmong and non-Hispanic white patients from the family medicine, pediatrics, and internal medicine clinics in Wisconsin. Multivariate logistic regression was used to control for the differences in age, sex, body mass index, and health insurance between the two populations (Thao et al., 2015). The total prevalence of diabetes in the Hmong patient population was 11.3% compared to 6.0% in the non-Hispanic white patient population ($p < 0.001$). The prevalence of diabetes in Hmong adult patients was 19.1% compared to 7.8% in white adult patients ($P =< 0.001$). Compared with non-Hispanic whites, the odds ratio (95% CI) for diabetes, adjusted for age, sex, BMI, and insurance was 3.3 (2.6-4.1) for Hmong patients. The adjusted relative odds ratio of diabetes in this sample of Hmong patients is 3.3 times higher than its non-Hispanic white counterpart. The result of this study is consistent with previous findings of significantly increased diabetes risk in the Hmong of Wisconsin (Her & Mundt, 2005)

Using a community screening approach, Her and Mundt (2005) conducted a pilot study that sought to compute the risk of diabetes in Hmong adults living in Wisconsin. The two sampling sites were at a Hmong New Year festival (November, 2000) in Madison, WI and a community agency in Wausau, MI. The convenience sample (n=140) completed a survey that consisted of a demographic questionnaire along with the American Diabetes Association (ADA) risk test. Physical data included blood pressure, height, weight, waist circumference, hip circumference and casual capillary blood glucose by reflectance meter. A positive screen was a casual capillary whole blood glucose ≥140mg/dl, 41% of the sample was identified as having a positive blood glucose screen on the survey. Waist-to-hip ratio was also a strong predictor of a positive screen (Odds ratio=3.2, [CI=1.5, 6.2]) than the ADA risk test (Odds ratio=2.7, [CI=1.4, 5.1]). This study result concluded that newly arrived adult Hmong in Wisconsin were at an increased risk for type 2 diabetes (Her & Mundt, 2005). These two studies confirmed an increased risk of diabetes and a higher prevalence of diabetes in Hmong Americans when compared to adult whites and non-Hispanic white counterparts.

Diabetes Care Intervention

Culhane-Pera et al. (2005) conducted an experimental intervention in which Hmong (n=39) received diabetes care in the form of group visits in a community health center setting. The group visits focused on integrating diabetes management along with cultural preferences. Pre and post intervention measures include physical health, mental health and behavior (diet and exercise). Comparisons were made between the study participants and a control group. The control group consisted of Hmong with type 2 diabetes (T2DM) who declined to participate in the current study (n=22) and Hmong with T2DM from a local diabetes register (n=216) that were not participating in the study. To evaluate for improved outcome measures (primary and secondary biological, behavioral, and mental health outcomes) in the intervention group, a series of analyses pre and post intervention were conducted. The pre-post analysis was controlled, but there was no randomization, therefore, selection bias potentially affected the results of this study. Missing data were also identified; and this could have affected the power of some of the comparisons made. The study results showed no change in A1C when computed as a categorical or continuous variable but that mental health status improved in the intervention group. There was decreased anxiety with an improvement in total anxiety depression scores. (Culhane-Pera et al., 2005). The mental health of participants improved with medical services but clinical outcomes did not significantly improve.

Discussion

This scoping review was designed to evaluate the existing literature on the prevalence of diabetes and factors affecting diabetes care in the Hmong American population. One striking finding of this review is the lack of large national studies that include Hmong Americans, and thus, the lack of evidence regarding Hmong Americans with diabetes. The following discussion focuses on (a) reducing disparity, (b) diabetes global context, (c) culture, (d) culturally appropriate education, and, (e) lack of trust.

Reducing Disparity

Racial and ethnic minorities suffer a disproportionate burden of diabetes, with higher prevalence rates, worse diabetes control, high rates of complications, and lower survival from having a chronic illness (Buckner-Brown et al., 2011; Peek et al., 2007). The prevalence of diabetes in Hmong Americans is high (Her & Mundt, 2005; Pfeifer & Thao, 2013; Smalkoski, Herther, & Xiong, 2010; Thao et al., 2015). This review suggests that there is little national data on Hmong Americans with diabetes. To reduce diabetes disparity in the Hmong population, practices and policies should be instituted that could improve the environment in which the Hmong live, work, and learn. One of the six themes of *The Healthy People 2020* (2015) environmental objective highlights the importance of the environment and its infrastructure in disease prevention. Prevention of exposure to environmental hazards calls for support from many partners, such as the state and local health departments. Personnel, surveillance systems, and education are important resources for investigating disease, monitoring for hazards in the built in environment and educating the public. Features of the built environment of Hmong Americans can impact diabetes-influencing behaviors, such as physical activity patterns, social networks, and access to resources (Healthy People, 2015).

Diabetes Global Context

Risk factors for developing diabetes include being overweight, the Asian population has the fastest growing prevalence of overweight in children in the United States (Harrison et al., 2005). The evidence suggests that Hmong refugees face an increased risk of being overweight, thus making them vulnerable to developing type 2 diabetes (Culhane-Pera et al., 2007; Harrison et al., 2005; Her & Mundt, 2005). In a more global context, economic development contributes to obesogenic environments, which are characterized by decreased opportunities for physical activity and increased access to high caloric diets (Hu, 2011). With the existence of social gradients, some ethnic minority groups, such as the Hmong in the US, are more likely to suffer from

obesogenic environments and have worse disease outcomes.

Living in an obesogenic environment is a reality for many ethnic and racial minority groups. The Hmong have identified environment factors such as a lack of opportunity for physical activities, a safe environment for children to play, and easy access to fast food, that contribute to the development of diabetes (Perez & Thao, 2009). There is a need to modify and make the environment less obesogenic in Hmong Americans. This endeavor can be complex and challenging and requires a broad range of policy across multiple sectors to support this. Community planning must include active measures to decrease the risk of diabetes in the Hmong. This could be done by the promotion of an evidenced-based life style program that emphasizes dietary changes and physical activity in the Hmong population.

Culture
When the Hmong immigrated to the US, they brought with them their culture, customs, religion, rituals, and health beliefs. Health care providers must be aware that health in this ethnic group is seen as a harmonious balance of forces between the natural and super natural world; illness is an imbalance of these two forces (Cha, 2010). An important person in the spiritual world and the health of the Hmong is the shaman. The health care community should work collaboratively with shamans to educate the Hmong community about diabetes. This can be beneficial to the community and empowering to shamans as they teach other Hmong about diabetes and how to better understand and manage this chronic illness. *Partners in Healing* is a program at Mercy Medical Center in Merced, California, where Shamans are trained in the basics of Western medicine. After receiving training, they will often times refer the patient to see a medical doctor first. This makes the Hmong community more trusting of western health care (Kalantari, 2012).

In addition to receiving care from the western health care, a Hmong person with diabetes might be using a traditional method of care which includes the use of herbal medicine for treatment of diabetes. Health care providers should promote an open understanding and tell patients that they are aware of other methods of treating diabetes and ask what other methods of treatment the patients might be using. It is important when treating Hmong individuals to ask about use of herbs in treating diabetes because they can be a potential hazard in combination with prescribed western medication.

Culturally Appropriate Education. Diabetes management can be enhanced by providing patients with education about the disease but education is likely to be more effective when one considers the patients' background and cultural preferences (Hawthorne, Robles, Cannings-John, & Edwards, 2008). The education provided must be culturally appropriate, and programs must be designed to increase diabetes awareness and improve understanding, compliance, and the management of the disease (Cobb, 2010). In this review, some Hmong participants identified that they had no understanding of printed brochures about diabetes (Yang et al., 2009b). Thus, diabetic educators have to make an assessment about the spoken language and the literacy level of the Hmong. A strategy to overcome a language barrier is to communicate with the Hmong in their own language. This is not always feasible for health care providers, but the use of medical interpreters is one strategy to consider. Diabetes educators should also consider using presenting education in a format that is preferred by the Hmong. This includes the use of bright colors with bold type, and, the use of bullets points and diagrams (Chu, Lawton, Martinson, & McNaughton, 2000). In teaching Hmong with low literacy, a strategy to consider is the use of culturally appropriate artwork, an example is the use of a Hmong story cloth. After the educational material is presented, it must be followed up with an evaluation of how the educational material was received and the understanding of the material by the recipient.

Lack of Trust
Evidence suggests that mistrust negatively impacts breast and cancer screening in Hmong participants (Thorburn, Kue, Keon, & Lo, 2012).

The lack of trust can pose a barrier to providing health care to the Hmong population. Health care providers must work to build trust with the community, thus making an effort to gain trust and alleviate fears. Strategies to gain trust may include dissemination of information on diabetes though respected leaders, for example, shamans and clan leaders. The use of Hmong lay people to speak about their experience with western health care is also another possible intervention.

Strengths and Limitations

This scoping review contributes to the existing literature on the Hmong with diabetes. The strengths of this review include the comprehensiveness of the search and using a systematic approach to review the studies. The inclusion criteria were also broad, allowing for a larger assessment of research activities in the Hmong population. Limitations include not specifying the distinction between Type 1 and Type 2 diabetes. The type of diabetes dictates the treatment; therefore, patients' experiences might be different. The authors did not make this distinction because of the sparse literature on diabetes in the Hmong.

Conclusion

Relatively few studies have been published exploring the prevalence and factors affecting diabetes in Hmong Americans. Findings from this review suggested that Hmong Americans have misunderstandings and misconceptions about diabetes, there are significant cultural characteristics of this group, mistrust of health care providers, and a language barrier, all of which can affect diabetes care. Based on the findings it is suggested that more published literature is needed and Hmong Americans need to be included in large national studies in order to improve diabetes care and decrease diabetes disparity in this ethnic minority group. Future research in the Hmong population should focus on reducing diabetes risk, providing culturally competent health care, and building trust in health care providers to reduce health disparities and improve health for this underserved ethnic minority groups.

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