A Scoping Review: Diabetic Footcare in the Chinese Americans

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Introduction (Overview)

Diabetes and its complications have reached epidemic proportions in the United States (US) causing premature deaths and significant financial strain in the healthcare system [1]. The Asian American population has been disproportionately affected by this disease with research demonstrating that Asian Americans are 40 percent more likely to be diagnosed with diabetes than non-Hispanic Whites causing significant morbidity, mortality, and increase in healthcare expenditures [2]. The population of Chinese immigrants in the U.S is rapidly increasing and are the fastest growing Asian American Population [1,3]. However, despite their growing significance, current literature regarding effective diabetic interventions for this minority group remains sparse [1].

Patient navigation is a patient support intervention delivered by individuals without specific healthcare training who interact with patients in a peer-level capacity to facilitate healthcare delivery, patient-provider communication, patient understanding of care issues. There is a crucial shortage of diabetic educators, and the novel use of diabetic patient navigators can help bridge the gap between a patient's limited resources and the available critical resources [4].

Problem Statement

Despite being the fastest growing racial group in America, Chinese Americans bear a disproportionally high diabetes burden and faces significance barriers to accessing diabetes self-management education (DSME) including diabetic footcare [5]. In fact, there is currently little evidence-based literature to support specific foot practices for this patient population [6]. The significance of this scoping literature review is to help guide future stakeholders in creating culturally tailored diabetic footcare practices that can help improve diabetic footcare practices for Chinese Americans through the incorporation of a diabetic patient navigator.

Methods

The literature review was conducted utilizing articles published from January 2020 to December 2024 using the databases Pubmed, CINAHL, Proquest, and Google Scholar. Search terms included scoping literature, Asian Americans, diabetic footcare, underrepresented minorities, diabetes, barriers to diabetes self-management, diabetic patient navigator, cancer patient navigator, Chinese Americans. These keywords aide in the the search to determine gaps in diabetic self-management in the Chinese American population [3].

The inclusion criteria were developed by this reviewer and includes: 1) patients who identify as Chinese or Chinese American with a documented history of diabetes mellitus evaluated from January 2020 to December 2024, 2) participants who are 18 years old of age or older, 3) articles that were published in English, and 4) patient with diabetic foot complaints.

Characteristics of the Chinese American Patient in U.S. Healthcare

The US is home to almost 15 million Asians, and Chinese Americans constitute the largest percentage of Asian Americans [3]. This population is also the nation's fastest growing racial or ethnic group with numbers project to surpass 46 million by 2060 [7]. The term "Chinese" can refer to any of the 56 different ethnic groups recognized by the People's Republic of China but is commonly used to describe the Han Chinese, which is the largest ethnic group in China ("Cultural Approaches to Pediatric Palliative Care in Central Massachusetts: Chinese" n.d.). A

broad definition of the present-day Chinese diaspora includes those people living outside of China who were born in China or who otherwise identify as Chinese based on the language they speak and/or their ancestry [8].

The Chinese American patient faces unique cultural and linguistic barriers that may prevent them from accessing available healthcare services [9]. Approximately, 30% of Asian Americans in the US have limited English Proficiency with language barriers impacting access to healthcare and how healthcare services are understood, playing a vital role in dealing with a disease in the US healthcare system [10]. A review of current literature demonstrates that the language barriers for immigrants in the U.S have proven to be and have continued to be a significant challenge to healthcare-seeking Chinese Americans across the country [11].

According to Tong & Sentell (2017), In 2008, almost 62% of Chinese immigrants in the US reported limited English Proficiency and a significant portion (34%) of US-born individuals with Chinese ancestry speak some form of Chinese dialect at home, highlighting the need important aspect of their native dialect being passed down through generations despite the natural acculturation process. Chinese American immigrants encounter challenges in diabetes care in many ways, including limited health literacy particularly those who are foreign born, have poor fluency in English or received little education; face major barriers to accessing and understanding diabetes related information which include language barriers coupled with their personal beliefs and concerns about others (cultural factors) that increase hesitancy among first-generation Chinese immigrants diagnosed with to seek updated health information [3,12].

What is a Patient Navigator?
The passage of the National Cancer Act signed by President Richard Nixon in 1971 created the National Cancer program which provided funds, guidance, and technical assistance to help cancer control coalitions [13,14]. This act was a significant milestone in the fight against cancer, paving the way for the implementation of patient navigation interventions that can help reduce cancer disparities [14].

The development of the concept of patient navigation was related to the findings of the American Cancer Society National Hearings on Cancer in the Poor. The critical issue that the report identified is that poor Americans encounter significant barriers when seeking and obtaining cancer care often leading them to forgo treatment if they cannot afford it, resulting in greater pain and suffering than other Americans [13].

With these findings in hand, the Patient Navigation Program was established in Harlem, New York, in 1990 to address the dramatic disparities in breast cancer mortality among minority women in the community; and its success has provided the impetus for the development of many similar patient navigation programs across the country and for federal support for Patient Navigation research to address the critical need for effective interventions to eliminate cancer health disparities, particularly among minorities and the underserved [15].

The resounding success of the Patient Navigation Model in cancer care has set the stage for its integration into various other specialties in the healthcare system. Today, Patient Navigator interventions that targeted vulnerable or socially disadvantaged population groups and covered chronic conditions such as diabetes, cardiovascular diseases, HIV/AIDS, dementia, chronic kidney disease, kidney failure or multiple chronic diseases have been introduced across various countries and settings to enable timely access to healthcare services, and to ensure completion of diagnoses and follow-up of care [16]. This innovative approach not only enhances patient outcomes but also streamlines processes across diverse medical fields, facilitating a more cohesive and effective healthcare delivery system [13]. The rising prevalence of chronic diseases is a challenge for healthcare systems worldwide and access to healthcare services is vital in decreasing health disparities. Patient navigation has been proposed as an innovative model of care aimed at addressing diverse barriers to accessing care as many patients see themselves confronted with a fragmented and complex healthcare and navigating through it poses a serious challenge [13,16].

The increasing number of individuals affected by chronic diseases, long-term conditions, and multiple morbidities, such as those experienced by diabetic patients, necessitates frequent and repeated interactions with various healthcare providers. Consequently, these patients often require ongoing support and management from a diverse range of medical professionals to effectively manage their complex health needs [16]. Patient navigation may be particularly beneficial in the management of diabetes care given the ongoing and significant shortage of diabetes care providers, which limit access to care and compromises adherence to clinical practice recommendations [4]. In light of these challenges, patient navigators can bridge the gap by enhancing the integration of care between patients' needs and clinical resources. This approach can lead to improvement in patient outcomes especially for those patients who are at high risk due to barriers to engagement with healthcare systems and those that suffer from multiple complex diseases [4].

The Diabetic Patient Navigator
Patient navigation may be particularly helpful in diabetic care as successful diabetic control requires patients to carry out several self-management activities while working closely with medical providers on an ongoing basis [4]. The prevalence of diabetes in the US is substantial, with Chinese individuals representing an estimated 50% of the total cases, which is why Type 2 Diabetes Mellitus continues to be a significant challenge for Chinese and Chinese American adults [1].

As previously mentioned, patient navigation is a patient support intervention delivered by individuals without specific healthcare training who interact with patients in a peer level capacity to facilitate healthcare delivery, patient-provider communication, and patient understanding of care issues [4]. The critical shortage of diabetic care providers presents significant challenges on access to care and adherence to clinical practice recommendations. Patient navigators have the potential to mitigate this gap by facilitating access to clinical resources and addressing patients' needs effectively [4,12].

Review of Results
A comprehensive review of research literature was conducted in October 2024 by searching multiple data bases including

PubMed, CINAHL, ProQuest, and Google Scholar to identify articles describing diabetic footcare in the Chinese American population that were published between January 2000 to December 2024 in English or with an English translation. The PubMed database was searched using the keywords "diabetic foot ulcer" and "Chinese". The search produced 1776 citations. An additional eight studies were identified in the search using the keywords 'Chinese Americans" and diabetic foot care". However, after reviewing the abstracts of each article, only 10 articles were related to diabetes and Chinese Americans. All ten articles were reviewed and were grouped according to topics such as diabetic knowledge/knowledge deficit, prevention of diabetes, prevention of diabetic foot complications, and the effects of limited English proficiency in diabetic health.

The articles by Quinjiao et al. (2023), Lo et al. (2022), Qingwei et al. (2021), and Yeh et al. (2022) emphasize the importance of developing culturally specific foot care education for the Chinese American population, which can guide effective prevention and treatment protocols. Acculturation emerged as a resounding theme throughout literature [17-20]. Several methods were employed to support acculturation, including the use of an online orientation manual, a linguistically tailored Diabetes Prevention Program (DPP), and the translation of English-language diabetes self-management tools. All were found to be effective. The findings of Jiang et al. (2023) and Niu et al. (2023) further support the effectiveness of these culturally tailored interventions [21-22]. The article by Elafros et al. (2023) was the only article included in the literature review that featured Chinese American participants, albeit as part of a broader study population [23].

A separate comprehensive review of research literature was conducted in November 2024 utilizing multiple databases including PubMed, CINAH, ProQuest and Google Scholar. The objective of this review was to identify articles that describe patient navigation programs specifically aimed at Chinese American patients with diabetes mellitus that were published between January 2000 to December 2024. The search within the PubMed database employed the keywords "Chinese Americans", "patient navigation" and "diabetes mellitus" which produced no relevant results. Despite the growing body of research on culturally tailored diabetes interventions, significant gaps remain. A search of the literature revealed no studies that simultaneously addressed patient navigators, diabetes, and Chinese American populations. However, five articles pertaining to breast and cervical cancer screen were identified using the keywords "Chinese Americans" and "patient navigation". The full chart is provided in Appendix A for reference.

This absence highlights a critical area for future research, as patient navigation has been shown to improve health outcomes in other minority groups by reducing barriers to care, improving adherence, and enhancing patient education. Given the unique cultural and linguistic needs of the Chinese American population, incorporating patient navigators into diabetes care models could be a promising strategy that warrants further exploration.

Discussion
The scoping review of the published literature revealed a paucity of information about diabetes and diabetic foot care within the Chinese American population. This is particularly noteworthy, given that Asian Americans are 40 percent more likely to be diagnosed with diabetes compared to non-Hispanic whites. Additionally, Chinese Americans represent the largest population segment within the Asian American community [3]. Diabetes is a major health problem and as the incidence of diabetes mellitus increases, it disproportionally affects minority populations. This trend could result to a substantial increase in diabetic foot infections and its associated complications [6].

Asian Americans are one of the most understudied racial or ethnic minority groups in the United States. The lack of data on Asian Americans results in deficits in health-care systems, which fail to understand the complexity and diversity of the population's health risks [24]. Accurately assessing health disparities across separate Asian American subgroups is critically important to health research and policy, as there is often substantial variability in risk and outcomes [3].

Health disparities lead to unnecessary healthcare costs that increase the financial burden on taxpayers. Addressing these disparities is crucial not only for improving individual health outcomes but also for reducing overall healthcare expenditures. To date, despite continued advances in the treatment and management of diabetes, little is known about diabetes management practices among Asian Americans [24].

In an effort to reduce existing disparities in cancer care, the introduction of the patient navigation model has been proposed as an innovative intervention to address known barriers to obtaining cancer care. This model has now expanded to encompass various other medical specialties such as diabetes management [14,16]. A study conducted by Lewis-Thames et al (2022) found that the utilization of patient navigation services greatly benefited non-English-speaking and medically underserved patients especially those with limited English proficiency [25].

A growing body of literature indicates that the timely treatment of diabetes is crucial for the prevention of disability and mortality; therefore, it is imperative for patients to possess a comprehensive understanding of diabetes and its associated complications [14]. Enhancing patients 'knowledge can significantly improve self-management practices, ultimately leading to better health outcomes for individuals living with diabetes [23]. Providing a diabetic foot program that is specifically tailored to the needs of the Chinese American population can provide an important opportunity to effectively improve knowledge, self-care behaviors, and a reduction of foot complications [12].

Chinese immigrants in the US are vulnerable to health disparities because they have a high rate of limited English proficiency and low health literacy [26]. Patient navigation maybe particularly helpful in diabetes care as navigation is associated with improved glycemic control and better clinical engagement among patients with diabetes by decreasing fragmentation of care [4]. The addition of a patient navigator could provide a level of expanded care that helps to guide Chinese American diabetic patients in overcoming barriers to healthcare services access to facilitate timely access to care [27].

Recommendations
It is essential to recognize that as the population becomes more diverse, addressing health disparities becomes increasingly

important [14]. The results of this scoping review highlight the importance of implementing targeted interventions for high-risk populations, such as Chinese Americans with diabetes, which can help alleviate some of the excess healthcare costs and improve access to necessary care.

Patient navigation is often conceptualized to promote patient engagement as a key component of improving disease management and health. A notable strength of patient navigators in reducing health disparities lies in their ability to facilitate patient outreach, connection, and communication, as patient navigators frequently share similar characteristics with individuals they support, including community of residence, culture, language, race/ethnicity, and socioeconomic status [27,15]. This shared background helps enhance trust and understanding between navigators and patients.

The lack of visibility and lack of recognition that health and health care disparities exist for Asian Americans are difficulty challenges to overcome, but through small, actional steps and a renewed mindset of inclusivity; We can work toward a more equitable health system that benefits everyone (Yi, 2020).

X. Language-Appropriate Diabetic Footcare Education for Chinese-Speaking Patients

Proper footcare can substantially reduce the risk of foot ulcers and subsequent amputations. However, for patients with limited English Proficiency (LEP), including many in the Chinese-speaking population, language barriers can hinder the comprehension of educational materials and limit effective disease self-management [28]. Tailoring patient education to linguistic and cultural needs is essential to improve diabetic foot care outcomes. Providing health information in the patient's preferred language has been shown to improve comprehension, satisfaction, and adherence to care plans [27].

In accordance with the recommendations from the ADA Diabetic Footcare Guide, a forward translation will be carried out to translate the material from English into Simplified Chinese. At least two certified Mandarin speakers from my workplace will be engaged in this process, as Mandarin is the most commonly spoken Chinese dialect in the United States.

The translation process will follow the Brislin's model which is a widely recognized translational methodology used to ensure semantic and conceptual equivalence in cross-cultural research and practice. It involves a multi-step process designed to preserve the original meaning while adapting content to the target culture [30].

A panel of healthcare professionals and native Chinese speakers will review to the translations to reconcile discrepancies and ensure medical accuracy. A reconciled Chinese version will be translated back into English by a separate set of new bilingual translators to verify semantic equivalence. The final Chinese version will undergo a pilot testing with a small sample of patients in a clinical setting or during educational sessions which will be conducted in Chinese and will be facilitated by Chinese speaking staff.

Various visual aids such as diagrams and photos illustrating foot inspection, cleaning and protection techniques will also be incorporated as visual aids can transcend language barriers and re-enforce learning.

The sample patients will then be asked to read the material and complete a short questionnaire that will evaluate comprehension, clarity, and usefulness while healthcare providers will also be surveyed for their observations on patient engagement and understanding. Certified Bilingual interpreters will be utilized during clinical encounters to explain complex concepts, clarify translated materials during clinic visit and to answer patient questions [31-36].

The study will demonstrate that developing language appropriate diabetic footcare education will be a critical component in addressing disparities among Chinese-speaking patients with diabetes.

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