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Sabrina Wong
spwong4@usfca.edu

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# Eliminating Barriers to Chinese American Diabetic Patients: Implementation of Diabetic Cantonese Group Visits

Sabrina Wong, DNP(c), MPH, BSN, RN

University of San Francisco

**Chair:** Karen Van Leuven, PhD, FNP-BC

**Co-Chair:** Dena Cuyjet, DNP, PNP, RN

## Abstract

**Problems:** Asian Americans have higher incidence and prevalence of diabetes mellitus type 2 and less preventive care and higher complication rates than the rest of the American population.

**Context:** According to the National Healthcare Quality and Disparities Reports (2016), Asian Americans are more likely to be diagnosed with diabetes compared to non-Hispanic whites by over ten percent.

**Interventions:** A comprehensive group visit program was implemented in a clinic in Oakland, Chinatown catered towards Cantonese-speaking diabetic patients. The group visit included culturally and linguistically appropriate materials related to nutrition, exercise, and diabetes knowledge. Each cohort attended a ninety-minute group visit session once a week for four consecutive weeks. One session would include time for endurance or muscle-strengthening exercise, diabetes education, nutrition tips for diabetics that would fit the Cantonese diet, and basics of mental health related to their disease process and coping.

**Measures:** Metrics to evaluate the efficacy of the program include pre and post-intervention HgbA1c, pre and post-intervention self-management survey, and program evaluation surveys.

**Results:** There was a total of 12 participants (age 61 to 85) participating in two cohorts. Results demonstrated a mean decrease in HgbA1c from 7.833 (CI = 95%, 7.8333 ±1.016) to a post-participation HgbA1c mean of 7.783 (CI = 95%, 7.7833 ±1.149). There was minimal change in HgbA1c given that the program length was only four weeks, and the HgbA1c results were drawn three months following the first blood draw. A more significant change in HgbA1c could be possible if the intervention was over a longer period of time. Self-management survey results showed an improvement in diabetes self-management for all categories assessed. Categories included confidence in understanding the cause of diabetes, importance of diabetes control,

target for well-controlled diabetes, connection between physical and mental health, prevention of rapid fluctuation of glucose levels, and finding answers to questions related to diabetes. Group evaluation survey results also displayed intent for lifestyle changes secondary to the intervention for all patients.

**Conclusions:** The HgbA1c results showed minimal change, however there was an increase in post-participation confidence levels related to knowledge and self-care related to diabetes, and all surveyed patients reported increased learning from the group visits.

*Keywords:* diabetes mellitus type 2, group visit, glycemic control, Cantonese

## Table of Contents

Abstract ..... 2
Table of Contents ..... 4
SECTION I ..... 6
Introduction ..... 6
SECTION II ..... 8
Problem Description ..... 8
Available Knowledge ..... 10
Addressing Cultural Barriers ..... 10
Culturally Appropriate Education ..... 12
Effect of Group Visits ..... 15
Implications for Practice ..... 18
PICOT Question ..... 19
Theoretical Foundation ..... 19
Specific Aims ..... 20
SECTION III ..... 21
Context ..... 21
Proposed Interventions ..... 22
Proposed Implementation ..... 22
Developmental Phase: ..... 22
Recruitment Phase: ..... 23
Educational Phase: ..... 23
Evaluation Phase: ..... 24
Study of the Proposed Interventions ..... 24
Gap Analysis ..... 25
Proposed Timeline ..... 26
Strengths, Weaknesses, Opportunities and Threats ..... 27
Proposed Budget ..... 29
SECTION IV: Results ..... 30
Demographics ..... 30
Labs ..... 30
Self-Management Evaluation ..... 31
Table 1: Diabetes Self-Management Survey Results ..... 32
Program Evaluation ..... 33
Table 2: Diabetes Program Evaluation Results ..... 33

SECTION V ..... 34
Summary ..... 34
Interpretation ..... 35
Limitations ..... 35
Conclusions ..... 36
SECTION V ..... 38
SECTION VI ..... 43

# SECTION I

## Introduction

Prevalence of Diabetes Mellitus Type 2 is growing worldwide, but higher prevalence is seen in Asian Americans compared to non-Hispanic whites, according to the National Diabetes Statistics Report (Yan, Li, Qin, Mayberry & Daniels, 2018). Along with higher prevalence, Asian Americans are also less likely to have access to preventive healthcare which leads to higher rates of diabetes complications. These health disparities are due to a lack of culturally competent diabetes education and care for this vulnerable population (Yan et al., 2018). Stronger infrastructure is needed to create a culturally and linguistically appropriate education program to reduce health disparities.

Over 10% of the American population has diabetes mellitus (Ferdinand & Nasser, 2015). The disease puts diabetic individuals at double the risk of premature death. Incidence and prevalence have continued to rise over the last few decades. High-risk races or ethnicities for diabetes include African American, Latino, Native American, Asian American and Pacific Islanders (Nichols et al., 2016). The American Diabetes Association (2019) reports that approximately 25% of individuals with diabetes in the United States are undiagnosed, while approximately 50% of Asian and Hispanic Americans are undiagnosed. The high rate of undiagnosed individuals is due in part to the generalized body mass index (BMI) cut off of 25 kg/m2 as a risk factor for diabetes. The BMI cutoff is used to identify overweight or obese individuals in the general population but does not take into consideration racial or ethnic specificity (Hsu, Araneta, Kanaya, Chiang & Fujimoto, 2015).

The National Health and Nutrition Examination Survey (NHANES - 2015), using the standard BMI cutoff, identified a prevalence of obesity in Asian Americans as 10.8% compared to 34.9% for all United States adults. However, epidemiologic studies have identified a higher risk of diabetes in Asian Americans with lower BMI values than currently established. Asians are more likely to develop visceral adipose tissue compared to peripheral adipose tissue which is more associated with insulin resistance and type 2 diabetes. At the same BMI level of non-Hispanic whites, Asians are also found to have higher percentages of body fat. The differences in body composition at equal BMI levels lead to higher rates of undiagnosed diabetes in the Asian population (Hsu et al., 2015).

The prevalence of diabetes is known to be high in Asian populations across the world, and there is substantial variation among the different Asian subgroups (Cheng et al., 2018). According to the National Center for Chronic Disease Prevention and Health Promotion, NHANES has been oversampling non-Hispanic and non-black Asian American participants beginning in the year 2011 due to the lack of information on the group in the United States. In the latest NHANES, the survey included information on 9,908 men and non-pregnant women for the representative population (Cheng et al., 2018). Race/ethnicity was separated into non-Hispanic white (n = 4,472 total, n = 1,592 with diabetes), non-Hispanic black (n = 2,594 total, n = 705 with diabetes), Mexican American (n = 1,296 total, n = 459 with diabetes) and non-Hispanic Asian American (n = 1,446, n = 492 with diabetes). The non-Hispanic Asian American population was further subdivided into East Asian (n = 565), South Asian (n = 336), Southeast Asian (n = 381) and other Asian (n = 164). In the study, Diabetes Mellitus (DM) was defined as diagnosed by self-report of professional diagnosis or previously undiagnosed with A1c > 6.5% at the start of the study, fasting plasma glucose (FPG) > 126 mg/dL or 2-hour FPG > 200 mg/dL.

Prevalence of total diabetes, which includes diagnosed and undiagnosed diabetes, was found to be higher in Mexican Americans, non-Hispanic blacks and non-Hispanic Asians compared to non-Hispanic whites. Asian Americans had the highest rate of undiagnosed diabetes, and East Asians with diabetes had the lowest understanding of diabetes. Moreover, foreign-born Asian adults in the United States had 100% higher total diabetes prevalence compared to their US born counterparts ($p = 0.029$).

Poor glycemic control and changes in hemoglobin glycation has been identified as cause for HbA1c disparities among racial and ethnic minorities (Herman & Cohen, 2012). Impaired glucose tolerance in African Americans, Hispanics, American Indians and Asians also leads to elevated HbA1c levels. Even with equal adherence to plans of care, African Americans have worse glycemic control than non-Hispanic whites. Ferdinand & Nasser (2015) reports ethnicity to have a stronger effect on diabetic control than socioeconomic status. Prevalence of diabetes varies drastically, but diabetic outcomes also change based on race and ethnicity (Zhang, Wang & Huang, 2009).

## SECTION II

### Problem Description

An observational study was performed to assess healthcare utilization in immigrants living in the United States (Ku, 2009). Multivariate analyses were employed upon the Medicare Expenditure Panel Survey (MEPS) to analyze the annual medical expenditure per person for individuals with healthcare insurance. Results showed a reduced likelihood of using health services and lower healthcare expenditures for those with immigrant status. The same analysis was performed of US born citizens, and the total cost of immigrant healthcare expenditures was

20% of the amount spent by U.S. citizens. In a model estimating likelihood of medical expenditures in a year for native-born citizens, established and recent immigrant, the risk ranges from 1.00, 0.74 to 0.061, respectively. According to Ku (2009), recent immigrants are responsible for approximately 1% of the governmental spending on healthcare, despite accounting for 5% of the adult population. A major factor of limited healthcare spending from immigrants is due to the lack of culturally and linguistically appropriate care for this population.

According to Jang et al. (2017), Asian-American immigrants have a 2.24 times greater risk of having unmet healthcare needs than U.S. born citizens. The authors utilized the 2015 Asian American Quality of Life (AAQoL) conducted annually in Austin, Texas to survey a sample size of 2,609 Asian Americans in their own languages. The cross-sectional study included risk variables such as health insurance, annual household income and immigrant-specific factors. The survey included an evaluation of English proficiency and questioned whether respondents experienced a time in the past 12 months when medical care was needed but inaccessible. Results showed that 15% of the study population did not have insurance coverage, 62% reported limited English proficiency, and 12% reported lack of access to medical services within the last year. While the study showed disparities in access for immigrants from Asian countries, other populations are also at risk.

Mexico, China and India are the three countries that import the largest immigrant populations to the United States to date (Read & Smith, 2017). Nationally representative data was analyzed from the New Immigrant Survey (NIS) comparing utilization behaviors among legal immigrants from the three countries. Gender and national origin differences were compared through Andersen's Behavioral Model to exclude factors that may necessitate healthcare. Multivariate logistic regression models were used to predict provider utilization within the last

year and assess whether barriers to utilization are different among immigrant groups. Findings showed that barriers to care vary by gender and place of origin. Chinese immigrants were less likely to visit a provider within the last year, primarily caused by a lack of health insurance and the inability to communicate with the healthcare provider.

## Available Knowledge

A systematic review was conducted to identify relevant peer-reviewed studies. The following databases were utilized: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Cochrane Database of Systematic Reviews. A broad search was performed through the databases to improve search sensitivity. The search terms included "diabetes", "group visit", "community-based", "ethnic", "culturally appropriate", "Chinese American" and "Cantonese". The Johns Hopkins Nursing Evidence-Based Practice Evidence Appraisal Tool (JHNEBP) was utilized to ascertain clinical relevance and validity. Systematic reviews, quantitative, qualitative and mixed studies were included in the eligibility criteria. Studies were limited to peer-reviewed studies written in English conducted within the last ten years (between 2009 and 2019) to ensure the most current data. Articles were selected based on the inclusion criteria and study quality review. Studies were excluded if they were focused on Diabetes Mellitus Type I or gestational diabetes, or if the study focus was on ethnic groups other than Asian Americans. The review of evidence includes a total of 22 studies that fit the study criteria.

### *Addressing Cultural Barriers*

The first major barrier to quality diabetes care is communication. A qualitative study published by Leung, Bo, Hsiao, Wang & Chi (2014) investigated health literacy and compliance

with care among Chinese immigrants with diabetes despite use of translators and translated materials. The study design included six focus groups and two individual interviews in community health centers and one retirement village. The key themes identified in the sessions were difficulty obtaining, processing, and/or understanding diabetes related information. Cultural views also affected their understanding of diabetes. The majority of participants reported a high respect and authority level of physicians and expressed a desire for education coming from the physician. However, participants also were reluctant to engage their physicians with questions if there was poor understanding or disagreement with treatment plans. Study participants reported feeling as if their self-care decisions were altered as a result of the health literacy barriers. A survey of dietary habits revealed that participants were reluctant to change eating habits due to the heavy burden on their family members. A low-sugar and low-fat diet is regarded as low quality and non-appetizing and caring for their family members happiness for food outweighed the benefit of personal good health. Moreover, the participants shared that there was a preference to the collective approach of diabetes education and felt they were able to learn more from their peers as well.

Ethnic groups in America have a higher disease burden from diabetes as evidenced by a higher prevalence of diabetes-related mortality and complications (Zheng, Ley & Hu, 2018). This is linked heavily to the social determinants of health, including limited access to health care and health insurance coverage. Consideration of immigration status, cultural histories and experiences in the United States are critical to creating targeted interventions for local communities.

The interpretive comparative interview study published by Chesla, Chun & Kwan (2009) describes the cultural and family challenges to disease management related to type 2 diabetes in

foreign-born Chinese American patients and their spouses. Multiple interviews were performed with couples in various settings, related to their beliefs about diabetes and expected care within the family unit and community. Participants were asked if they identified as Chinese American or Chinese with immigration status to America from mainland China or Hong Kong. The interview questions were focused on understanding of diabetes, perception of care, and narratives related to diabetes care. Results showed that the main challenges to diabetes management within foreign-born Chinese American families included disruption of family harmony due to diabetic symptoms, conflict between dietary prescriptions and food beliefs, and challenges to established family role responsibilities. Diabetic symptoms reported by patients and their spouses focused on disease-related irritability. The documentation of main complaints from this specific population is helpful in creating health promotion and educational programs for Chinese American patients to increase medication and lifestyle compliance, and ultimately help improve glycemic control.

***Culturally Appropriate Education***

Understanding the significance of racial and ethnic disparities and cultural barriers that exist is vital to developing education that is appropriate and feasible for minority populations. A systematic review of randomized controlled trials was conducted by Hawthorne, Robles, Cannings-John & Edwards (2010) to identify culturally appropriate health education for ethnic minority groups. The review aimed to determine whether culturally appropriate education was more effective than “usual health education” among ethnic minority groups. Culturally tailored health education interventions included specific dietary education and translated learning materials. In the review which evaluated 11 randomized controlled trials, Hawthorne et al. (2010) determined that there are benefits to implementing culturally appropriate health education shown through improvement in glycemic control and diabetes knowledge. The improvements

were sustained up to one-year post intervention, but further long-term effects were not discussed. Further development included an additional 22 new trials bolstering the credibility of the review (Creamer, Attridge, Ramsden, Cannings-John & Hawthorne (2016). The included studies totaled 7,453 participants with a total of 33 trials and 35 ethnic minority groups studied. A combination of group and individual education showed a reduction in HgbA1c over 3 and 6 months. However, group sessions showed a reduction in HgbA1c over longer periods of time (12 and 24 months).

Another review assessed the impact of culturally competent diabetes care on disease-related outcomes in ethnic minority groups (Zeh, Sandhu, Cannaby & Sturt, 2012). The review included 11 relevant studies that performed research on culturally competent interventions on any diabetes related outcome related to any ethnic minority population worldwide. A culturally competent assessment tool was used to assess the interventions, categorized as highly culturally competent (n = 7) or moderately culturally competent (n = 4). Interventions included individual visits (n = 4), group sessions (n = 4) or a combination of both (n = 3). Outcomes evaluated included clinical, psychosocial, lifestyle and healthcare utilization. The main clinical outcome evaluated was Hb A1c in nine of the studies, with four studies showing HbA1c changes from 77 mmol/mol (9.2%) to 70 mmol/mol (8.6%) (P = 0.01), one with statistically significant improvements, and three with no changes. One qualitative study included in the review assessed diabetes knowledge and showed a small improvement and intention to change diabetes self-management. The review included many ethnic minority groups globally with multiple methodological types.

Another systematic review conducted by Ricci-Cabello et al. (2014) evaluated experimental and quasi-experimental studies and their impact on racial/ethnic minority groups

with type 2 diabetes. A total of thirty-seven studies were included which showed benefits of culturally sensitive care compared to routine diabetic care in primary care without language or cultural application. A reduction in HgbA1c of – 0.31% was found in a meta-analysis of 20 randomized controlled trials (95% CI – 0.48% to – 0.14%). The study reported limited information on long-term effects and cost-effectiveness.

The effect of culturally tailored diabetes education was also assessed specifically in the Chinese population. Seven case studies were employed throughout China, Hong Kong, Singapore and Australia with Chinese patients (Choi, Davidson, Walker, Lee & Palermo, 2016). Major differences identified include the view of diabetes education as an optional supplement to pharmaceuticals, preference of a top-down delivery method with limited audience participation and learning about diabetes management from other sources with reluctance to ask or challenge the provider. There was an emphasis on disease mechanisms and the specific pathophysiology of the disease. Clinicians and patients reported a belief that factual information would power behavioral change. Patients felt all diabetes education could be completed in one session and there would be no need to return for follow-up.

Translated materials also proved to be ineffective for many of the patients. In the case studies, clinicians borrowed diabetes education and tools developed from Western ideas such as motivational interviewing and the Diabetes Conversation Map. The techniques were met with resistance and patients preferred to be told what to do as opposed to having conversations about future goals. Ultimately, providers and patients reported that the patients' needs were not being met through low attendance rates at group and individual visits. The use of purely translated materials without consideration for the cultural differences proved to be insufficient, as reported by Choi et al., (2016).

As previously mentioned, pure translation of materials from English to Chinese is inadequate for effective culturally appropriate education. Ho, Tran & Chesla (2014) identify the difference between surface and deep levels of culture seen in intervention materials. The surface level is defined as assumed generalizations of cultures that are used to develop communication techniques. However, deeper levels continue to evaluate the target population's perception of multiple variables, including cause, course and treatment. Both levels are required to develop culturally appropriate education but are not often employed. The authors evaluated 16 different types of data from five different organizations printed in English, Chinese or both found in the San Francisco area. Direct translation discrepancies were minimal in the documents, at 1 – 2%. However, upon analysis of the cultural meaning in context of health and culture, the printed materials were not the same between the two languages. The goal of the materials was to "manage and control", whereas a Chinese understanding focuses on "balance and homeostasis". An emphasis on emotional, spiritual, psychological and social considerations is often more important to create balance which is believed to lead to overall better health. Evaluation of culturally appropriate written materials as well as education content should be conducted to better educate different ethnic groups.

### *Effect of Group Visits*

The use of shared medical visits guides meaningful interaction and problem solving between all patients in the visit (Jeon & Benavente, 2015). It also provides disease management education alongside a supportive environment where all patients are afflicted with a chronic disease. Often group visits are an outlet for patients to reduce intense shame and isolation in the protected space. However, barriers to group visits exist and often start with the reimbursement system. There is no official coding available for group visits, and standard management codes

are used for the combined visits. Moreover, group visit models vary in the number of group participants, visit duration and frequency. The limitations of reimbursement may prove to be too costly for certain systems depending on staff and resource availability (Jeon & Benavente, 2015).

A qualitative research study performed by Thompson, Meeuwisse, Dahlke & Drummond (2014) studied the patient's perspective of a group visit for diabetic patients with low socioeconomic status. The patients interviewed had participated in monthly group visits consisting of diabetes management education, medical care and identifying behavioral goals. Participants described the group visit as people who are "in the same boat" with the purpose of improving oneself in terms of medical needs and self-management. The group dynamic was described as a positive experience, as their peers contributed to group problem solving, acted as role models, and provided peer support. An emphasis was also placed on the provider's growth and learning from the close and sustained interactions with a group of patients, as opposed to short periods of time with individuals. Participants also reported that there was time to address psychosocial issues that may not be as apparent in individual visits.

Quinones et al. (2013) published a systematic review to evaluate the effectiveness of group visits to manage chronic health conditions led by non-prescribing facilitators. Facilitators mainly consisted of peer educators. The group visits were designed for conditions including arthritis (n = 22), asthma/COPD (n = 10), congestive heart failure/hypertension (n = 12), diabetes (n = 29), multiple conditions (n = 4) and pain (n = 4). While there was no consistent evidence for improved quality of life overall, there was improvement seen in healthcare utilization rates for patients with multiple chronic conditions. The most significant results from the study showed short (Mean HbA1c = -0.27, CI = -0.44, 0.11) and long-term glycemic improvement (Mean HbA1c = -0.23, CI = -0.44, -0.02).

Overall, the study concluded that group visits are a reasonable option to educate patients with chronic conditions but should not be the only option due to poor participation and retention rates. For the 31 publications focused on diabetes, results found that six months of follow-up for group visits would reduce HbA1c slightly more than usual care (HbA1c = -0.27%). Group visits with duration greater than three months had a greater improvement on HbA1c but were also found to be of poorer quality due to extended length in program time.

A study protocol for a randomized controlled trial with mixed-methods design was published to evaluate group visits in the diabetic elderly population utilizing the Aging, Community and Health Research Unit-Community Partnership Program (ACHRU-CPP) compared to usual care, with the goal of improving health-related quality of life (HRQoL) (Markle-Reid et al., 2017). The study protocol plans to enroll 160 participants diagnosed with type 2 diabetes mellitus and two other chronic conditions that are over 65 years old and recruited from the community. The group visits will be implemented in local community clinics with existing resources available at each individual site. Outcomes to be evaluated include acceptability, appropriateness, adoption, feasibility, fidelity, reach, maintenance and cost. While study results are not yet published, the format of the study, focused on acceptability and feasibility outcomes with relation to the diabetic geriatric population with multiple comorbidities, will be important in guiding future implementation for local community clinics.

Berry, Williams, Hall, Heroux & Bennett-Lewis (2015) evaluated the efficacy of an interdisciplinary diabetes group visit in a community-based medical practice for low-income patients. The cluster randomized design included an experimental group (n = 40) which received individual sessions with a primary care provider with a medication review and medical examination, alongside 5 group sessions every 3 months for diabetes self-management

education. The control group (n = 40) received 5 individual check-ups every 3 months with their primary care provider without additional group education, and had comparable demographics, medication regimens and baseline A1C levels. The experimental group patients saw a significant decrease in their A1C (P = 0.001), decrease in triglycerides (P = 0.33) and decrease in resting pulse (P = 0.31) compared to the control group. While there was no significant difference in low-density lipoprotein or blood pressure between the two groups, the control group experienced a significant decrease in high-density lipoprotein (P = 0.033). The group visits were well-received by experimental patients, and those patients saw a decrease in A1C by 1.2 percentage points, whereas the control group saw an increase in A1C by 1.3 percentage points.

Group visits have been shown to be effective in managing chronic diseases, particularly in diabetic populations. However, culturally appropriate programs need to be tailored with regard to racial and ethnic diversity. Identifying culturally appropriate education for group visits will be important in reducing the health disparity for diabetes in ethnic minorities.

***Implications for Practice***

The disproportionate incidence and prevalence of diabetes mellitus type 2 in Asian Americans is clearly outlined in the literature. The immigrant health differential is a factor, with Asian immigrants more heavily afflicted with the disease when compared to native-born Asians and other foreign-born immigrants. Immigrants are more likely to have unmet healthcare needs as a result of insurance status, costs and cultural differences. Cultural barriers are also a major factor of the poor health maintenance reported by diabetics. The lack of linguistically appropriate care and general health literacy barriers lead to poor dietary habits and general diabetic care. However, community-based programs have shown to be highly effective for Asian Americans in providing education and better glycemic control. A more established comprehensive group visit

program needs to be established to help reduce the major health disparity seen in the Asian American diabetic population.

## PICOT Question

In diabetic patients, what is the effect of comprehensive group visits on HgbA1C and diabetic health literacy in the Cantonese population in Oakland Chinatown?

## Theoretical Foundation

The Chronic Care Model (CCM) was developed in the United States in 1990 (Baptista et al., 2016). The model was created to address patients with chronic disease, including patients with type 2 diabetes mellitus, and their interactions between health systems and communities. The model incorporates six keys elements including organization of health care, self-management support, decision support, delivery system design, clinical information systems, and community resources and policies. Improving all six components of the chronic care model has been identified as improving functional and clinical outcomes of diabetes management (Stellefson, Dipnarine & Stopka, 2013).

The first component of the chronic care model focuses on the health system, specifically organization of health care. This involves providing leadership specifically for chronic care that would aim to secure resources and remove barriers to care. Self-management support focuses on empowering the patient and facilitating skills-based learning. Decision support is the third component which provides guidance to providers to utilize only evidence-based practice guidelines in daily clinical practice. Evidence-based practice is also applied in the delivery system design, which emphasizes the delivery of effective and efficient clinical care. Facilitating

efficient and effective care is the goal of clinical information systems by identifying relevant subpopulations for proactive care and providing care coordination between team members. The sixth and final component of the chronic care model is to mobilize community resources and advocate for policy change to meet the needs of patients (Barr et al., 2003).

According to a systematic review assessing the effectiveness of the chronic care model and diabetes management in US primary care settings performed by Stellefson et al. (2013), the 16 multi-design studies showed evidence that the chronic care model has been effective in managing diabetes. In cases where organizational leaders supported system-level reorganizations with improvement of coordination of care, positive patient outcomes were shown through improved self-efficacy for disease management and clinical decision making.

**Specific Aims**

The purpose of this project is to create a group visit program that includes culturally and linguistically appropriate diet, exercise and diabetic health education for Cantonese patients identified in a clinic in Oakland Chinatown. The program will include exercise, nutrition, behavioral health and diabetes health education. The project will be developed with the chronic care model framework, specifically removing barriers of care for patients, empowering patients with skills-based learning and proactively identifying at need patients in the community.

The site selected is a multi-site Federally Qualified Health Center (FQHC) which serves predominantly immigrant and refugee populations. The clinic serves a population which reports 73% of patients experiencing linguistic isolation, 95% of patients earning less than $48,600 annually as a four-person household, and 94% of patients who are on Medi-Cal, Medi-Cal and Medicare, or are uninsured (Asian Health Services, 2020). Diabetes mellitus type 2 is a growing

problem worldwide but is also becoming a major problem for Asian Americans in the United States. Asians have higher incidence and prevalence of diabetes mellitus type 2 and less preventive care and higher complication rates than the rest of the American population (Wang et al., 2011). The study by Wang et al. showed adjusted prevalence of diabetes of 5.8% for non-Hispanic whites, while rates for Asian-Americans to be 10.3%.

According to the National Healthcare Quality and Disparities Reports (2016), Asian Americans are 60% more likely to be diagnosed with end stage renal disease and 10% less likely to have retinal eye examinations compared to United States citizens. These health disparities are due to a lack of culturally competent diabetes education and care for this vulnerable population (Zeh et al., 2012). Stronger infrastructure is needed to create a culturally and linguistically appropriate education program to reduce health disparities.

Within the clinics, the majority of patient visits were predominantly spent discussing lifestyle changes such as diet, exercise and mental health. However, providers reported that there was not enough time to go over all lifestyle changes and this was further exacerbated by linguistic barriers as many providers do not speak Cantonese. Providers report that in spite of their efforts, patients often return three months later with the same questions, a higher hemoglobin A1c (HgbA1c) and increased medication requirements.

## SECTION III

### Context

The key stakeholders in this project include a physician, registered dietician, behavioral health therapist, project manager, medical assistants and a nurse practitioner student. These stakeholders will be heavily involved in ensuring the progression of the program. The other key

stakeholders also include the patients and family members. Due to the nature of the Chinese culture, patients often identify family members as major factors in their diabetes journey, including encouraging or discouraging diet, exercise and mental health (Chesla & Chun, 2005).

## Proposed Interventions

There is an established need for comprehensive diabetic care that is culturally and linguistically sensitive to the Cantonese patient population in Oakland Chinatown. Considering the need in the community, this author has worked closely with the clinic providers and project manager at the local FQHC to develop and propose the following interventions:

- Research and contact of all Cantonese patients in the clinic with a hemoglobin A1c greater than 7.0% for recruitment.
- Creation of a comprehensive Cantonese group visit program which includes diabetes education, nutrition, exercise and behavioral health components.
- Development of diabetic diet take home materials in Chinese with input from the Registered Dietician (RD).
- Creation of a diabetic self-management survey to assess confidence level in the individual's ability to self-manage their diabetes.
- Development of a program evaluation to assess stage and commitment to change as a result of program attendance.

## Proposed Implementation

***Developmental Phase:*** The initial phase of this project began with identifying the best evidence-based practice materials that are culturally appropriate for Cantonese speaking patients.

Components of the comprehensive group visit program included general diabetes education, nutrition, exercise and behavioral health. This author collected pre-existing diabetes materials from the clinic and ensured that materials are up to date. Provided materials included PowerPoints and take-home paper documents that were provided during the class. All materials were presented to relevant key stakeholders in advance, including the overseeing physician, registered dietician, physical therapist and behavioral health specialist. Any materials in English were translated by the clinic's translation services.

***Recruitment Phase:*** Patients in the clinic with a HgbA1c greater than 7.0% were considered for the study. A list of eligible patients was generated by the physician two months prior to the group visit start date. Regular patients presenting to the clinic routinely receive A1c tests every year, or more frequently based on previous A1c levels. This data was obtained via the electronic health record previously established at the clinic. The patients were contacted in order of highest to lowest HgbA1c by the patient navigator one month prior to the visit start date. A choice of morning session and afternoon session was offered to patients, with each session limited to a maximum of eight patients each.

***Educational Phase:*** The group visits were held on two sessions on Wednesdays. There were four consecutive weekly sessions for a total of four sessions per group in one month. Each session lasted one and a half hours, with a thirty-minute break in between the two sessions. The sessions start with introductions and ground rules. Next, a ten-minute exercise session was led by the health coach. The exercise session was followed by a fifteen-minute diabetes education period led by the physician. The topics discussed included: (1) What is Diabetes Mellitus? (2) Diabetes Medications (3) Complications of Diabetes and (4) Diabetes Health Targets. A second ten-minute exercise session followed. The dietician had twenty minutes for dietary topics

including healthy and unhealthy sugars, portion control, traditional Cantonese low-sugar menus and healthy grocery shopping in Oakland Chinatown. The last fifteen-minute portion of the session was conducted by the behavioral health therapist. Weekly topics included: (1) Emotional Health and Its Link to Physical Health (2) Depression (3) Anxiety (4) Stress and Self-Management. The author helped to facilitate each session and all sessions were conducted in Cantonese.

***Evaluation Phase:*** Patient feedback was collected in pre- and post-surveys to assess the efficacy and patient evaluation of the program. HgbA1c levels were also collected pre- and post-intervention. The program was measured through change in HgbA1c levels, patient satisfaction and retention rate. Following the program completion, patients' HgbA1c levels were re-evaluated three months after the program completion date. Patients remain routinely followed by their primary care providers after this point and will have their HgbA1c levels assessed when recommended by their primary care provider. Ongoing enrollment was a potential for patients who display interest in repeating the program provided there will be availability in future cohorts.

**Study of the Proposed Interventions**

The short-term goal of this project was to help decrease HgbA1c levels and provide culturally appropriate education for maintaining glycemic control for patients participating in the group visits. The long-term goal was to have ongoing group visits that are accessible to the local community and can help encourage long-term glycemic control beyond group visit attendance. A check-in every three months from previous cohorts could be established and overlap with the start of new diabetes group visits. Previous group members could share their success stories and

provide advice for new group members. Successful patients can also stay on to be "mentors" for new incoming group visit members that could help encourage patients along their journey. Quantitative and qualitative data was analyzed from patient surveys which were used to summarize findings and provide recommendations for ongoing diabetes group visits.

**Proposed Outcome Measures**

Data collection included three main components of HgbA1c, self-management pre- and post-survey, and a post program evaluation survey. HgbA1c was drawn prior to the first group visit and re-drawn again three months following to assess effect of the intervention on glycemic control. The self-management survey (Appendix I) was provided to all patients during the first visit to assess the patient's assessment of their own self-management of diabetes. The same survey was administered on the last program day to see if the patient's perception of self-management changed, and if any practical lifestyle changes occurred. The program evaluation survey (Appendix H) was also conducted at the end of the program to assess if patients found the group program to be helpful. All surveys were provided on paper in simplified Chinese characters. The program coordinator, health navigator and patient navigator were made available to read the surveys in Cantonese to patients who are unable to read. The data was transcribed onto an Excel sheet and collected for data analysis. All data collection forms were provided in English for viewing prior to translation.

**Gap Analysis**

A gap analysis (Appendix B) was conducted to assess the current state of diabetic care for patients in the proposed clinic. Currently, cultural and language barriers have been identified for many of the patients in the clinic who are seeing non-Cantonese speaking providers, or who

may encounter difficulties utilizing an interpreter. A study conducted in the San Francisco Bay Area among older Chinese American immigrants showed limited English proficiency (71.9%) and low health literacy (72.7%) (Tsoh et al., 2017). Patients identified these as major barriers to healthcare and self-reported poor health. Many also reported that a medical interpreter often still led to miscommunications with their health care provider (Tsoh et al., 2017). The proposed solution was to create a four-week diabetic program curriculum held entirely in Cantonese without requiring any interpreters to reduce miscommunication. Materials were created in Chinese and verbally explained to patients in Cantonese for those who cannot read.

There was no pre-existing comprehensive group for Cantonese speaking diabetic patients at the chosen clinic. Moreover, fifteen minutes was found to be insufficient to discuss all lifestyle changes and recommendations for diabetic patients and the long-term complications. Instead, a transdisciplinary model involving community to motivate patients for effective self-management has proven to be effective (Burke & O'Grady, 2012). The proposed project would create a comprehensive program including diabetes education, nutrition, exercise and behavioral health components. This could also help alleviate provider stress for those who do not have enough time to review diabetic lifestyle changes in addition to the patient's other chronic problems during the quick fifteen-minute visit.

**Proposed Timeline**

A Gantt chart (Appendix C) has been provided below for reference. The timeline for project implementation began with project identification in September 2018. The author contacted multiple clinic sites in the San Francisco Bay Area to identify specific needs within individual clinic sites. One of the major concerns of multiple facilities was diabetes management

for Cantonese speaking patients. A literature review and gap analysis were conducted to assess the current provisions and needs of Clinic A. In conjunction with the recommendations from the clinic, this project was suggested to create group visits held in Cantonese for diabetic patients. An implementation plan was developed by the author and submission of manuscript and prospectus in late 2018. In January 2019, major stakeholders were identified in the clinic, including Cantonese-speaking physician, licensed clinical social worker (LCSW), registered dietician (RD), health navigator (HN) and patient navigator (PN). The program curriculum and project materials were created together with the above stakeholders in January, and program dates were established, and patient recruitment began in February 2019. The program start date was March 6, 2019, with two group visits held once a week for four consecutive weeks. Following the completion of the four-week structured diabetes group visit, evaluation began in March 2019. The first evaluation point was HgbA1c of patients in March and July at the beginning of the program and three months following program completion. Two surveys (self-management and program evaluation) were also collected at the start and end of the group visit program. Finally, analysis of the data began in May 2019 with the final write-up and presentation completed in December 2020.

**Strengths, Weaknesses, Opportunities and Threats**

A strengths, weakness, opportunities and threats (SWOT) analysis (Appendix E) was created for this project. A few of the major strengths of the project include the improvement of provider and patient relationships. This allows for more direct facetime with a provider, behavioral health specialist and dietician. It allows for patients to feel more integrated into their health care system, which would also allow for future follow-up visits as needed beyond the

group visits. This also ties in with the comprehensive multi-disciplinary care which would not be commonly seen in regular appointments. This form of diabetic care is directly linked with recent evidence-based practice to show an increase in quality of patient care (Burke & O'Grady, 2012).

Weaknesses of the program include difficulty finding Cantonese proficient providers to fulfill all the roles. While the chosen clinic site has multiple providers which speak Cantonese, not all will be available or interested in participating in the program. Moreover, it is important to obtain administrative support to help relieve providers of their normal case load during this time. For providers who already have a busy schedule, this may prove to be difficult or even impossible. In addition to finding providers at the right time, a large enough location must be secured for the group visits and their family members.

Opportunities of the program include greater community support between patients. While the group visit program is limited to only four weeks at a time, the group would allow for patients and their family members to continue supporting each other beyond the four week-period. Chinese-speaking patients have reported in the past the importance of family and community in establishing healthier habits for treating diabetes (Chesla, Chun & Kwan, 2009). The group also provides opportunities for encouraging patients in their own diabetic self-management through education in their native language. This would also help to reduce long-term costs if patients' diabetes is maintained under control through fewer diabetic complications.

Potential threats to the program include low patient participation or retention rates. Major barriers to Chinese American patients already previously mentioned include socioeconomic and language barriers, which may appear in the form of lack of transport, inflexible working hours or even lack of insurance. However, these threats will be addressed during recruitment when the

health navigators will ask patients if they have any of these barriers prior to enrollment and address them prior to the start of the program.

## Proposed Budget

Initial expenses for the project are shown in Appendix F. Program costs appear high due to the number of staff required for the project including a physician, LCSW, RD, program coordinator, health navigator and patient navigator. Moreover, overhead costs and project materials combined with the total staff costs equate to approximately $2,739.26 per group visit day. However, even with the anticipated loss of revenue due to taking providers from their normal visits, the projected revenue from physician billing would equal $3,856 per group visit day of eight patients per group, with two groups per day. The loss of revenue and projected revenue is calculated by reimbursement rates for the specified Federally Qualified Health Center (FQHC). Considering the total costs and projected revenue per group visit day, there is an estimated profit of $1,116.74 per day. The total profit for the group visit program would be $4,466.96, not including potential earnings from fewer diabetic complications for patients with uncontrolled diabetes.

## Ethical Considerations

Two main ethical principles essential to this project include non-maleficence and beneficence. Particularly in a group visit setting, informed consent and patient confidentiality are also important factors to consider. Considering the nature of the intervention, informed consent and patient confidentiality will need to be emphasized to all stakeholders, especially the group participants. There is always a risk of breach of confidentiality, but such risks can be limited by clearly stating rules at the beginning of the group and requiring all patients to sign a

confidentiality form. The goal is to work towards benefitting every individual in the group and doing no harm, particularly through ensuring patient confidentiality in the group setting.

## SECTION IV: Results

### Demographics

Participants were separated into two groups based on availability, labeled as Cohort 1A and Cohort 1B. There was a total of 12 participants, age 61 to 85. Cohort 1A had participants age 61 to 85 (median age = 71.5), while Cohort 1B had participants age 65 to 81 (median age = 74.2). All participants (n = 12) identified as Asian with Cantonese as their primary language. Thirty-three percent of participants (n = 4) identified as male, while 67% (n = 8) identified as female.

### Labs

Pre-participation HgbA1c was drawn for all patients at the time of the first visit, or a previous A1c was accepted if drawn within two months of the first group visit. Cohort 1A had a pre-participation HgbA1c mean of 7.22 (CI = 95%, 7.2167 ± 0.674) and post-participation HgbA1c mean of 7.22 (CI = 95%, 7.2167 ± 0.576). Cohort 1B had a pre-participation HgbA1c mean of 8.45 (CI = 95%, 8.45 ±1.872) and post-participation HgbA1c mean of 8.35 (CI = 95%, 8.35 ± 2.232). Cohort 1B had a greater difference in pre and post-participation HgbA1c, but with a larger margin of error when compared to cohort 1A. Considering both groups together, the pre-participation HgbA1c mean is 7.833 (CI = 95%, 7.8333 ±1.016) with a post-participation HgbA1c mean of 7.783 (CI = 95%, 7.7833 ±1.149).

**Self-Management Evaluation**

A self-management evaluation (Appendix I) was provided to all participants pre- and post-participation. A total of six questions were provided, while answers were to be selected along a Likert scale ranging from 1 to 5, not at all confident to totally confident. The evaluation assessed whether patients felt comfortable understanding and managing their diabetes diagnosis. Overall, the survey showed an increase in mean from pre to post-intervention through the survey, as depicted in Table 1: Diabetes Self-Management Survey Results. However, the p-values from the Mann-Whitney U test did not show a statistically significant change in the results.

***Table 1: Diabetes Self-Management Survey Results***

| **Question** | **Pre-Intervention Mean (Standard Deviation)** | **Post-Intervention Mean (Standard Deviation)** | **Mann-Whitney, p-value (α=0.05)** |
|---|---|---|---|
| How confident do you feel that you understand what *causes diabetes?* | 3.833 (SD = 1.27) | 4.111 (SD = 1.17) | 0.348 |
| How confident do you feel that you understand *why it's important to control your diabetes?* | 4.083 (SD = 1.31) | 4.222 (SD = 0.83) | 0.472 |
| How confident do you feel that you know what *your target is for well-controlled diabetes?* (HbA1c, fasting) | 3.667 (SD = 0.89) | 4.222 (SD = 0.83) | 0.095 |
| How confident do you feel that you understand the *connection between your physical health and your mental health?* | 3.583 (SD = 1.08) | 3.889 (SD = 1.05) | 0.261 |
| How confident do you feel that you can *prevent your glucose levels from rising too high or dropping too low?* | 3.670 (SD = 1.15) | 4.111 (SD = 0.78) | 0.206 |
| How confident are you that you can *get answers to your questions regarding diabetes when you need it?* | 3.500 SD = 1.00) | 4.110 (SD = 0.60) | 0.059 |

**Program Evaluation**

A post-participation survey (Appendix H) was also administered at the end of the program to assess for program engagement and patient-perceived benefits. Only 58% (n = 7) participants completed the post-participation survey. Three patients did not show up to the last group visit where the survey was conducted, and two patients left early before completing the survey.

***Table 2: Diabetes Program Evaluation Results***

| **Question** | **Pt 01** | **Pt 02** | **Pt 03** | **Pt 04** | **Pt 05** | **Pt 06** | **Pt 07** |
|---|---|---|---|---|---|---|---|
| What did you gain from this program? (Check all that apply) | | | | | | | |
| *a. Answers to my questions about diabetes* | ✓ | ✓ | | ✓ | ✓ | | |
| *b. How to take my diabetes medications* | | ✓ | | ✓ | ✓ | | ✓ |
| *c. Exercises that I can try at home* | ✓ | | ✓ | | ✓ | | ✓ |
| *d. How to manage my stress* | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| *e. Who to talk to if I am feeling depressed or anxious* | ✓ | ✓ | ✓ | | ✓ | | ✓ |
| *f. Changes to my diet* | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| *g. How to read nutritional label* | ✓ | | ✓ | | ✓ | ✓ | ✓ |
| *h. Nothing new* | | | | | | | |
| Do you intend to try to exercise at least 15 min/week 3-4x/week? | Y | Y | Y | Y | Y | Y | Y |
| Do you intend to try new stress relieving activities 3-4x/week? | Y | Y | Y | Y | Y | N | N |
| Do you intend to make changes to your diet and eating habits? | Y | N | Y | Y | Y | Y | Y |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do you intend to try anything different as a result of this program? | Y | N | Y | Y | Y | N | N |

## SECTION V

### Summary

Based on the Chronic Care Model, this project aimed to develop and implement a group visit style diabetes education class for Cantonese speaking diabetic patients identified in a clinic in Oakland Chinatown. The goal was to help reduce HgbA1c levels of patients after attending all four sessions of the group visit program as well as provide patients with tools and confidence for diabetes self-management. One of the major factors contributing to the success of the intervention was be the incorporation of language and cultural education that will be most effective towards patient learning. While the intervention was conducted in Cantonese, the possibilities are endless for other language group visit programs to be incorporated in the future. The clinic for intervention also sees a large number of patients speaking Mandarin, Vietnamese and Khmer, among others. Plans for dissemination include sharing the program results with clinic management for potential program implementation in other languages. The clinic has multiple sites throughout the city and may benefit from an expanded group visit program. While the current project has plans for a physician led group, a qualified nurse practitioner could also lead the group. Moreover, the initiative has been spearheaded by a nurse practitioner student and continues to pave the way for advanced nursing leaders.

## Interpretation

The three main components evaluating program success was based on HgbA1c results, self-management pre- and post-survey, and a post program evaluation survey. The HgbA1c results showed minimal change, with a slight decrease between pre- and post-participation mean when calculating the two cohorts together. There was a more significant decrease in HgbA1c in Cohort 1B. The diabetes self-management results showed positive results through an increase in pre and post-participation mean for confidence levels related to knowledge and self-care related to diabetes. However, the p-values from the Mann-Whitney U test did not show a statistically significant change in the results. The post-program survey also showed positive results with all surveyed patients reporting something new learned from the group visits, as well as two to four new goals to be attempted related to lifestyle changes to improve their health.

Overall, the quantitative data was unable to report statistically significant change as a result of the program. However, a small sample size and group retention rate greatly affected data collection. This project should be continued with a larger sample size and efforts to maintain patient retention to truly report statistically significant improvement in diabetes management.

## Limitations

Patient retention created major limitations to the project. Two patients dropped out of the project after the first week due to lack of interest and lack of transportation. Due to the short time frame for the group visit period, new patients were unable to be recruited. Moreover, follow-up visits were initially scheduled for every three months following the last visit to provide refresher courses and monitor patient adherence to suggested lifestyle changes. Most patients did not show

up to follow-up visits, and they were subsequently cancelled due to lack of interest. Data collection was also hindered as a result.

A major limitation to the project was the lack of adequate space for the number of patients interested in the program. Despite a larger number of potential patients for the program, the site was unable to provide a large enough venue to accommodate all interested patients. This resulted in fewer recruited patients initially, which decreased revenue for the site and productivity for the group visit provider.

## Conclusions

Incidence and prevalence of type 2 Diabetes Mellitus is shown in literature to be higher in Asian Americans, with disproportionate amount of care allocated to those individuals. Adequate comprehensive care needs to be available to these patients to help reduce complications through encouraging diabetes self-management skills. The comprehensive group visits in the short-term will allow for patients to reduce their HgbA1c and embrace new diabetes management skills. Further research and efforts with a larger sample size will be needed to statistically prove these results.

As the program continues growing, long-term effects could also include these patients going out into the community and sharing these new skills with their friends and family. Ultimately, with better managed diabetes, these patients will likely experience less complications due to better glycemic control. This also translates to decreased costs for clinics and healthcare systems. Most importantly, this project will allow for patients to feel more connected to their community and healthcare systems with better quality of life.

Next steps for this project involve more cohorts to participate in the group visits. However, a longer period for each cohort may be necessary to collect more statistically significant data for more impactful results. Other clinics have reached out in regard to the success of the group visits, and collaboration between other clinics and group visit programs may be utilized in developing the next diabetic group visit program.

## SECTION V

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## SECTION VI

Appendix A
Non-Research Determination Form

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**DNP Statement of Non-Research Determination Form**

**Student Name: Sabrina Wong**

**Title of Project:**

In diabetic patients, what is the effect of comprehensive group visits on HgbA1C and diabetic health literacy in the Cantonese population in Oakland Chinatown?

**Brief Description of Project:**

A) **Aim Statement:** The purpose of the study is to evaluate the effect of comprehensive group visits in Cantonese for diabetic Chinese American patients on HgbA1c and health literacy.

**B) Description of Intervention:** The group visits will be held once a week over a four week period. Each visit will include education in their native language about diabetes and diabetic health promotion, including healthy foods and exercise that are applicable to their culture.

**C) How will this intervention change practice?** Healthcare providers will learn how to support patients in a group format, including support from other staff including medical assistants, behavioral health therapists and registered dieticians.

**D) Outcome measurements:** Outcomes will be measured by patient questionnaires and HgbA1c.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

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☑ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

**EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST ***

**Instructions: Answer YES or NO to each of the following statements:**

| **Project Title:** | **YES** | **NO** |
|---|---|---|
| The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes. | x | |
| The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care. | x | |
| The project is **NOT** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does **NOT** follow a protocol that overrides clinical decision-making. | x | |
| The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards. | x | |
| The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience. | x | |
| The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP. | x | |
| The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research. | x | |
| The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients. | x | |
| If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."* | x | |

**ANSWER KEY:** If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research.

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**IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

**STUDENT NAME (Please print): Sabrina Wong**

Sabrina Wong

**Signature of Student:** Sabrina Wong **DATE** 10/17/2019

**SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):**

**Signature of Supervising Faculty Member (Chair):** **DATE**

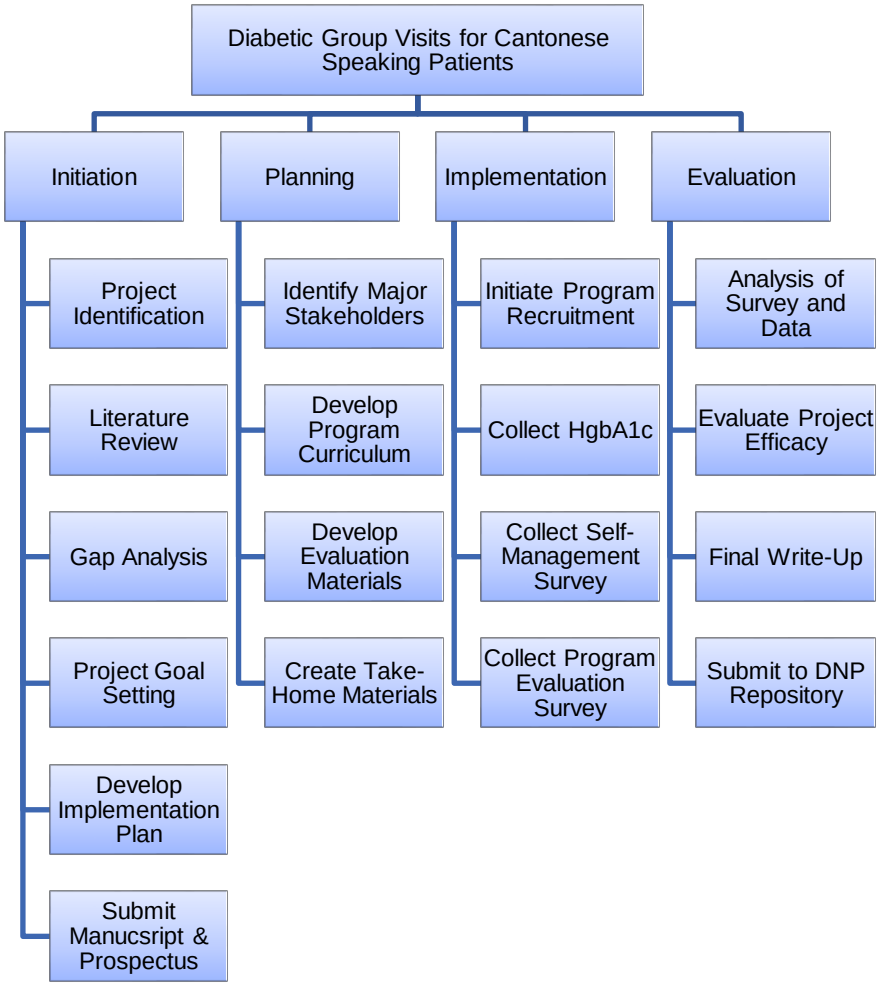
Appendix B
Gap Analysis

| Diabetic Group Visit Program Gap Analysis | | |
|---|---|---|
| **Current State** | **Best Practice** | **Proposed Solution** |
| Cultural and language barriers to effective diabetic care in the clinic setting | Effectively communicate in patients in their native language to avoid miscommunication and recommend treatments that are culturally appropriate | Create materials and programs in Cantonese to communicate effectively and culturally appropriately to the respective patient population |
| Absence of a comprehensive diabetes program for patients | Provide diabetic education that is all-inclusive to a patient's health | Create a comprehensive program including diabetes education, nutrition, exercise and behavioral health components |
| Lack of formal group visit program for patients | Acknowledge the power of community in encouraging effective diabetes self-management | Develop a group visit program to help encourage community growth and partnership as patients develop diabetes self-management techniques |

# Appendix C
# Gantt Chart

| | 2018 | | | | 2019 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Timeline for Project Implementation** | **Sept** | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sept** | **Oct** | **Nov** | **Dec** |
| *Development* | | | | | | | | | | | | | | | | |
| Project Identification | | | | | | | | | | | | | | | | |
| Literature Review | | | | | | | | | | | | | | | | |
| Gap Analysis | | | | | | | | | | | | | | | | |
| Project Goal Setting | | | | | | | | | | | | | | | | |
| Develop Implementation Plan | | | | | | | | | | | | | | | | |
| Submit Manusript | | | | | | | | | | | | | | | | |
| Submit Prospectus | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| *Project Development* | | | | | | | | | | | | | | | | |
| Identify Major Stakeholders | | | | | | | | | | | | | | | | |
| Develop Program Curriculum | | | | | | | | | | | | | | | | |
| Develop Program Evaluation Materials | | | | | | | | | | | | | | | | |
| Create Take Home Materials | | | | | | | | | | | | | | | | |
| Identify Program Dates | | | | | | | | | | | | | | | | |
| Initiate Patient Recruitment | | | | | | | | | | | | | | | | |
| Program Start | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| *Evaluation* | | | | | | | | | | | | | | | | |
| Collect HgbA1c | | | | | | | | | | | | | | | | |
| Collect Self-Management Survey | | | | | | | | | | | | | | | | |
| Collect Program Evaluation Survey | | | | | | | | | | | | | | | | |
| Analysis of Survey and Data | | | | | | | | | | | | | | | | |
| Final Write-Up | | | | | | | | | | | | | | | | |

Appendix D
Work Breakdown Structure



Appendix E
SWOT Analysis

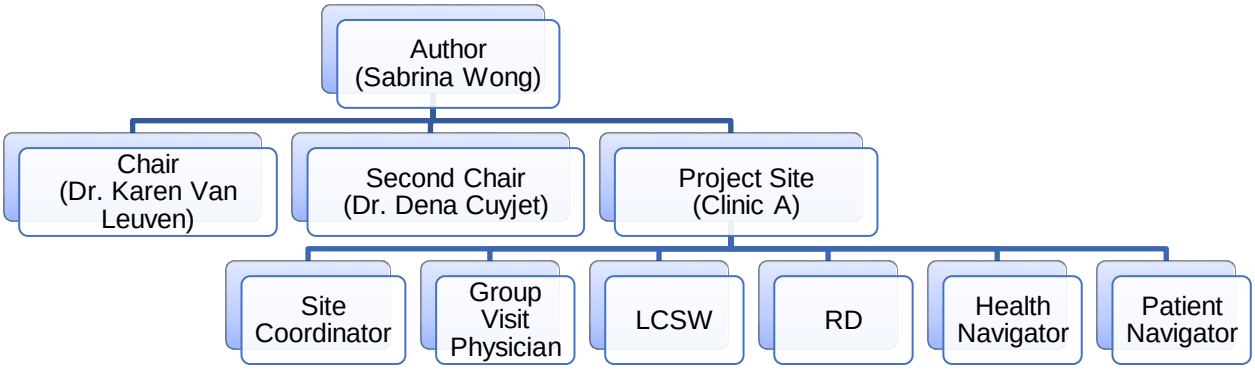
| | |
|---|---|
| **Strengths**<br>• Evidence-Based<br>• Increase quality of patient care<br>• Improved relationships with patients<br>• Comprehensive multi-disciplinary care | **Weaknesses**<br>• Difficult to find enough Cantonese speaking providers<br>• Need to obtain administrative support<br>• Busy work environment<br>• Limited available space for large groups |
| **Opportunities**<br>• Improve community support between patients<br>• Improve overall patient health<br>• Encourage patient diabetic self-management<br>• Educate patients in their native language regarding diabetes<br>• Reduce costs | **Threats**<br>• Not enough patient participation<br>• Low retention rates<br>• Limited time frame for working patients |

Appendix F
Proposed Budget

**Projected Expense and Revenue Per Group Visit**

| **Direct Expense** | **Projected Cost (-)** | **Projected Revenue (+)** |
|---|---|---|
| *Staff* | | |
| Physician | $403.85 | $3856 |
| Licensed Clinical Social Worker (LCSW) | $187.69 | $0 |
| Registered Dietician (RD) | $143.76 | $0 |
| Program Coordinator | $0 | $0 |
| Health Navigator | $166.82 | |
| Patient Navigator | $83.41 | |
| Fringe (28%) | $275.95 | |
| *Total Staff Costs* | *$1261.64* | *$3856* |
| | | |
| *Indirect Costs* | | |
| Incentives | $50 | |
| Overhead (15%) | $196.72 | |
| Project Materials | $50 | |
| Loss of Revenue | $1180.90 | |
| *Total Indirect Costs* | *$1477.62* | |
| | | **+ $1,116.74** |

Appendix G
Communication Matrix



Appendix H
Post-Program Program Evaluation

**Diabetes Management Group Visit Program Evaluation**
HMC Cantonese March 2019 Cohort

**BENEFITS AND COMMITMENT TO CHANGE**

What did you gain from this program? (Check all that apply)

a. Answers to my questions about diabetes
b. How to take my diabetes medications
c. Exercises that I can try at home
d. How to manage my stress
e. Who to talk to if I am feeling depressed or anxious
f. Changes to my diet
g. How to read nutritional label
h. Nothing new
i. Anything else? _____

Do you intend to try to exercise at least 15 min/week 3-4x/week?

a. Yes
b. No
c. If yes, what do you plan to try?

Do you intend to try new stress relieving activities 3-4x/week?

a. Yes
b. No
c. If yes, what do you plan to try?

Do you intend to make changes to your diet and eating habits?

a. Yes
b. No
c. If yes, what do you plan to try?

Do you intend to try anything different as a result of this program?

a. Yes
b. No
c. If yes, what do you plan to try?

Appendix I
Diabetes Self-Management Pre and Post Survey

1. How confident do you feel that you understand what **causes diabetes**?

**(Not at all confident)** 1 2 3 4 5 **(Totally confident)**

2. How confident do you feel that you understand **why it's important to control your diabetes**?

**(Not at all confident)** 1 2 3 4 5 **(Totally confident)**

3. How confident do you feel that you know what **your target is for well-controlled diabetes**? (HbA1c, fasting)

**(Not at all confident)** 1 2 3 4 5 **(Totally confident)**

4. How confident do you feel that you understand the connection between your physical health and your mental health?

**(Not at all confident)** 1 2 3 4 5 **(Totally confident)**

5. How confident do you feel that you can prevent your glucose levels from rising too high or dropping too low?

**(Not at all confident)** 1 2 3 4 5 **(Totally confident)**

6. How confident are you that you can **get answers to your questions regarding diabetes when you need it**?

**(Not at all confident)** 1 2 3 4 5 **(Totally confident)**