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Walden University

College of Health Professions

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Stella B. Biira

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Walden University
2020

Abstract

Environmental Barriers to Accessing Tertiary Prevention among Hispanics Diagnosed with Type 2 Diabetes

by

Stella B. Biira

MA (ief), Brandeis University, 2004

BSc (QE), Makerere University, 2000

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health – Community Health Education

Walden University

December 2020

Abstract

In the United States, Hispanics diagnosed with type 2 diabetes (T2DM) have not accessed tertiary level prevention, which is critical in diabetes management and the prevention of further complications. The purpose of this quantitative study was to examine the association between neighborhood crime, the absence of community health centers, the lack of culturally competent providers, the lack of public transportation, the residential setting, the distance to T2DM education classes, and access to tertiary prevention among Hispanics diagnosed with T2DM. The research was guided by the Andersen behavioral model. A sample size of $N = 4{,}977$ was used in the study, and the secondary data was obtained from the 2018 Behavioral Risk Factor Surveillance System. Inclusion criteria consisted those Hispanics diagnosed with diabetes, 18 years and older, residing in the United States, and participating in the study during 2018. Pearson's Chi-square test of independence was used to examine the association between the independent variables (IVs) and dependent variable (DV). The results showed a non-statistically significant ($p > .05$) relationship between public transportation, competent providers, residential setting, and access to tertiary level prevention among Hispanics with a T2DM diagnosis. The evidence to make assertions on the relationship between the tested IVs and the DV was insufficient. These study findings present opportunities for further research on the environmental factors that influence access to tertiary level prevention for Hispanics with a T2DM diagnosis. Results could contribute to positive social change and guide policy decisions by promoting awareness of the importance of tertiary level preventive care through the education of individuals and communities at large.

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Dedication

This dissertation is dedicated to my beloved parents whose love, prayers, care, and sacrifices over the years prepared me for my future. I am forever grateful!

To my mother, Mrs. Immaculate Bwambale, who is currently battling diabetes and the inspiration for my study. Your life's sacrifices were worthwhile and made a lasting impact on many! I celebrate you Toto!

To my father, Eng. Justus Bwambale for believing in me since I first made the declaration that I would one day complete a Ph.D. You started calling me "Doctor" because you believed I could do it. For not letting my dream die, Papa, I am forever grateful. It finally happened!

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Chapter 1: Introduction to the Study

Introduction

There is a growing concern about the increasing prevalence of diabetes in the United States, particularly among Hispanics. In 2015, over 30 million people (9.4% of the total population) in the United States had been diagnosed with diabetes (Centers for Disease Control and Prevention [CDC], 2017). Of those diagnosed with type 2 diabetes (T2DM) in 2015, 12.1% were Hispanics (American Diabetes Association [ADA], 2019). Moreover, these numbers do not include undiagnosed cases, which are mostly among ethnic minorities in the United States like Hispanics (Juarez et al., 2018). The large numbers of those affected by diabetes coupled with other health risks for comorbidity and death necessitate action (Lee, Bowen, Mosley, & Turner, 2017; Sun et al., 2018). For diabetes patients, health risk factors occur after diagnosis and during management, making it an ongoing concern (Henry & Schor, 2015; National Institute of Diabetes and Digestive and Kidney Diseases, 2019). Finding ways of delaying the progression of diabetes and preventing further complications among these patients could lead to improved lifestyles. Thus, diabetes patients need to promptly access tertiary level prevention services that are offered in the physical and virtual settings where patients interact with caregivers (Hirshon et al., 2013; Mogre, Johnson, Tzelepis, & Paul, 2019).

In this chapter, I will provide a detailed description of the study background and problem statement and present a comprehensive discussion of the theoretical foundation, research question, and nature of the study. This will be followed by definitions of central

concepts, assumptions, the scope of the study, delimitations, and limitations of the study. The chapter ends with a summary and a transition to the next chapter.

Background

There is a higher number of Hispanics diagnosed with T2DM, who are at increased risk for cardiovascular diseases (Hildebrand et al., 2018). Further, the leading cause of morbidity and mortality among Latinos or Hispanics is diabetes (Garcia et al., 2015). Both the prevention of diabetes and balancing of diabetes care are essential for positive health outcomes (Toivakka, Laatikainen, Kumpula, & Tykkyläinen, 2015). Diabetes management practices and tertiary level prevention programs have contributed to positive health outcomes when implemented on time (Lachance, Kelly, Wilkin, Burke, & Waddell, 2018). Practices like routine monitoring, healthy dieting, continued physical activity, and medication adherence can be applied at the tertiary level, preventing or delaying further complications (Mukona, Munjanja, Zvinavashe, & Stray-Pederson, 2017). Additionally, continued education and sharing of knowledge can help in promoting healthier lifestyles among people with diabetes (Brown et al., 2015; Francis, 2019; Toulouse & Kodadek, 2016). Patients need to promptly access these services to prevent the progression of diabetes or the development of secondary complications (Lan, Hoang, Linh, & Quyen, 2017) as well as achieve positive health outcomes (Gumber & Gumber, 2017; Lee et al., 2017).

The effective management of diabetes also requires routine interactions between a patient and provider (Grady & Gough, 2014; Wagner, 2000). There needs to be a coordination between primary healthcare, patient self-management, and specialist tertiary

care (Lo et al., 2016b). Diabetes service providers are typically located in acute settings, ambulatory care facilities, hospitals, doctor's offices, community health centers, and more recently, remotely through health portals in places where there is Internet access (Hirshon et al., 2013; Jackson et al., 2018; Mogre et al., 2019; Peremislov, 2017). Accessing culturally competent providers has also been known to yield better health outcomes (Flores, 2017).

Access to tertiary level prevention varies by race, ethnicity, socioeconomic status, age, sex, disability, and residential location (HealthyPeople, 2019). Research has shown that Black and Hispanic individuals have higher odds of having T2DM (Piccolo, Duncan, Pearce, & McKinlay, 2015). Older non-White people with diabetes are at higher risk of poor health outcomes when access to tertiary level prevention in healthcare settings is restricted (Ryvicker & Sridharan, 2018). Gender also plays a role in accessing diabetic care, as women experience higher diabetic complications compared to men (Suresh & Thankappan, 2019). Additionally, some diabetes patients have not accessed health care services owing to factors like religious beliefs, language barriers, lack of knowledge, and minimum support from care providers (Alzubaidi, McNamara, Browning, & Marriott, 2015; Suresh & Thankappan, 2019; van Gaans & Dent, 2018). For some, like Mexican Americans, busy schedules, cultural beliefs, and political factors have hampered their participation in diabetes prevention (Brown et al., 2018). Neighborhood attributes have also been considered as contributing risk factors in chronic disease analysis (Lagisetty et al., 2016; Malambo, Kengne, De Villiers, Lambert, & Puoane, 2016).

The hindrances to access to care have varied within the Hispanic community among those diagnosed with T2DM (Titus & Kataoka-Yahiro, 2019), but research has highlighted environmental factors like area crime, lack of public transportation, and distance to T2DM classes as barriers to access to care (Fortmann, Gallo, & Philis-Tsimikas, 2011; Moreno et al., 2014; Rodriguez, Chen, & Rodriguez, 2010). Research has indicated a link between crime and diabetes health outcomes (Tamayo et al., 2016; Smalls, Gregory, Zoller, & Egede, 2015b), though further investigation is needed into the role of neighborhood factors in T2DM management (Piccolo et al., 2015). Further, the lack of quality community care centers and hospitals has affected health outcomes among people with diabetes (Rodriguez et al., 2010). The lack of infrastructure and overcrowded clinics hinders access to care among diabetes patients (Malambo et al., 2016; McCormack et al., 2019; Mendenhall & Norris, 2015). For example, long distances and the lack of transport have been cited as significant barriers to access to care among people with diabetes (McCormack et al., 2019; Mogre et al., 2019; van Gaans & Dent, 2018). Additionally, the residential setting matters in the management of diabetes; patients residing in high social affluent neighborhoods have been more adherent to diabetes management compared to those from lower-class areas (Smalls et al., 2015b, 2017). Further, with limited knowledge or understanding of the ways of managing diabetes, diabetes patients do not access these facilities (Mendenhall & Norris, 2015).

Few studies analyzing the impact of perceived neighborhood problems on access to care among Hispanics diagnosed with T2DM have been conducted. Further, environmental barriers to access to care among Hispanics in rural settings have not been

thoroughly investigated (Titus & Kataoka-Yahiro, 2019). But research supports the existence of environmental obstacles to accessing tertiary level prevention and the need for studies that assess the impact of environmental factors on access to tertiary level prevention, particularly among Hispanics with a T2DM diagnosis. Thus, this study was necessary to conduct.

Problem Statement

The research problem was the need to understand how environments influence health outcomes among Hispanics diagnosed with T2DM. Diabetes accounts for over 79,000 deaths in the United States annually (ADA, 2019; United Health Foundation, 2019), with Hispanics twice as likely as non-Hispanic Whites to have a T2DM diagnosis (Office of Minority Health, 2016). To limit further complications, diabetes patients need to access tertiary level prevention (Grady & Gough, 2014; Gumber & Gumber, 2017; Lee et al., 2017). The prompt use of these health services improves patient's health outcomes and lifestyles (HealthyPeople, 2019), and therefore promotes positive social change (Walden University, 2020c). Hispanics diagnosed with T2DM have faced various challenges in accessing health care (Titus & Kataoka-Yahiro, 2019; Whittemore et al., 2019). Understanding the barriers to accessing tertiary level prevention among Hispanics diagnosed with T2DM could result in the development of strategies that improve access, resulting in better health outcomes for them (Crawford, 2017; Gumber & Gumber, 2017).

Purpose of the Study

The purpose of this study was to examine the association between neighborhood crime, the absence of community health centers, the lack of culturally competent

providers, lack of public transportation, the residential setting, the distance to T2DM education classes, and access to tertiary prevention among Hispanics diagnosed with T2DM. This study was a retrospective quantitative research with a cross-sectional design. The study was conducted in the United States, given that 18% or 58.8 million of the population were Hispanics (U.S. Census Bureau, 2018). Projections showed that by the year 2060, the Hispanic population will have grown to 119 million, representing 28.6% of the total U.S. population (Colby & Ortman, 2015).

Research Question and Hypotheses

Research Question: Is there an association between neighborhood crime, absence of community health centers, residential setting, lack of public transportation, lack of culturally competent providers, distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM?

H_0: There is no association between neighborhood crime, absence of community health centers, residential setting, lack of public transportation, lack of culturally competent providers, distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM.

H_a: There is an association between neighborhood crime, absence of community health centers, residential setting, lack of public transportation, lack of culturally competent providers, distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM.

Theoretical Foundation

For this study, I utilized the concepts of the Andersen behavioral model (ABM). The ABM was developed by Andersen in 1968 to assess why families used health services, define and measure equitable access to health care, and help in developing policies that promoted equal access (Andersen, 1968). The basis of the initial model was that the use of health services was determined by one's need, enabling resources, and predisposing factors (Andersen, 1968). The model was later modified to include the type of healthcare systems, consumer satisfaction, and precise measurements of service use (Andersen, 1995). Further, the model was improved to cover the relevance of health policy, health reform, and health status outcomes (Andersen, 1995).

The ABM has been widely used in studying the access and use of health-related services (Babitsch, Gohl, & von Lengerke, 2012; Hirshfield et al., 2018; Holtzman et al., 2015; Hong et l., 2019; Lindley, 2015; Lo, Parkinson, Cunich, & Byles, 2016). The model has also been frequently used in the study of long-term care and how it links to ethnicity (Chang & Chan, 2016; Erskine et al., 2018; Holden, Chen, & Dagher, 2015; Holtzman et al., 2015; Mui, Choi, & Monk, 1998; Seo, Bae, & Dickerson, 2016). The ABM provides a foundation that helps researchers understand how environmental and individual factors influence health outcomes and behaviors (Holtzman et al., 2015). In promoting health and improving health outcomes, health behavior theories like the ABM that link people's actions and results to the environment can be useful and relied on in generating practical public health solutions (Creswell & Creswell, 2018; Holtzman et al., 2015). These aspects also align with the goals of community health education, which is

improving health outcomes and public health systems by developing and promoting programs that address community needs (Walden University, 2019). Details on the model and how it evolved over the years are explained in Chapter 2.

There have been barriers to access to care for Hispanics diagnosed with T2DM that have not been thoroughly examined (Titus & Kataoka-Yahiro, 2019), and there is a need for additional research targeting the link between Latinos and environmental interventions (Perez et al., 2019). Thus, the ABM was chosen after extensive research on community health education-related models that addressed access to health care issues and outcomes. Diabetes is a chronic problem that requires ongoing long-term medical care to prevent further complications (HealthyPeople, 2019b), which presents a need as defined by the constructs of the ABM (Andersen, 1968). An assumption of the model that physicians are needed for care aligned with the focus of this study on tertiary level preventive care within ambulatory units as well as accessing providers. Additionally, accessing health services was a focus of the study, which aligned with the enabling factors of the ABM. Further, the parameters on which the ABM is based are relevant in investigating the role of the chosen environmental factors in accessing tertiary prevention. Finally, the ABM alludes to equitable access to health services (Andersen, 1995), which refers to all people with need having the ability to utilize these resources. The ABM combines aspects of the environment, characteristics of the population, and health behavior and stresses the need to consider health outcomes (Andersen, 1995; Holtzman et al., 2015). Given the issues under investigation in this study, the ABM provided an appropriate platform for this study.

Nature of the Study

A cross-sectional design was applied in this study. The chosen method was appropriate for this study, as it considers the prevalence of a disease and the outcome at a moment in time, taking only a proportion of the population (Cherry, 2019; Setia, 2016). For this study, the target population was Hispanics already diagnosed with T2DM, a portion of the U.S. population. Additionally, the design allows for the comparison of different variables simultaneously in each community (Cherry, 2019; Setia, 2016), which aligned with the goals of this study. Further, this design is commonly used when determining the association between variables and not causality (Gallin, 2018; Public Health Action Support Team, 2020). The goal of this study was to determine whether there was an association between the exposures and the outcome and not to investigate causal relationships, which made the cross-sectional design most suitable. The study was also retrospective, as I used previously collected information on experiences that took place in the past with no follow-up expected (Hess, 2004). Data were collected and stored by the CDC (2019a).

The study had one dependent variable (DV) and six independent variables (IVs). The DV was access to tertiary level prevention. The IVs included neighborhood crime, community health centers, culturally competent providers, public transportation, the residential setting, and distance to T2DM education classes. There were no covariates.

Methodology

Publicly available electronic data were used in examining the influence of environmental factors on access to tertiary level prevention. Data were extracted from the

CDC's Behavioral Risk Factor Surveillance System (BRFSS), which is a nationwide system that holds health-related information collected by telephone surveys for all U.S. residents (CDC, 2019a). The data collected relates to risk behaviors, chronic health conditions, and the use of preventive services (CDC, 2019a).

The CDC database is a large data warehouse holding public health information on all U.S. states and its territories, including Puerto Rico and the U.S. Virgin Islands (CDC, 2019d). Data are categorized by demographics, indicators, and location (CDC, 2019e). Demographics include age, gender, and education, and the location is broken down by county, state, and national levels (CDC, 2019e). The interactive database allows for the selection of different indicators that are on an age-adjusted and non-adjusted basis (CDC, 2019e). The database also provides U.S. data on health status and determinants, utilization of health resources, health care resources, and health care expenditures and payers, breaking it down by age, geography, race, gender, and socioeconomic status (CDC, 2018c). The CDC database is updated each time new information is released from various sources like the U.S. Census Bureau and other relevant data sources (CDC, 2019f).

Types of data collected related to the variables and addressed the research question. Indicators included a measure of diagnosis of diabetes (CDC, 2018c, 2019c), availability of healthcare resources (CDC, 2018c), accessibility and utilization of health resources for preventative care (2019d), health status and determinants (CDC, 2018c), and environmental factors (CDC, 2019a). The timeframe for the study was determined by the most recent complete data collected and available for all states.

I conducted descriptive analyses to present secondary data with more straightforward interpretation, describing patterns in ways that would help in drawing meaningful conclusions (Taylor, 2018). In this study, I sought to establish an association between the chosen DV and the IVs, all of which were categorical variables. When attempting to investigate the association between categorical variables, Pearson's Chi-square test of independence is used (Kent State University, 2020; Suresh, 2019). Pearson's Chi-square test informs of the existence of a relationship between categorical variables (Frankfort-Nachmias & Leon-Guerrero, 2018); however, Pearson's Chi-square test does not show the strength of the correlation nor causation between variables (Kent State University, 2020). But in this study, I tested for the association between two categorical variables but not for predictability or causation, making the Pearson's Chi-square test of independence the most suitable form of analysis. The statistical assumptions for Pearson's Chi-square tests were tested during analysis.

Definitions

Dependent Variable

Access to tertiary level prevention: The ability to get to a location where the required medical attention is provided or where health care providers are located for purposes of preventing further complications (HealthyPeople, 2019).

Independent Variables

All the IVs chosen were categorical or nominal. Though distance is typically a continuous or ratio variable, for this study, it was set as a categorical variable. The definition of each of the IVs is described in this section.

Community health centers (CHCs): Places where patients obtain medical attention increasing access to primary care by reducing barriers like language, distance, lack of insurance, and cost (National Association of CHCs, 2019).

Culturally competent providers: Health care professionals with the ability to meet linguistic, cultural, and social needs of the patients (Flores, 2017; Health Policy Institute, n.d.; Jin et al., 2017).

Distance to T2DM classes: Refers to how far (travel distance and time) someone must go to access diabetes knowledge (Kelly, Hulme, Farragher, & Clarke, 2016).

Neighborhood crime: The presence of violence or crime in a geographical location, hampering the performance of certain activities (Kneeshaw-Price et al., 2015; Wilson, Brown, & Schuster, 2009).

Public transportation: A form of transportation open for use by all people locally along designated routes (Madill, Bandlan, Mavoa, & Giles-Corti, 2018).

Residential setting: Place someone resides or municipality of residence (Purnell et al., 2016).

Other Definitions

Access to care: The connection between those seeking health services and the available health services (Kurpas et al., 2018) or the ability to receive care when needed (Simmons et al., 2015). It is also defined as obtaining needed medical attention or having a usual place to get this care (CDC, 2017a).

Blood glucose: Refers to the amount of sugar in an individual's blood influenced by diet, exercise, medication of pathological systems (Mathew & Tadi, 2020). Blood

glucose levels are measured over 2 or 3 months using Hemoglobin A1C tests, with a normal result being less than 5.7%, pre-diabetes ranging between 5.7% and 6.4%, and diabetes being 6.5% or higher (ADA, 2020).

Diabetes mellitus: Is a chronic condition where one has elevated levels of blood glucose or blood sugar causing damage to body organs over time (World Health Organization [WHO], 2020). Diabetes diagnosis occurs when the blood sugar levels as measured by HbA1c $\geq$ 6.5% or if $\geq$ 126mg/dl tested at fasting (ADA, 2020; Pratley, 2013).

Glycemic index: A number that indicates how fast the body converts carbohydrates into glucose (Dansinger, 2019).

Hemoglobin A1c (HBA1c): A measurement showing the average levels of blood glucose or sugar within three months (Dennis et al., 2018; National Institute of Diabetes and Digestive and Kidney Diseases, 2018). One is classified as diabetic if the HbA1c $\geq$ 6.5%; pre-diabetic if 5.7% $\geq$ HbA1c $\leq$ 6.4%; and normal if HbA1c < 5.7% (ADA, 2020; Kashima et al., 2020).

Hispanics/Latinos: A person with origins from South America, Central America, Cuba, Puerto Rico, Mexico, or other Spanish cultures (CDC, 2015b; Lopez, Krogstad, & Passel, 2019).

Tertiary level prevention: Care provided to those already been diagnosed with a disease with a focus on reducing disability, complications, or reduced function (Heard, Mutch, & Fitzgerald, 2020).

Type 2 Diabetes (T2DM): Is a condition where the body does not use insulin properly, leading to uncontrollable glucose levels (ADA, 2018; Hurtado & Vella, 2019). It occurs when an imbalance between insulin levels and sensitivity results in an insulin deficiency (Sapra & Bhandari, 2020).

Undiagnosed diabetes: An individual whose diabetes has not been diagnosed by a physician and has plasma glucose or sugar levels of at least 126mg/dl or hemoglobin A1c or at least 6.5% (Selvin, Wang, Lee, Bergenstal, & Coresh, 2017).

Assumptions

Data for this study were extracted from the CDC database. It was assumed that the data were collected based on the CDC's guidelines and was valid and reliable (CDC, 2001). I also presumed that all data on Hispanics or Latinos in the United States were accurate. Another fundamental assumption was that the diagnosis of diabetes was made by a healthcare provider possessing an unencumbered license with no language barriers. It was also assumed that those accessing healthcare services were doing so for preventive purposes and only after the diagnosis of T2DM. This distinction is critical, as patients seek and access health care services for different reasons. Further, I utilized the ABM under the assumption that the utilization of the healthcare services was specifically for tertiary level preventive purposes, which aligned with the propositions of the ABM. Because the data were secondary, these assumptions were necessary.

Scope and Delimitations

The objective of this study was to understand how neighborhood factors influence health outcomes among Hispanics diagnosed with T2DM. For diabetes patients, poor or

limited access to preventive care is associated with increased morbidity and mortality (Cuevas & Brown, 2017; Garcia et al., 2015). The findings of this study may increase knowledge of environmental factors that influence tertiary level prevention patterns for Hispanics with T2DM as well as lead to a better understanding of the burden Hispanics face regarding accessing the care needed for diabetes-related complications. It was expected that with the identification of environmental barriers to access to tertiary level prevention, the prevalence and mortality rates within this population can reduce. The study's results may be useful in providing preliminary and representative data on access to tertiary level prevention for Latinos diagnosed with T2DM.

For inclusion in this study, participants had to be Hispanics in the United States with a diabetes diagnosis, whose information was included in the 2018 primary data set available from the CDC. Eligible participants were those already diagnosed with diabetes, 18 years or older, and both males and females were considered. Eligible participants of different ethnicities and those with missing values relating to the study variables were excluded. Because the BRFSS data are collected only on those 18 and older, Hispanics with diabetes under 18 years were not considered. I also considered only Hispanics with a diagnosis of T2DM, so selection bias was likely present in this study (see Nohr & Liwe, 2018). To reduce this bias, I chose a large sample of participants (N = 4,977) to meet the required criteria. Finally, only data relating to the U.S. participants was considered, leaving out other parts of the world.

A delimitation of this study was the non-inclusiveness of all variables impacting access to tertiary level prevention by Hispanics diagnosed with T2DM. Though I chose to

focus on six neighborhood factors, they do not entail all potential environmental barriers to accessing tertiary level prevention within this population and may not be the most critical ones. This likely caused omitted bias, which occurs when a variable is excluded as a predictor in the regression model that might impact the outcome (Radaelli & Wagemann, 2019).

Additionally, though the socioecological model (SEM) considers the individual, their affiliations with people, community, organizational, and environmental levels (Coreil, 2010), I did not use it for this study. My study interests were not going to exploit all the five components of the model, plus the SEM is not specific to access to tertiary level prevention. I emphasized the specific reason as to why the health services were being sought, so I believed that the ABM was suitable for exploring the association between certain environmental elements (enabling factors) and access to health care services for tertiary level prevention.

The study findings may not be generalizable to all ethnic groups because the focus was on Hispanics diagnosed with T2DM, yet the disease affects other ethnicities. The results may also be generalizable for Hispanics with T2DM residing in the United States but not those in other countries. Finally, being a cross-sectional study, no causal relationships were established.

Limitations

A potential limitation of this study is that it excluded Hispanics with diabetes who did not receive a formal diagnosis from a healthcare professional as well as those below the age of 18 and those residing outside the United States. Eligible participants with

missing data and those of different ethnicities were eliminated. Finally, the 2018 data used for the study was the latest complete available but not the most current, which was a limitation as the statistics could have changed since its collection.

Another significant limitation of this study was the absence of potential confounding variables, which could affect internal validity. Confounding variables are those factors other than the IVs that may affect the DV, impacting the observed association between exposure and outcome (Alexander et al., 2015). Though data on other factors that could potentially affect access to tertiary level prevention was available, I only considered certain environmental factors. I selected a large sample size (N = 4,977), which increased the statistical power and created unbiased parameter estimations, allowing for the validity of my analysis (Faber & Fonseca, 2014).

Finally, a potential bias in the study was maturation bias. Physical, biological, or psychological changes within individuals could threaten the internal validity of a study finding (Lund Research Ltd, 2012). Over time, people are affected by different factors that could jeopardize access to tertiary care patterns among adults living with T2DM. To address this bias, I examined the results with the understanding that preexisting differences could play an unknown role in the study findings.

Significance

Significance to Theory

In this study, I uniquely addressed the need to understand how environmental factors impact access to tertiary level prevention for Hispanics with a T2DM diagnosis by employing a cross-sectional study design. Understanding the environmental factors that

influence access to tertiary level prevention can increase awareness among Hispanics diagnosed with T2DM. This knowledge could help this population better plan for their treatment options and how to access tertiary level prevention during disease management while navigating the potential neighborhood barriers. The study findings can also add to the body of knowledge as to which environmental factors to be mindful of when planning diabetes management practices to prevent further occurrence of complications among people with T2DM. Further, the study findings can act as a source of information on the benefits of accessing tertiary level prevention, which is critical for T2DM patients. This study also had the potential to improve health outcomes by transforming healthcare systems, consequently reducing disparities in access to healthcare for tertiary preventive purposes. The study findings may foster health promotion and education efforts to increase awareness of T2DM and how to obtain preventive care at the tertiary level. The results might serve to mobilize healthcare providers, patients, and communities to prevent and control further diabetes-related complications by creating frameworks to ensure health services needed by those with diabetes are made available.

Significance to Practice and Policy

The study's objectives aligned with the CDC's health goals in which disease prevention, health equity, promotion of quality of life, and creation of social and physical environments that promote health for all are a top priority (CDC, 2019h). With the knowledge of potential environmental challenges, diabetes patients, their caretakers, and health care providers can incorporate targeted measures in the diabetes management regimen. Further, the study's findings may inform policies that improve access to tertiary

level prevention for diabetes patients. Policymakers and researchers can apply the study findings to create targeted solutions that address the environmental factors that impede access to tertiary level prevention for Hispanics diagnosed with T2DM. Such programs could include arranging transportation, bringing services closer to the population of interest, or making these services more accessible to all. These programs could also be used as models for helping other ethnic groups with diabetes access tertiary level prevention. The programs may minimize or eliminate disparities in access and use of health care services (Olsen & Laudicella, 2019).

Academicians, educators, and community workers may use this study's results to tailor their education, treatment, and diabetes management practices in ways that prioritize tertiary prevention while overcoming environmental barriers. Using culturally competent health personnel can help provide education and knowledge on the importance of preventive health care (Velasco-Mondragon, Jiminez, Palladino, Davis, & Escamilla-Cedujo, 2016). The research findings may encourage the evidence-based allocation of resources on the benefits of tertiary prevention for T2DM, bringing resources near those who need them, consequently improving the health outcomes and quality of life for all. The results of this study also laid the foundation for future research on access to tertiary level prevention for people with diabetes and those with other chronic diseases among Hispanics and probably different ethnicities.

Significance to Social Change

The findings of this study contribute to Walden University's critical mission of promoting positive social change. Positive social change is about participating in

activities that lead to an improvement in the individual's life, their communities, nation, and globally (Walden University, 2020c). Understanding the role of environmental factors in accessing tertiary level prevention may have wide-spread benefits like limited post diabetes diagnosis complications, improved health outcomes, and a better quality of life. The results can be useful for the successful planning and implementation of public health prevention programs for Hispanics with T2DM, decreasing the prevalence of T2DM and diabetes-related complications within this population (Garcia et al., 2015). Increased access to tertiary prevention can lead to less morbidity, disability, and mortality from T2DM, which would lead to a better quality of life, increased productivity, and virtually a better socioeconomic status of individuals and communities (Al-Alawi, Al Mandhari, & Johansson, 2019; Grady & Gough, 2014). Additionally, stakeholders can design reasonable measures and strategies that allow those with T2DM to access tertiary level prevention, therefore inhibiting further complications and improving health outcomes. If people with T2DM access tertiary level prevention by overcoming specific environmental barriers following this study's findings, a gap was bridged.

Summary

The WHO (2020a) identifies T2DM as one of the deadliest health conditions in the United States, with 1.6 million deaths per year attributed to diabetes. With the increasing diabetes burden, this issue needs to be addressed as a public health priority (Office of Disease Prevention and Health Promotion, 2020). In this regard, understanding the factors that influence access to health care post-diagnosis and prevent further complications, especially among Hispanic populations, is necessary. Diabetes is one of

the leading causes of morbidity and mortality among Hispanics (Cuevas & Brown, 2017; Garcia et al., 2015; Geissler & Leatherman, 2015). This study was guided by the ABM, which has been used in understanding factors that influence healthcare utilization and access (Andersen, 1968, 1995; Babitsch, Gohl, & von Lengerke, 2012). This allowed for the exploration of the environmental factors that affect the management of T2DM among Hispanics. The findings may serve as a source of information for multiple stakeholders, diabetes patients, and providers. Results can also influence the allocation of resources, designing of policies, and education to reduce diabetes complications and improve access to health services for tertiary prevention among Hispanics.

In Chapter 2, I will provide a review of literature related to the barriers to accessing tertiary level prevention among Hispanics diagnosed with T2DM. This will be after I have provided a detailed synopsis of the importance of tertiary level prevention and its relation to access to care for people with diabetes. Next is a thorough explanation of the ABM, its constructs as it relates to the utilization of health services, and its applicability to this study. I will also provide a detailed review of the literature on the chosen variables highlighting the importance, relevance, and gaps. This will be followed by a summary and conclusions of the literature review.

Chapter 2: Literature Review

Introduction

Diabetes remains one of the deadliest health problems in the United States, with 1.6 million deaths a year attributed to diabetes (WHO, 2020). Among Hispanics, diabetes is the leading cause of morbidity and mortality (Garcia et al., 2015), making this population's prioritization critical. Risk factors for diabetes patients typically occur after diagnosis and during its management, making it an ongoing concern (Henry & Schor, 2015; National Institute of Diabetes and Digestive and Kidney Diseases, 2019). But effective intervention programs for diabetes control and management at the tertiary level deter the rise of increased burden or serious complications (Lan et al., 2017; Lee et al., 2017; Rushforth et al., 2016). Diabetes patients need to access tertiary level prevention services offered in the physical and virtual settings (Hirshon et al., 2013; Mogre et al., 2019; Yue et al., 2016). However, not all Hispanics diagnosed with T2DM have accessed these services (Tang et al., 2015). Understanding the barriers to accessing this care post diagnosis could help reduce the effects of diabetes and improve health outcomes (Crawford, 2017).

The literature review is arranged by themes to present a comprehensive discussion of the benefits of access to tertiary level prevention in diabetes management and what hinders this access among Hispanics with T2DM. The literature review begins with a detailed description of the search strategy used in selecting the reviewed books, articles, databases, and other sources of information relevant to the study. I then discuss the theoretical foundation of the study, rationale for its choice, and its applicability to this

research. This is followed by a detailed explanation of the IV and DVs and the related published literature. I also provide a comprehensive view of the methodology and methods of analysis. The chapter ends with a summary of the major themes of the literature and the gaps this study addresses.

Literature Search Strategy

Databases and Search Engines Used

To figure out the currently available information on diabetes and access to tertiary level prevention, I searched databases that held academic articles, reports, and books through the Walden University Library. Some of the databases consulted included MEDLINE, CINAHL, SAGE Journals, PubMed, ProQuest, and Journal of American Diabetic Association (Walden University, 2020a). For the study, most of the journals included primary studies, although secondary sources like meta-analyses and books were used for more thorough and comprehensive research. I developed a data extraction matrix to track and record the information collected. The categories included the title, the aim of the study, methodology, findings, conclusions, implications, and references. As I read each source, I took note of the main take-aways for ease of application later in the study. These data were recorded under 12 main categories: access to care, Andersen model, tertiary prevention, and each of the seven variables. I also included an "other" section to record other useful information about diabetes. I also used Google Scholar and other relevant websites such as the ADA, CDC, WHO, and the American Public Health Association, and I accessed the Internet in search for definitions, information, and clarifications.

Key Search Terms

To capture recent and ensure that all potentially relevant articles were identified, I used various search terms related to diabetes, the population of interest, access to care, the theoretical model, and methodology used. I also applied different terminology used in addressing diabetes, the people of interest, and variables. Key search words and phrases used in searching the databases included but were not limited to *type 2 diabetes, access to care, community health centers, tertiary level prevention, diabetes management, risk factors, barriers, neighborhood crime, environmental factors, transportation, distance to healthcare facilities, community health education theories, cross-sectional study,* and *Latinos, and Hispanics.* In Google Scholar, specific search terms used included but were not limited to *Andersen Behavioral Model, community health education, tertiary level prevention, theoretical model, Hispanics,* and *diabetes mellitus.* A comprehensive listing of the search terms and phrases used to support the literature review can be found in Appendix A.

Scope of Literature Review

The search covered all parts of the world not restricted to the United States. Search inclusion filters included peer-reviewed articles published between 2015 and 2019, and all literature chosen was written in English. Additionally, qualitative, quantitative, and mixed-method studies were included. For review eligibility, the sources needed to have an element of diabetes mellitus or chronic disease perspectives, prevention, the Andersen model, reasons for tertiary level care, and access to preventive care. The Walden University databases included journal articles, magazine articles, book

chapters, editorials, essays, reviews, and newspaper articles (Walden University, 2020d). Google Scholar provided articles, book chapters, and reviews. Though there was some overlap between the articles from Google Scholar and the Walden University databases, not all were full texts or peer reviewed. The Internet was most helpful with access to free websites, blogs, and specific information like word definitions.

My initial search yielded 276 pieces of material, including some that were not relevant to the specific variables under investigation but related to diabetes. These were global search results from all sources, including books, articles, and Internet sources. Literature specific to tertiary level prevention was extremely limited within the population and topic of interest. Additionally, the definition of access to care was not necessarily the same as the one being applied in this study. I found that utilization was mostly applied in the literature. I also covered pieces addressing both Hispanics and Latinos, though some studies only referenced one of each. I realized that there were repetitions with some recorded under different themes, so the duplicated articles and those not closely aligned with tertiary level prevention were excluded. Having sorted the pieces relevant to my survey, I chose 243 (88%) research pieces, making 33 (12%) articles ineligible. Of those selected, 199 (82%) are quoted in the literature review, which would give an average number of approximately 18 items per category addressed, though some variables had more articles than others. Forty-four articles (18%) are not quoted within the literature review but provided in-depth information on the subject and are applied in other chapters. See Appendix C for a summary of the search process.

Theoretical Foundation

Study Theory and its Origin

The concepts of the ABM were utilized as a theoretical foundation for this study. The ABM was developed by Andersen in 1968 to assess reasons why families' utilization of health services differed, define and measure equitable access to health care, and assist in developing policies that promoted equal access (Andersen, 1968). The ABM was formulated to discover the conditions that facilitated or impeded the utilization of health services. Results of the ABM were based on broad health services use in ambulatory care units, hospitals, dental care offices, and places where physical inpatient services were provided (Andersen, 1968). Per the model's constructs, access refers to the use of or visit to healthcare facilities and also to accessing the appropriate services at the right time for the improvement of individual health outcomes (Petrovic & Blank, 2015).

Additionally, according to Andersen (1968), health service utilization can be explained by three dynamics: predisposing factors, enabling conditions, and need. When families had discretion, the application of enabling and predisposing aspects was most important, whereas need was only relevant where there was little family discretion (Andersen, 1968). Each of these components was discussed at the individual, organizational, and contextual level (Andersen, 1968; Babitsch, Gohl, & von Lengerke, 2012). Families only pursued medical care when they were predisposed, and predisposing factors referred to the social, organizational, cultural, and political factors that predisposed individuals to the use of health services (Andersen, 1995; Babitsch et al., 2012). Predisposing factors include demographic characteristics (age, gender), social

factors (education, ethnicity, occupation), and mental factors as pertains to health beliefs (attitudes, values, knowledge; Andersen, 1968,1995). Enabling factors are conditions that allow a family to attain health services, and they include but are not limited to income, availability of family support, distance to hospitals, transportation means, travel time, as well as the distribution of health services and personnel (Andersen, 1968, 1995; Babitsch et al., 2012). Andersen also asserted that families needed to perceive the need for health services. Need pertains to a person's perceived need for care influenced by environmental characteristics like crime traffic or death rates, mobility, morbidity, and disability (Babitsch et al., 2012). Although all explanatory components of the model were useful, need was the most critical component in explaining the difference in families' utilization of health services (Andersen, 1968).

In 1995, Andersen revisited the model, highlighting the critical aspects of the initial model, analyzing the components that had been considered, and discussing what was missing or not explicitly explained (Andersen, 1995). Andersen (1995) also reviewed all comments and criticisms made on the initial model, propelling some modifications. The 1995 ABM was modified to include the type of health care systems, consumer satisfaction, and precise measurements of service use (Andersen, 1995). It also included potential access, the presence of enabling resources, the increased likelihood of use, and equitable access (Andersen, 1995). Further, the modified version covered the relevance of health policy, health reform, and health status outcomes (Andersen, 1995). The ABM combines aspects of the environment, characteristics of the population, health behavior, and stresses health outcomes (Andersen, 1995; Holtzman et al., 2015). Emphasis is

placed on individuals' interactions with formal health services in influencing health outcomes (Andersen, 1995). See Appendix B for the 1995 version of the ABM (presented with permission).

Theoretical Propositions

The ABM has mostly been used as the theoretical background of many reviewed studies (Babitsch et al., 2012). Although the primary goal of the ABM was to assess the conditions that either encouraged or deterred medical care utilization, it is broad and nonspecific (Andersen, 1968). The model was not specific as to what level, disease, or the purpose these services were being offered, a criticism by Penchansky (as cited in Andersen, 1995). Green et al. (as cited in Andersen, 1995) also questioned the relationship of the ABM and preventive health behavior, and Mechanic (as cited in Andersen, 1995) and Rundall (as cited in Andersen, 1995) wondered whether the model was meant to predict or explain the use of health services. Others questioned if other characteristics could be added to the components of the model (True et al., 1997). With the 1995 version, Andersen provided a detailed description of factors not included in the initial model, which could probably have been applicable. Despite the various modifications to the model, it still addresses healthcare utilization (Andersen, 1995). However, the model can be used to analyze usage of health services, specifically, for preventive purposes, which was not clearly explained in the initial version. The assumptions of the model are geared toward the utilization of health services. Because diabetes patients need to access and utilize these services during the management of the disease, it presents relevance.

Analysis of Prior Application of the Andersen Behavioral Model

Many public health studies have utilized the concepts of the ABM in investigating and explaining access and the use of healthcare services (Babitsch et al., 2012). The 1995 version of the model has been explicitly and extensively used in studies investigating healthcare services utilization (Babitsch et al., 2012). Accessing and utilizing health care services is a crucial aspect of community health promotion (Andersen, 1968; Walden University, 2019) and aligns with the goals of this study.

In my search, I identified several articles in which the ABM had been applied and published in English between 2015 and 2019. In further support of the ABM's link to access to healthcare utilization, Erskine et al. (2018) focused on access to tertiary care among patients discharged from hospital. Based on the study findings, environmental factors, lack of transportation, and established sources of care were significant barriers to access to tertiary care for these patients (Erskine et al., 2018). Further, Holden, Chen, and Dagher (2018), using the constructs of the ABM, found that those who were uninsured received meager preventive services; however, it was established that African Americans and Hispanics without insurance fared better than Whites without insurance in utilizing health services. Paduch et al. (2017) also applied the ABM in assessing psychological barriers to the use of healthcare services among individuals diagnosed with T2DM, finding that though there were many barriers to using healthcare services, ethnic minorities faced more specific obstacles like language barriers and cultural beliefs.

In terms of studies focused on areas outside the United States, Wandera, Kwagala, and Ntozi (2015) applied the concepts of the ABM and established that health needs and

enabling factors played a critical role for older adults in accessing healthcare in Uganda. To understand why some people in China did not utilize healthcare services, Zhang, Chen, and Zhang (2019) applied the concepts of the ABM and established that contextual factors like employment rates had not been examined in understanding the rate of healthcare service utilization. After collecting data from 2,526 households and applying the ABM's standard elements, Herbeholz and Phuntsho (2018) found that the predisposing and enabling factors were insignificant in their study on use of health care in Bhutan. Economic status and place of residence were significantly associated with healthcare utilization and choice of health facilities; however, social capital influences varied between urban and rural areas, presenting a suggestion that the strategic organization of social capital could help improve healthcare utilization in Bhutan. Finally, in Nigeria, Koce, Randhawa, and Ochieng (2019) organized the various factors affecting the use of primary care based on predisposing, enabling, and need components of the ABM. Major themes included patients' understanding of healthcare delivery systems, views on healthcare providers, perceptions about facilities, support from relatives, and access to healthcare facilities. Findings showed that the referral system in Nigeria and others like it needed to be evaluated and developed. A multifaceted approach was needed to help ensure that patients accessed and utilized services at the appropriate level of care (Koce et al., 2019).

Rationale for Using the Andersen Behavioral Model

The ABM is a behavioral health model popularly used in studying the access and use of health-related services (Babitsch et al., 2012; Hirshfield et al., 2018; Holtzman et

al., 2015; Hong et al., 2019; Lindley, 2015; Lo et al., 2016a). The model has also been frequently used in surveys linking long-term care and ethnicity (Chang & Chan, 2016; Erskine et al., 2018; Holden, Chen, & Dagher, 2018; Holtzman et al., 2015; Mui et al., 1998; Seo et al., 2016). According to Andersen (1968, 1995), hospital services are sought based on need. Diabetes is a chronic problem that requires ongoing long-term medical care to prevent the occurrence of further health complications (HealthyPeople, 2019b; Liddy, Johnson, Irving, Nash, & Ward, 2015; Saunders, 2019), which aligns with the need construct of the ABM. Additionally, the ABM assumes the need for ambulatory and physician use because the health conditions require seeking care (Andersen, 1968), which aligned with the study's focus on tertiary level preventive care within ambulatory units and accessing providers. The ABM also acknowledges the external environment (physical, political, and economic concepts) as a key input in understanding the use of health services (Andersen, 1995), and the neighborhood setting was a variable in this study. Finally, in promoting the benefits of tertiary level prevention and improved health outcomes, health behavior theories like the ABM are critical. The ABM links people's health behaviors and results to the environment, making it useful and reliable in generating practical public health solutions (Creswell & Creswell, 2018; Holtzman et al., 2015). The aspects of the modified model (Andersen, 1995) align with community health education goals of improving health outcomes and public health systems by developing and promoting programs that address community needs (Walden University, 2019).

Though other models' assumptions could be applicable, they were not specific to access to tertiary level prevention. For instance, the SEM used in explaining the

relationship between the use of services and environmental factors could have been applicable as a theoretical guide to this study. The SEM suggests that there are factors at the individual, interpersonal, community, organizational, and environmental levels that determine the use of health resources (Coreil, 2010). The SEM could potentially serve in understanding why Hispanics with T2DM have not accessed tertiary level prevention. However, if the SEM were used in this study, emphasis would be placed on just one aspect of the model's 5 major categories, which is not comprehensive. Instead, it would be prudent to understand all the SEM levels that affect access to care, which would be helpful in developing targeted interventions. The focus of this study was evaluating environmental factors as they relate to individuals, rendering other levels of the SEM irrelevant. With such observations, the ABM's assumptions seemed to fully cover the interests of this study, explaining its choice. The ABM focuses on the use of health services and access to care (Andersen, 1995).

Applicability of the Andersen Behavioral Model

The ABM provides a framework that helps understand how environmental and individual factors influence health outcomes and behaviors (Holtzman et al., 2015). Based on the interests of this research, the fundamentals of the ABM provided an appropriate platform for the application. The parameters on which the ABM model is based were relevant in investigating the role of the chosen environmental factors (IVs) in accessing tertiary level prevention (DV) among Hispanics diagnosed with T2DM. The IVs in the study included neighborhood crime, the absence of community health centers, lack of culturally competent providers, lack of public transportation, the residential

setting, and distance to T2DM education classes. The IVs are the enabling factors. The model looks at enabling factors in accessing health care, and in this study, interest was in understanding how these IVs impact access to tertiary level prevention. Additionally, the ABM alludes to equitable access to health services (Andersen, 1995), which refers to all people with need having the ability to utilize these resources. Per Andersen (1995), inequitable access is influenced by the social structure like ethnicity, health beliefs, and enabling factors like income. Hispanics or Latinos, like other people of different races, need to access these resources without limitation. The constructs of the model concerning equitable access were, therefore, very relevant in this study. Finally, the ABM highlights the importance of health outcomes, and in this study, results were critical if tertiary level prevention was to be promoted and embraced.

Literature Review Related to Key Variables and Concepts

Studies Related to the Methodology

The study was a retrospective quantitative research that used a cross-sectional design method to evaluate the environmental barriers to access to tertiary level prevention among Hispanics with T2DM. By definition, a cross-sectional design considers the prevalence of a disease at a given time using a proportion of the population (Cherry, 2019; Setia, 2016). The design allows for the comparison or analysis of different variables simultaneously in each community (Cherry, 2019; Setia, 2016), which aligned with the goals of this study. According to Frankfort-Nachmias (2008), the cross-sectional design is a method commonly utilized in social science studies. While there are no studies specifically carried out to analyze the association of environmental factors and

access to tertiary level prevention among Hispanics diagnosed with T2DM, studies have been carried out relating environmental factors to access to health care. Access to health care has been linked to diabetes prevention and management, which makes such studies viable examples of how researchers have approached diabetes prevention and control. This study's primary assumption was that for those already diagnosed with diabetes, health care was sought for tertiary level preventive purposes. Based on this assumption, I highlighted examples of studies linking neighborhood factors to access to health care using the cross-sectional design.

Nicklett et al., (2017) conducted a cross-sectional study to examine the relationship between diabetes management and access to health care among older American Indians diagnosed with T2DM. The DV, diabetes management, was measured by HbA1c based on data collected from the Strong Heart Family Study. IVs related to accessibility, availability, accommodation, and affordability of health care access. The authors found that older American Indians continued to face barriers to accessing health care, most related to transport, distance to where the services were provided, and wait times to see the providers. Using bivariate models, the authors found that only affordability was significantly associated with diabetes management and not accessibility, availability, or accommodation. Using multivariate models showed no significant association between access-related barriers and diabetes management. The authors pointed out limitations like the inability to establish causality since the study was cross-sectional. The population being older American Indians residing in rural areas limited the generalization of the survey results to those in urban areas or younger ages. Further, the

use of secondary data and methods made the study findings prone to bias. Several positive recommendations arose from this study, including the suggestion that improved access to care while necessary, may not be enough among American Indians. Study findings could probably apply to other ethnicities. The authors recommended further investigation on the subject.

Small et al. (2015b) carried out a cross-sectional study by recruiting T2DM patients from an academic and Veterans Medical Center in Southern U.S. The main variables included neighborhood violence, access to healthy food, social support, and neighborhood aesthetics. It was established that self-care behaviors and neighborhood aesthetics had direct effects on glycemic control, and social support, while access to healthy foods had direct effects on self-care. Further, results showed that social support had an indirect impact on glycemic control via self-care. The study results showed that neighborhood factors are essential and should be taken into consideration when designing interventions for T2DM patients. However, being a cross-sectional study, results did not determine causality among the variables. The study findings may not be generalizable due to the limited heterogeneity of participants in the study.

Mendenhall and Norris (2015) conducted a cross-sectional mixed and qualitative survey study to investigate women's experiences in diabetes care. The study was conducted among urban women diagnosed with diabetes and caregivers of children enrolled in the "Birth to Twenty" program in Soweto, South Africa. The three main categories that arose from the investigation included counseling, treatment, and social support. Women had a good understanding of diabetes and how it could be controlled.

Despite inconsistent reporting of treatment routines, structural barriers were identified as major impediments in accessing care. Overcrowded facilities, lack of medicine, stigma, and lack of family support were cited. Public versus private systems influenced health care accessibility within this population. The findings provided useful information needed to navigate diabetes care in SA. Health systems and providers played a critical role in managing and preventing diabetes. The study findings were especially beneficial in tertiary level prevention as the participants had all been diagnosed with diabetes and were in the process of managing it or preventing further complications. Among the limitations were the inability to address those seeking preventative care at the primary level. It was concluded that eliminating certain barriers would encourage the patients to want to access the services and manage the disease.

Smalls, Gregory, Zoller, and Egede (2015a) carried out a cross-sectional study assessing the effects of neighborhood factors on self-care and health outcomes among adults with diabetes. Using data on HbA1c, blood pressure, and LDL cholesterol, it was determined that neighborhood violence, walking environment, aesthetics, social cohesion and support, and food insecurity were statistically significant. No meaningful relationships were found between neighborhood safety, crime, recreational facilities availability, or access to healthy foods and self-care behaviors and health outcomes. It was identified that food insecurity, diet, neighborhood activities, and social support had independent associations with self-care behaviors and health outcomes. Environmental factors played a role in diabetes-related health outcomes and self-care. Study strengths included the use of a larger sample, application of validated theoretical concepts and

models, and the consideration of a wide range of factors as variables. Limitations included non-explanation of causality, the fact that the sample was not representative of other individuals with diabetes within the United States, and the non-consideration of how long the participants had lived in the community. Key recommendations, included the need to prioritize food security, neighborhood activities, and social support in designing future targeted interventions for individuals with T2DM.

With the understanding that a few studies had been conducted to analyze the influence of neighborhood crime on health in diabetes patients, Tamayo et al. (2016) conducted a cross-sectional survey. The researchers investigated the association between an individual's perception of neighborhood safety or violent crime and stress, body mass index (BMI) or hemoglobin A1c (HbA1c), physical activity with diabetes. 54% of people with diabetes reported neighborhood safety concerns, and 15% reported violent crime concerns. Among patients with diabetes, it was found that neighborhood crime and safety were associated with BMI. While results showed no association between the neighborhood safety concerns with HbA1c levels, they were associated with BMI and obesity. Crime was cited as the most typical neighborhood problem. Source biases were mentioned as a limitation as well as residual confounding. The authors also pointed out the inadequacies experienced in selecting a measure for perceived neighborhood crime, which could have impacted the results. Findings showed that perceived neighborhood problems impacted risk factors among people with T2DM. Also, the findings added to the body of public health confirming an association between unsafe neighborhoods and increased BMI and obesity, which is a significant risk factor in diabetes prevention. The

authors recommended further studies that examined the modifiable environmental influence on diabetes patients and policy implications.

van Gaans and Dent (2018) conducted a systematic review of cross-sectional and some opinion pieces on access to health care, which was a crucial element of my study interests. Access to tertiary level prevention is an on-going health service critical in preventing further complications for people with diabetes (Saunders, 2019). The review's key areas of focus included availability, accessibility, affordability, accommodation, and acceptability. Accessibility factors included access to transport to where the services were provided, which also restricted the choice of appointment time. Accommodation issues included long waiting times to see the health professionals. Affordability referred to the ability to access health services. Acceptability centered around the patient's feelings of shame in receiving care from providers other than family members or of a different gender than themselves. Finally, availability referenced the adequacy of health care services. Accessibility to health services for older adults was highly linked to where they were geographically located and their ability to access transport. Additionally, some of the patients were hindered by the level of morbidity, cultural background, and the type of services they received. The findings added to the body of knowledge on the importance of access to health care services and the contributing factors. Study limitations included the choice of only English-language articles published in scientific journals that may have led to excluding other relevant materials. Also, most of the pieces chosen were cross-sectional studies, which did not address causality. It was recommended that longitudinal studies on the same topic be carried out to further evaluate issues impacting healthcare

access within this population. Although the study focused on older people in Australia, findings confirmed that various factors influence access to health services, and these vary by population.

Garcia et al. (2015) carried out a cross-sectional study among Latinos in the Sacramento area to assess the association between socioeconomic position and individual-level risk factors among people with diabetes. Diabetes was the leading cause of morbidity and mortality among Hispanics, yet, not many studies had been carried out to examine the role of area-level socioeconomic position in diabetes. The central assumption was that the higher the socioeconomic position, the lower the diabetes incidence. While there was no relationship observed between socioeconomic position and prediabetes within this population, the findings showed an association between socioeconomic position and the prevalence of diabetes within Latinos. The researchers also alluded to bias arising from the reliance on self-reporting and the fact that other factors that could play a role in increasing the risk of diabetes had not been included. The authors highlighted the importance of considering neighborhood factors that could place older Latinos at high risk for diabetes.

Lan, Hoang, Linh, and Quyen (2017), carried out a cross-sectional study to measure the burden of T2DM among those aged 30-69 years in Chi Linh, Vietnam, and establish the gaps in access to health care for this population. The authors wanted to explore the adverse effects of urbanization and rapid economic growth on this population. The leading influencers of blood glucose levels were age and BMI. It was established that primary level prevention was critical in this population and that effectively targeted

intervention programs needed to be implemented to reduce the rise of the diabetes burden. Primary prevention was essential since early-stage blood pressure and glucose levels could be detected and, proper and timely management could be provided to avoid serious complications. Primary prevention would also help reduce hospital overload at the intermediate level. Limitations included the fact that only two indicators for access to health care were examined. It was highlighted that financial stability was important in accessing these services and could be a barrier to diabetes management. The findings confirmed that diabetes was a public health problem in this region and that diabetes prevalence was high within the chosen age group. Primary level prevention through lifestyle modifications was critical since it played a vital role in the control of diabetes.

McBrien et al. (2017) conducted a cross-sectional study to determine and quantify the barriers to achieving diabetes care goals at the patient, provider, and system levels. Secondly, to determine if these barriers were different among diabetes patients depending on their glycemic control level. Telephone surveys were conducted among community dwellers already diagnosed with diabetes and care facilitators in Calgary, Alberta, plus surrounding regions. It was found that those with HbA1c > 10% were young but in worse conditions than those with HbA1cs of 7-8%. Financial barriers were a significant factor for those with high HbA1cs. It was suggested that the data could be used to generate hypotheses that could help to improve diabetes management within this population. From the study, it was concluded that financial constraints were a key barrier that needed to be addressed. The authors also hinted that their study findings could inform the development of programs that helped overcome barriers for diabetes patients and improve outcomes.

Ways Researchers Have Approached the Problem

Researchers in the public health field have approached access to tertiary level prevention for diabetes from different angles. Because tertiary level prevention for diabetes patients means preventing further complications (Saunders, 2019) and optimal control of blood sugar levels, different aspects can be applied to managing it. Some researchers have looked at lifestyle changes, others have focused on nutrition, while some have studied pharmacotherapy or weight management. Regardless of the approach, there are factors associated with accessing tertiary level prevention care. According to Kauhl et al. (2016), although T2DM is one of the deadliest chronic diseases, it has the potential of producing the highest positive health outcomes if the prevention of complications is successfully done. Per the authors, if preventive care is provided on time, the burden of T2DM can be significantly reduced (Kauhl et al., 2016). Diabetes management and prevention programs contribute to positive health outcomes (Lachance et al., 2018). Practices like continued monitoring, healthy dieting, physical activity, and medication adherence can be applied at the tertiary level, preventing or delaying further complications (Mukona et al., 2017). Additionally, continued education and information sharing can help promote healthier lifestyles among people with diabetes (Brown et al., 2015; Toulouse & Kodadek, 2016). Self-management education is critical for T2DM management, and, with appropriate knowledge, diabetes patients can manage the condition better, preventing further complications (Hunt, Henderson, & Chapman, 2018). Diabetes patients need to be continually educated on how to avoid risk factors and prevent new complications (Francis, 2019), which is a form of tertiary level prevention.

Tertiary level prevention is critical, and diabetes patients need to take full advantage of it to achieve positive health outcomes (Gumber & Gumber, 2017; Lee et al., 2017). Preventive care for people with diabetes can reduce the risk of complications (Bailey et al., 2015). For these patients, the prompt use of health services helps achieve positive health results (HealthyPeople, 2019). Following a study conducted by Graves et al. (2019), it was established that timely access to diabetes self-management practices was essential in reducing diabetes mortality and disparities. Accessing tertiary level prevention yields positive results, for instance, at a tertiary care hospital in India, counseling people with diabetes about their higher risk of contracting Tuberculosis helped minimize risks of contraction of the disease (Tiwari, Verma, & Raj, 2016). In further support of tertiary level prevention, Haslbeck et al. (2015) proved that the establishment of chronic disease self-management programs at the tertiary level resulted in positive results. To further demonstrate the importance of tertiary level prevention and its benefits, Shu-Li et al. (2018) confirmed that the introduction of tertiary public health prevention measures helped reduce the risks faced by people with chronic diseases in Taiwan. In China, it was found that among patients with T2DM, early identification of enablers and barriers to care allowed for creating interventions and strategies that improved tertiary level care for these patients (Chapman, Yang, Thomas, Searle, & Browning, 2016). Gibson et al. (2015) proved that to improve a populations' health, there was a need for access to appropriate, timely, affordable, and acceptable health care coupled with knowledgeable health care professionals. Among low-income women diagnosed with T2DM, coping strategies, cultural barriers, and lack of financial resources

hinder the effective management and prevention of diabetes-related complications both at the individual and institutional levels (Daros, 2019). Per Daros (2019), considering these factors in designating strategies helps realize positive health outcomes at the tertiary level. Having implemented the CDC's diabetes prevention program, Ely et al. (2017) reported significantly improved health outcomes for those who participated, proving the importance of preventive care for diabetes patients. It is critical for people with diabetes to access and utilize health care services for better disease management and further prevention of complications (Ho et al., 2018).

General practitioners and tertiary healthcare professionals have in the past and continue to emphasize the importance of self-care, more so at the tertiary level where specialized care is obtained (Lo et al., 2016b). Arguably, there is care outside the scope of general practitioners, which is typically sought from specialists (Manski-Nankervis, Furler, Audehm, Blackberry, & Young, 2015; Timbie, Kranz, Mahmud, & Damberg, 2019). Research shows that for positive health outcomes among diabetes patients, there needs to be a coordination between primary healthcare, patient self-management, and specialist tertiary care (Fradgley, Paul, & Bryant; Lo et al., 2016b; Timbie et al., 2019). Specialized care is a form of tertiary level preventive care often provided in hospital settings (Manski-Nankervis et al., 2015). Specialized care and education are critical for people with T2DM and allow for the proper allocation of resources (Bech, Borch Jacobsen, Mathiesen, & Thomsen, 2019). Among Hispanics diagnosed with T2DM, diabetes intervention programs have successfully contributed to controlled blood glucose levels (Perez-Escamilla et al., 2015). Yet, accessing tertiary level prevention can be

challenging to some (Whittemore et al., 2019). Understanding the barriers to accessing this care could help reduce the effects of diabetes, consequently improving patients' health outcomes (Crawford, 2017; Gumber & Gumber, 2017).

Rationale for Selection of the Variables

For this study, the IVs were chosen after reading a meta-analysis in which these factors were identified as perceived barriers to access to care among Hispanics but had not been extensively examined (Perez, Ruiz, & Berrigan, 2019; Silfee, Rosal, Sreedhara, Lora, & Lemon, 2016; Titus & Kataoka-Yahiro, 2019). Of the studies included in the systematic review, three highlighted environmental factors as perceived barriers to access to care (Titus & Kataoka-Yahiro, 2019). Moreno et al. (2014) listed crime in the area, lack of access to exercise facilities, lack of public transportation, absence of night lights, presence of trash, and distance to the location of T2DM education classes as main factors. Fortmann, Gallo, and Philis-Tsimikas (2011) cited a lack of environmental support services, while Rodriguez, Chen, and Rodriguez (2010), highlighted the lack of quality community care centers. Flores (2017) pointed out that many Hispanics had not accessed care due to the lack of culturally competent providers. Per Titus and Kataoka-Yahiro (2019), the residential setting, absence of community health centers, and lack of culturally competent providers had not been well-linked to access to care or tertiary level prevention, which needed to be examined. It was also pointed out that the influence of these neighborhood factors had not been thoroughly investigated among Hispanics in rural settings (Titus & Kataoka-Yahiro, 2019). The authors' observations provided direction as to which factors to include and which population to focus on in the study. In

the United States, immigrants and ethnic minorities like Latinos report unfavorable neighborhoods as a significant barrier to diabetes management (Perez, Ruiz, & Berrigan, 2019). Additional research targeting the link between Latinos and environmental interventions has been suggested (Perez, Ruiz, & Berrigan, 2019). The recommendations in these studies depict a consensus that further research on neighborhood factors and how they impact access to tertiary prevention among Hispanics is necessary. I searched for literature explicitly relating the mentioned neighborhood factors with access to tertiary level prevention and found no results explaining the choice of the study variables. Studies that examine the association between these environmental factors and access to tertiary level prevention among Hispanics diagnosed with T2DM have not been conducted.

Synthesis of Studies Related to the Key Variables

In this study, the DV was access to tertiary level prevention. The predictors included neighborhood crime, community health centers, public transportation, culturally competent providers, residential setting, and distance to T2DM education classes. While there were studies targeting some of these variables independently in relation to access to care, none have been carried out combining these specific IVs and tested against the DV.

Access to Tertiary Level Prevention

Studies on access to health care have been carried out but not explicitly focused on accessing tertiary level preventive care. Access to care has been defined differently by various researchers resulting in different interpretations (Souliotis, Hasardzhiev, & Agapidaki, 2016). It could be described as availability, which is the presence of health

services in a community (Souliotis, Hasardzhiev, & Agapidaki, 2016), or affordability in terms of cost (Shartzer, Long, & Anderson, 2015). Access has also been defined as the connection between those seeking health services and the available health services (Kurpas et al., 2018) or the ability to receive care when needed (Simmons et al., 2015). In this study, access to tertiary care meant the diabetes patients' ability to access a location where health care providers are or where the needed diabetes care is provided (HealthyPeople, 2019), for purposes of preventing further occurrence of complications. People with diabetes need to access clinical services and health professionals to receive on-going diabetes care for preventive reasons (Luo, Chen, Xu, & Bell, 2019). Access to tertiary level prevention varies by race, ethnicity, age, sex, socioeconomic status, disability, and residential location (HealthyPeople, 2019; Majeed-Ariss, Jackson, Knapp & Cheater, 2015). Blacks and Hispanics have higher odds of having T2DM (Majeed-Ariss et al., 2015; Piccolo et al., 2015). According to Lynch et al. (2015), traditionally disadvantaged groups that include non-Hispanic Blacks and rural patients bear the greatest risk and burden of multimorbidity. Additionally, older non-white people with diabetes are at higher risk of poor health outcomes when access to tertiary level prevention in healthcare settings is restricted (Ryvicker & Sridharan, 2018). Gender also plays a role in accessing diabetic care, which contributes to females experiencing higher diabetic complications, with difficulties managing their Hemoglobin A1c, compared to men (Suresh & Thankappan, 2019). Since health interventions are essential in diabetes management, for effectiveness, they need to be tailored with race and ethnicity taken into consideration (Majeed-Ariss et al., 2015; Murayama et al., 2017). Among Latinos with

poorly managed diabetes, health interventions lead to improved access to care and health outcomes (Chang et al., 2018; Perez-Escamilla et al., 2015). Also, among diabetes patients experiencing inequality in health care access, increased access is pivotal in promoting preventive visits, therefore improving health outcomes (Olsen & Laudicella, 2019).

Access to health care among Hispanics has been stalled by various factors including language barriers (Luque, Soulen, Davila, & Carmell, 2018), social barriers like lack of education (Mendoza Catalan et al., 2017; Nedjat-Haiem et al., 2017), and minimum support and influence of care providers (Alzubaidi, McNamara, Browning, & Marriott, 2015; Mendoza Catalan et al., 2017; Suresh & Thankappan, 2019; van Gaans & Dent, 2018). In reviewing literature, other reasons cited included limited electronic health literacy (Aponte & Nokes, 2017; Jang et al., 2018), lack of access to health services like health insurance (Larimer, Gulanick, & Penckofer, 2017; Velasco-Mondragon et al., 2016), health illiteracy (Velasco-Mondragon et al., 2016), and cultural beliefs and attitudes about T2DM (Lopez, Tan-McGrory, Horner, & Betancourt, 2016; Njeru et al., 2016; Velasco-Mondragon et al., 2016). According to Hsueh et al. (2019), lower risk perceptions among immigrants and racial/ethnic minority adults with diabetes could affect preventive behaviors. In Latin America, access to care for communicable and non-communicable diseases has been highly linked to geographic accessibility, affordability, availability, and acceptability of health services (Geissler &Leatherman, 2015). Among Mexicans, employment turnover in the labor market has affected how diabetes patients access health care (Guerra et al., 2018). Transport challenges, low socioeconomic status,

work schedules, and fear arising from the current U.S. anti-immigrant political climate have also been cited as barriers among Hispanics (Luque et al., 2018). Immigrants and ethnic minorities like Latinos in the United States have reported unfavorable neighborhoods as a significant barrier to preventative measures like increased physical activity (Perez, Ruiz, & Berrigan, 2019). For some Mexican Americans, busy schedules, cultural beliefs, and political factors like fear of deportation have hampered their participation in diabetes prevention (Brown et al., 2018). Within this population, low income, unemployment, lack of insurance, presence of cultural and socioeconomic barriers have also been cited (Larimer, Gulanick, & Penckofer, 2017; Velasco-Mondragon et al., 2016). Among Latinos in the United States, the neighborhood socioeconomic position has been linked to the prevalence of diabetes (Garcia et al., 2015). Often, neighborhood environmental attributes have also been considered as contributing risk factors in chronic disease analysis, including diabetes mellitus, and should, therefore, be accounted for in the prevention measures (Geissler & Leatherman, 2015; Lagisetty et al., 2016; Malambo et al., 2016).

In a recent study on the importance of data mining techniques in understanding public health issues, neighborhood factors were associated with health outcomes in diabetes and asthma patients (Cuesta, Coffman, Branas, & Murphy, 2019). Also, Hussein et al. (2018) concluded that exposure to a poor neighborhood and environmental conditions had an adverse effect on disease risk factors like diabetes. Among women with gestational diabetes, research shows that regardless of race or ethnicity, environmental barriers were among the major factors that hindered their access to health care services

(Oza-Frank, Conrey, Bouchard, Shellhaas, & Weber, 2018). Titus and Kataoka-Yahiro (2019) determined that the hindrances to access to care within the Hispanic community could be categorized as self, provider, and environment-related (Titus & Kataoka-Yahiro, 2019). However, these barriers to access to care had not been thoroughly examined among Hispanics with T2DM. Fortmann, Gallo, & Philis-Tsimikas; Moreno et al.; & Rodriguez et al., as cited in Titus & Kataoka-Yahiro (2019), highlighted environmental factors as perceived barriers to access to care. Moreno et al. (2014) listed crime in the area, lack of access to exercise facilities, lack of public transportation, absence of night lights, presence of trash, and distance to the location of T2DM education classes as significant barriers. Studies like these prove a relationship between neighborhood factors and tertiary level prevention or diabetes management. These research findings attest to the existence of environmental obstacles to accessing tertiary prevention within various communities. They also present a strong argument in favor of the absence of studies that assess the impact of environmental factors on accessing tertiary level prevention among Hispanics with T2DM. There is, therefore, a need for further exploration of the subject, and the purpose of this study was to explore which neighborhood problems impact access to tertiary level prevention among Hispanics with T2DM.

Neighborhood Crime

Crime has frequently been associated with diabetes risk factors like obesity and overweight (Malambo et al., 2018). According to Tung et al. (2018), patients with chronic diseases like diabetes have often struggled with balancing the challenges of community violence and the demands of managing the disease. Up to this point, minimal

research has been carried out linking neighborhood crime and access to tertiary level prevention. Tamayo et al. (2016) established that crime impacted BMI and obesity. Having found a limited association between crime and stress among patients with T2DM Tamayo et al. (2016b) recommended further research. Further, Piccolo et al. (2015) found no link between neighborhood crime and diabetes. On the contrary, Smalls et al. (2015b), found that in the southeastern U.S., neighborhood violence was significantly associated with diabetes-related health outcomes and management. Such observations and recommendations attest to a possible link between neighborhood crime or violence and health outcomes among T2DM patients.

Community Health Centers

Health care systems and resources like infrastructure, medical facilities, and equipment play a crucial role in managing chronic diseases like T2DM (Fradgley, Paul, & Bryant, 2015; Yinzi et al., 2017). As the number of people with chronic diseases increases, so does the complexity of required patient care and the need for specialists and adequate infrastructure to enforce tertiary level prevention measures (Moore et al., 2016; Timbie et al., 2019). Tertiary prevention among diabetes patients occurs in acute settings, hospitals, clinics, doctors' offices, and CHCs, which should be easily accessible (Moore et al., 2016; Hirshon et al., 2013). For T2DM patients, doctor/provider visits for tertiary prevention purposes have improved health outcomes (Chang et al., 2018; Moradi et al., 2017). Neighborhood-centered disease prevention programs provided in CHCs have been found to be very effective (Baldwin, 2015; Chapman et al., 2016). In Kenya, public facilities and CHCs remain the most frequented by most of the population, particularly

those with T2DM (Mwavua, Ndungu, Mutai, & Joshi, 2016). Despite their importance, health systems and CHCs are not readily available to all people with T2DM (McBrien et al., 2017). Further, Rodriguez et al. (2010) revealed that the lack of quality CHCs and hospitals affect health outcomes among diabetes patients. Mendenhall and Norris (2015) pointed out that the lack of infrastructure and overcrowded clinics or facilities were barriers to access to care among diabetes patients. Additionally, the lack of specialists in CHCs to treat patients who need specialty care is a hindrance (Timbie et al., 2019). In Ghana, for example, while the people with diabetes were aware that tertiary diabetes care could be obtained in hospitals and clinics, one of the critical barriers to receiving this care was the long distance to the hospitals (Mogre et al., 2019). Geographical location and the lack of transport have often been cited as significant barriers to access to care among diabetes patients (van Gaans & Dent, 2018). Jacklin et al. (2017) found that lack of structural facilities and patients' prior experiences with healthcare providers were among the barriers to access to care. Among people with chronic illnesses, frequent visits to the emergency rooms point to the lack of CHCs where they could obtain routine and preventive care (Chen, Hilbert, Cheng, & Bennett, 2015). If the quality of care provided to diabetes patients and that of the CHCs was improved, better health results could be achieved (Al-Alawi, Al Mandhari, & Johansson, 2019). These surveys provide evidence of the importance of community health centers.

Residential Setting

According to Titus and Kataoka-Yahiro (2019), environmental barriers to access to care had not been thoroughly investigated among Hispanics with T2DM in rural

settings. For T2DM patients, the residential setting matters in the management of the disease (Smalls et al., 2017). However, each residential setting is set up differently in terms of services and resources, and it is often the case that urban environments have more resources than rural settings (Purnell et al., 2016). Several positive associations, have been found to exist between environmental settings and health outcomes (Blay, Schulz, & Mentz, 2015; Malambo et al., 2016; McCormack et al., 2019; Smalls et al., 2015a, 2017). McCormack et al. (2019) argued that the design of a neighborhood, including cycling paths, public transport, and well-built roads, influenced the choices Hispanics with T2DM made in deciding to access tertiary care. A built neighborhood also impacted glycemic control, health risk factors, and cardiovascular disease among diabetes patients (Malambo et al., 2016; Smalls et al., 2015a). The residential setting of people with diabetes is critical in determining the level of interaction patients have with their providers and adherence patterns to diabetes management (de Vries McClintock et al., 2015; de Vries McClintock et al., 2015). It is therefore critical that prevention of risk factors among diabetes patients are equally implemented in both rural and urban settings (Arugu & Maduka, 2017).

Prior research showed that area-level inequalities exist regarding the care T2DM patients receive based on rural or urban settings, though they may not be the only contributing factor to these variances (Chen, Chen, & Cheng, 2017; Toivakka et al., 2015). Diabetes prevalence was higher in rural areas as compared to urban areas, with rural people with diabetes facing more challenges (Hunt, Henderson, & Chapman, 2018, Tran, Tran, & Tran, 2019) and risk of multimorbidity (Lynch et al., 2015). Limited

knowledge and weak technologies in rural areas however hindered the designing and implementation of much-needed diabetes interventions in rural settings (Alvarado et al., 2017). There is a minimal amount of screening, testing, and monitoring done among rural diabetes patients, yet it is critical for these groups (Paul et al., 2016; Tran et al., 2019). Research also showed that people with diabetes living in high social affluent areas were more adherent to diabetes management measures than those from lower neighborhoods (de Vries McClintock et al., 2015; Smalls et al., 2017). However, on the contrary, Purnell et al. (2016) argued that T2DM disproportionately affected adults living in urban areas. Since residential settings and locations in themselves might be real influencers, it is important to understand their role in accessing tertiary level prevention among T2DM patients. Also, residential settings should be factored in diabetes self-management, treatment and prevention measures (Bigdeli et al., 2016).

Distance to T2DM Education Classes

For this study, I defined T2DM education classes as information or knowledge that is helpful and necessary in the management of diabetes. This kind of knowledge is obtained from places or physical locations that diabetes patients must access (Liddy et al., 2015). With limited knowledge or no understanding of the ways of managing diabetes, many do not access these facilities to get the needed information (Mendenhall & Norris, 2015). For instance, the lack of effective diabetes education and management hindered the control of the disease amongst women in Soweto, South Africa (Mendenhall & Norris, 2015). Because tertiary level prevention is an on-going process, continued education and sharing of information can help in promoting healthier lifestyles among

diabetes patients (Brown et al., 2015; Nedjat-Haiem et al., 2017; Toulouse & Kodadek, 2016). There is, therefore, a critical need for continued education for people with diabetes, especially on how to prevent further occurrence of risk, complications, and disease (Francis, 2019). Further, this knowledge should be culturally relevant in content and appealing to benefit the end-users (Nguyen, Sepulveda, & Angulo, 2017). Per Testerman and Chase (2018), the knowledge shared with Latinos with diabetes needs to address barriers like shame, lack of interest, lack of family support, and celebrate culturally appropriate foods, among others. The distance to the location of T2DM education classes or hospitals has been cited as a significant barrier to access to care (Mogre et al., 2019; Moreno et al., 2014). Moreover, decreased travel time and distance to the providers and education have improved health outcomes (Bobitt, Aguayo, Payne, Jansen, & Schwingel, 2019; Konerding et al., 2017).

Culturally Competent Providers

Diabetes patients need on-going care, which requires access to health care providers, and these opportunities should be enhanced for the management of diabetes (Nicklett et al., 2017). Additionally, these providers need to be competent and well-trained to adequately and effectively meet the patients' needs (Geissler & Leatherman, 2015; Stoop, Pouwer, Pop, Den Oudsten, & Nefs, 2019). Well trained health providers can help with the proper management of diabetes and identify potential risks that can be prevented (Tang et al., 2015). A lack of well-trained health providers can be detrimental to the health outcomes of people with diabetes (Jin et al., 2017). Culturally appropriate providers and interventions foster engagement among Hispanic diabetes patients and can

help improve self-management (Gumber & Gumber, 2017; Oza-Frank et al., 2018; Rotberg et al., 2016). In areas where culturally competent personnel and programs are provided, Latinos with T2DM have increased access to the services (Baig et al., 2014). Latinos' limited access to these providers can hamper positive health outcomes (Chang et al., 2018; Geissler & Leatherman, 2015; Rotberg et al., 2016). Also, a shortage of healthcare providers hinders the likelihood that diabetes patients will receive the recommended quality preventative care they need (Faul, Yankeelov & McCord, 2015; Velasco-Mondragon et al., 2016). Many Hispanics have not accessed care due to the lack of culturally competent providers (Flores, 2017). Culturally qualified providers are critical in the interpretation, education, and community outreach programs within Hispanic communities (Flores, 2017; Mansyur et al., 2015). In the United States, where many Latino immigrant families are settling, the presence of culturally relevant health and social service providers is critical (Held, McCabe, & Thomas, 2018). Matsumoto, Wimer, and Sethi (2019), pointed out that for refugee diabetes patients, this skilled care was critical in the improvement of health outcomes. In places where culturally appropriate diabetes care is being provided, positive health outcomes have been realized (Zeh, Cannaby, Sandhu, Warwick, & Sturt, 2018).

Public Transportation

For diabetes patients, accessing health care on time could be a matter of life and death. Effective diabetes management requires frequent interactions between patients and providers and visits to health care centers (Thomas, Wedel, & Christopher, 2018). Therefore, it is imperative that facilitation is made available for easier access to these

services, especially for those in rural settings (Thomas, Wedel, & Christopher, 2018). Geographical location and the lack of transport have often been cited as significant barriers to access to care among people with diabetes (van Gaans & Dent, 2018). Among Latinos, lack of transportation was perceived as one of the critical barriers to access to health-related care (Hildebrand et al., 2018; Luque et al., 2018). In Melbourne, Australia, it was discovered that transport and travel times played a crucial role in managing diabetes (Madill et al., 2018). Transportation to access diabetes health services, mainly specialists, is paramount in diabetes management and needs to be affordable by all people with diabetes (Madill et al., 2018; Timbie et al., 2019). Public transport is even more beneficial for those with diabetes who may not have or use private means (Madill et al., 2018). Roberts (2017) established that when health resources were taken to those who needed them despite being geographically dispersed, positive health outcomes were noted. Additionally, while the distance to services is viewed as a significant hindrance, planning needs to go into finding effective ways of bringing services to the areas where they are most needed (Toivakka et al., 2015). These observations prove that accessing tertiary level prevention services could be either by bringing them to those who need them or helping those who need them gain access to the services.

In support of observations made by O'Brien et al. (2015), among Hispanics with diabetes, there is a need for further exploration of the reasons why diabetes prevention programs and interventions have not been effectively utilized. Upon understanding the barriers to access, further studies need to be carried out on the reasons for the low utilization of tertiary level prevention services.

Synthesis of Studies Related to the Research Question

Studies addressing the association of environmental factors with access to tertiary level prevention among Hispanics have not been carried out. However, some studies have been carried out on the association between environmental factors and access to health care. For instance, Brown et al. (2018) conducted a study to determine the barriers Mexican Americans living in a rural community at the Texas-Mexico border faced when trying to adopt healthier lifestyles. The study was also carried out to establish recommendations for diabetes prevention. Participants were females diagnosed with prediabetes or T2DM, foreign-born and Spanish speakers. Interviews conducted by bilingual Mexican American moderators were tailored to prioritize diabetes prevention through managing healthier food intake and addressed cultural and lifestyle factors. Among the issues raised as barriers to diabetes prevention were costly healthy foods, fatigue from busy schedules and working multiple jobs, fear of deportation, and that culturally, exercising was deemed as a waste of time. Enough information was obtained from this study to apply in the prevention of diabetes-related complications. Training on healthy lifestyles and designing of culturally sensitive practices that would benefit Mexican American, diabetes patients was suggested. Limitations included the lack of investigation in the role of environmental factors in diabetes prevention and inconsideration of men's opinions. Recommendations included continued assessment and implementation of strategies to address these barriers as they were prone to change based on environmental, socio-cultural, and political shifts.

Piccolo et al. (2015) conducted a study using data from a Community Health Survey in Boston, focusing on adults from three ethnic groups–Blacks, Hispanics, and Whites. The neighborhood factors considered included property and violent crime, proximity to grocery stores, convenience stores, fast food, socioeconomic status, racial composition, open space, and neighborhood disorder. The prevalence of T2DM was based on glucose levels over 125mg/dl, HbA1c > 6.5%, or self-reported diagnosis. After applying a logistic regression, it was determined that Blacks and Hispanics had higher odds of having T2DM. Findings were controversial as they showed that overall, the neighborhood factors were not a significant contributor to the racial/ethnic disparities in T2DM prevalence in Boston. These findings, however, opened avenues for further investigations based on location, factors, methods, and probably population of interest. The researchers recommended that further research on the role of environmental factors needed to be done in other geographic locations. Specific aspects of the neighborhoods that influence health, including T2DM, needed to be researched.

In seeking to understand the association of gender differences and access to T2DM care, Suresh and Thankappan (2019) conducted a systematic review. The authors also sought to identify the barriers women faced in accessing this care. The researchers used English articles on accessibility to T2DM care sorted by gender and published between 2005-2017. It was established that women with T2DM faced more difficulties accessing the care they needed. Several reasons were presented as challenges for women in accessing T2DM care, including geographical barriers, health systems, economic and social causes, and some personal. Because the systematic review was based on only a few

studies, it was recommended that more studies could help add to the findings. This study' findings confirmed that barriers to access to T2DM care for those who needed it did exist.

Luque et al., (2018) carried out a study to examine the barriers Latina immigrant women faced when attempting to access health care. The study was carried out in South Carolina, currently considered a major destination state for Latino immigrants. Most of the Latina immigrant women were uninsured and consequently suffered poor health outcomes. Interview themes were centered around barriers and facilitators to healthcare access, health behaviors and coping mechanisms, disease management strategies, and cultural factors. It was observed that while the participants were willing to get care, they were hindered by various factors. Some of those factors cited included lack of health insurance, work schedules, lack of financial resources, fear of deportation, and language barriers. To cope, the participants relied on their social networks and families to assist them in navigating life's challenges. Findings showed that some of the factors that impacted Latino's frequency of contacting health care providers and systems were dire and needed to be addressed for positive health outcomes.

Summary and Conclusions

Major Themes in the Literature

Having read and reviewed literature related to diabetes and access to tertiary level prevention, I concluded that there were four main themes to pay attention to. First was that diabetes remains a problem that affects many regardless of age, race, gender, or location. The effects and impact of diabetes can be felt at an individual, community, and systemic levels. The management of diabetes is an on-going process and needs to be

adhered to if further complications are to be prevented. Prevention of diabetes can occur at the primary level for those without diabetes, but tertiary level prevention is critical to those already diagnosed with the disease. The second central theme was that tertiary level prevention is vital for people with diabetes as it helps prevent the occurrence of more severe complications. Research attesting to the benefits of diabetes management and tertiary level prevention have been conducted. However, these benefits were provided in specific locations by trained professionals, presenting an urgent need for diabetes patients to access these services. The third central theme was that accessing tertiary level prevention is critical and needs to be encouraged for people with T2DM. The benefits of accessing health care and tertiary level prevention are known, yet, not all who need this care have access to it, especially those in the Hispanic community. The factors that are perceived as barriers to accessing tertiary level prevention by Hispanics with diabetes vary. The fourth central theme of the literature was that for the environmental factors perceived as barriers, major categories identified included but are not limited to individual perceptions of crime, infrastructure and system-related, accessibility to services, and quality of care provided. This study attempted to examine the association of neighborhood crime, community health centers, public transportation, culturally competent providers, residential setting, and distance to T2DM education classes with access to tertiary level prevention among Hispanics diagnosed with T2DM.

What is Known Related to the Topic of Study

Investigators agree that environmental factors play a crucial role in obtaining health care services. The benefits of accessing health care for people with diabetes have

been well-researched and documented and recommendations made for those with chronic diseases like diabetes. Further, studies highlighting the barriers to access to health care and its impact on health outcomes have been conducted. The well-researched restrictions vary and can be categorized as individual factors, community factors, policy, and environmental. The importance of tertiary level prevention for those with chronic problems has also been well documented, and there are T2DM patients that have not accessed these services despite needing them. Not many studies on barriers to access to tertiary level prevention have been conducted, specifically, research linking environmental factors to access to tertiary level prevention has not been carried out at all. Most studies have either addressed one or two environmental factors against access to health care, but none precisely assess the combination of the chosen six factors. Additionally, research has been based on access to health care in general and not tertiary level prevention specifically, which is critical for people with diabetes. Additionally, not much assessment has been done on the effect of the chosen neighborhood factors on T2DM patients specifically. Further, such studies have not been carried out among Hispanics or Latinos. Although it is clear from previous research that not all patients have access to these preventative services, very little has been investigated on the barriers to access to tertiary level prevention among Hispanics diagnosed with T2DM. Therefore, it is vital to understand the role the chosen environmental factors play in accessing tertiary level prevention among Hispanics with a T2DM diagnosis.

Gaps Filled by the Study

The reviewed research findings attest to the existence of environmental obstacles to access to tertiary level prevention among Hispanics with T2DM. The results of this study could help in understanding and linking neighborhood factors to access to tertiary level prevention within the Hispanic population. Such studies have not been carried out before, and this study fills this gap. The study's findings uniquely addressed the need to understand how environmental factors impact access to tertiary level prevention for Hispanics diagnosed with T2DM. Based on the variables reviewed in this research, the results could increase awareness among Hispanic diabetes patients on the neighborhood factors that influence access to tertiary level prevention. This study could also add to the body of knowledge as to which environmental factors to be mindful of when planning diabetes management practices to prevent further complications among diabetes patients. Additionally, the study findings could act as a source of information on the benefits of accessing tertiary level prevention, which is critical for T2DM patients. With the knowledge of potential environmental challenges, diabetes patients, their caretakers, and health care providers could incorporate measures of overcoming these environmental barriers in the diabetes management regimen. Also, policymakers and researchers could apply the study findings to design targeted solutions that address the environmental factors that impede access to tertiary level prevention for Hispanics diagnosed with T2DM. Academicians, educators, and community workers could use this study's results to tailor their education, treatment, and diabetes management practices in ways that prioritize tertiary prevention while avoiding environmental barriers. Understanding the

role of environmental factors in accessing tertiary prevention could have wide-spread benefits, like limited post diabetes diagnosis complications and improved health, consequently becoming a social change tool.

In sum, based on the findings, it is evident that factors influence access to tertiary level prevention among Hispanics with T2DM. There is a need to categorize them to assess the impact of each on access to tertiary level prevention. Since there are several factors, it is crucial to test the effect of each IV on the DV. In Chapter 3, I will present an in-depth description of the research design, methodology, data collection, ethical considerations, and data analysis. I used already collected secondary data on each of these factors within this population.

Chapter 3: Methodology

Introduction

The study purpose was to examine the association between neighborhood crime, the absence of community health centers, the lack of culturally competent providers, lack of public transportation, the residential setting, the distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM in the United States. In 2015, 30 million people in the United States were diagnosed with diabetes, 12.1% of which were Hispanics (ADA, 2019; CDC, 2017b). With the increasing prevalence of diabetes among Hispanics, who are a large portion of the U.S. population, finding ways of preventing further complications and retarding the progression of the disease is critical (ADA, 2019; CDC, 2017b). Diabetes patients need to promptly access tertiary level prevention services offered in the physical and virtual settings to improve their health outcomes (Lachance et al., 2018; Mogre et al., 2019; Toivakka et al., 2015).

In this chapter, I will review the research design and the rationale for its choice while highlighting the study variables. I will provide a detailed description of the methodology as well as the data sources and procedures used to access them. This section will also include a description of the study population, how it was chosen, target size, and sampling methods. I will provide a detailed description of the threats to validity and highlight the institutional review board (IRB) process while emphasizing any ethical concerns related to the data collection. The chapter will end with a summary of the methodology aspects as described, followed by a preview of Chapter 4.

Research Design and Rationale

The study was a retrospective quantitative research with a cross-sectional method because it is used to consider the prevalence of a disease and the outcome in a portion of the population (Cherry, 2019; Setia, 2016). For this study, the target population was Hispanics diagnosed with T2DM. Additionally, the design allows for the comparison of different variables simultaneously in each community (Cherry, 2019; Setia, 2016), which aligned with the goals of this study. Further, this study aimed to determine whether there is an association between the exposures and outcome and not to investigate causal relationships, making the cross-sectional design suitable (Gallin, 2018; Public Health Action Support Team, 2020). The study was retrospective because I used previously collected information on past experiences with no follow-up expected (Hess, 2004). Data had already been collected and stored by the CDC, allowing for the investigation of potential relationships (Frankfort-Nachmias & Nachmias, 2008). In this study, the DV was access to tertiary level prevention, and the 6 IVs included neighborhood crime, culturally competent providers, community health centers, culturally competent providers, public transportation, the residential setting, and distance to T2DM education classes. The IVs were assessed under the enabling factors domain of the ABM. There were no covariate, mediating, or moderating variables included in the study.

Time and Resource Constraints

Because this quantitative study relied primarily on secondary data already collected, sorted, and validated by the CDC (2015a), no physical data collection was conducted. There was also no need for follow-up (Public Health Action Support Team,

2020). Publicly available electronic data from the CDC database were used in examining the influence of the chosen environmental factors on access to tertiary level prevention. Due to this, the need for extra time and resources for fieldwork was eliminated, allowing me to focus on analyzing the already collected data. The use of secondary data minimized or even dismissed the constraints related to collection time and resources.

Design and Knowledge Advancement

In this study, I sought to understand the factors that hindered Hispanics diagnosed with T2DM from accessing tertiary level prevention at any given point in time. After carefully reviewing similar studies (Lan et al., 2017; Nicklett et al., 2017; Smalls et al., 2015a, 2015b; Tamayo et al., 2016; van Gaans & Dent, 2018;) and reading about the various research designs (Allen, 2017; Cherry, 2019; Frankfort-Nachmias & Nachmias, 2008; Nour & Plourde, 2019; Zangirolami-Raimundo, 2018), I determined that for this study, a quantitative cross-sectional research design was the most appropriate. The cross-sectional design is a well-established research design in health research (Allen, 2017; Cherry, 2019). Researchers have used this design to study specific populations looking for relationships between various variables, allowing them to explore more and develop in-depth solutions (Cherry, 2019). This study design has been used for public health planning and monitoring, which encourages the advancement of knowledge in the discipline (Setia, 2016). Additionally, the design is used and helpful in determining how many people in a population are affected by a health condition and whether the frequency of occurrence varies by population characteristics (Hemed, 2015). Therefore, the design was chosen to examine the relationship between the selected neighborhood factors and

tertiary level prevention among Hispanics with T2DM, which may advance public health knowledge on the impact of neighborhood factors on chronic disease complications.

Methodology

Target Population

Statistics obtained from the U.S. Census Bureau (2018) indicated that in 2015, 58.8 million people (18% of the U.S. population) were Hispanics, making it the second-largest ethnic group. Hispanics continue to grow in numbers, and projections show that by the year 2060, Hispanics will have grown to 119 million (28.6% of the total U.S. population; Colby & Ortman, 2015). In a report published by the ADA, it was shown that in 2015, 12.1% of adults diagnosed with T2DM were Hispanics (ADA, 2019). Given these statistics, a study focusing on the Hispanic population in the United States was deemed beneficial to a significantly large portion of the nation's population. The target sample size of 4,977 was determined as described later in the chapter.

Sampling and Sampling Procedures

Because I used secondary data initially collected by the CDC, I emulated the agency's sampling strategy. The CDC (2019c) applies stratified sampling and simple random sampling using random digit dialing of all households in each state in the United States. The BRFSS collects data from randomly selected non-institutionalized adults, 18 years or older, residing in the United States, and all responses are self-reported (CDC, 2018a; CDC, 2019c).

Sampling frame. The participants selected for inclusion in this study were Hispanics with a diagnosis of T2DM, 18 years and older, and residing in the United

States. Each participant chosen had to have been enrolled in the CDC during the period of data collection. Eligible participants were either male or female. Eligible participants of different ethnicities were not considered. Additionally, Hispanics with missing values related to the study variables were excluded. Hispanics with diabetes under 18 years of age were not regarded, as the data collected by the BRFSS are only on those 18 and above, and the study focus was on T2DM. Per the WHO (2019), T2DM is prevalent in adults, whereas type 1 diabetes is most commonly diagnosed among younger individuals. Finally, only data relating to participants in the United States was considered, leaving out other parts of the world. I chose a sample of (N = 4,977) for statistical analyses.

Sample size (power analysis). This study involved one DV and six IVs, and I applied Pearson's Chi-square test of independence in data analysis. It is generally recommended that the sample size should be large enough to achieve beneficial results but should not be too large to create unnecessary burdens (Cunningham & McCrum-Gardner, 2007). Various tools can be used to calculate sample size depending on the type of data or study design (Yenipinar, Koc, Canga, & Kaya, 2019). For this study, G*Power was used to calculate the sample size, with the parameters of this tool including the alpha level (α), power level, effect size, and the sample size (Yenipinar et al., 2019). Alpha is used to determine statistical significance, and the commonly used level of significance is .05 (Pancholi, Dunne, & Armstrong, 2009; Scruggs, 2017). The power level determines true or positive significance, and the standard is .80 (Pancholi, Dunne, & Armstrong, 2009; Scruggs, 2017). Effect size, which helps measure the difference in outcomes of

groups, is usually an estimate ranging from small of .10 to a large of .50 (NCSS Statistical Software, n.d; Scruggs, 2017).

Utilizing G*Power 3.1.7 calculator to determine the minimum sample size, I used α of .05; power level of .80 and medium-size effect of .30 based on commonly used standardized effect sizes for Pearson's Chi-square test for independence (Cunningham & McCrum-Gardner, 2007; Faul, Erdfelder, Lang, & Buchner, 2007; Pancholi, Dunne, & Armstrong, 2009). I determined the degrees of freedom using the formula (R-1) (C-1), where R is the number of rows and C is the number of columns (Faul et al., 2007; NCSS Statistical Software, n.d). For a 6 by 2 table, the degree of freedom = (6-1) (2-1) = 5. Using the above parameters, the power analysis results indicated that this study would require a minimum sample size of $N = 143$.

Procedures for Recruitment, Participation, and Data Collection

Archival data sources. For this study, data were extracted from the BRFSS, a CDC-managed database. The BRFSS is a nationwide system that holds health-related information collected by telephone surveys for all U.S. residents (CDC, 2019a). Data are categorized by indicators, demographics, and location (CDC, 2019e). The data collected relates to risk behaviors, chronic health conditions, and the use of preventive services (CDC, 2019a). U.S. data on health status and determinants, utilization of health resources, health care resources, and health care expenditures and payers, broken down by age, geography, socioeconomic status, race, and gender can also be obtained (CDC, 2018c). For this study, data included a measure of diagnosis of diabetes (CDC, 2018c; CDC, 2019e), availability of healthcare resources (CDC, 2018c), accessibility and

utilization of health resources for preventative care (CDC, 2019a), health status and determinants (CDC, 2018c), and environmental factors (CDC, 2019a). The timeframe was determined by the most recent complete data collected and available in all U.S. states.

Gaining access to the data set. Publicly available electronic data were used in examining the influence of the chosen environmental factors on access to tertiary level prevention. The CDC provides open datasets online, and it is indicated that the HIPAA waiver is approved by the IRB, eliminating the requirement for researchers to obtain IRB reviews (CDC, 2003). Because data from public domains are free, no written permission was sought nor obtained, and no IRB letter was requested or provided. Additionally, no historical or legal documents were used in this study.

Instrumentation and Operationalization of Constructs

Developer and year of publication. The CDC developed its instruments in the late 20th century to address issues related to chronic diseases (CDC,2014). Having identified certain personal behaviors as increasing contributors to chronic diseases that were leading killers in the United States, the CDC designed a survey in 1984 to collect pertinent health information (CDC, 2014). The data collected as a result of this CDC survey instruments were utilized in this study.

Appropriateness to the current study. The kind of data collected by the CDC are uniform nationwide and applicable to current critical health situations (CDC, 2014). The BRFSS as a source of secondary data was appropriate for this study as data collected were related to health risk behaviors, chronic conditions, and use of preventive services

(CDC, 2014; CDC, 2019a), which aligned with the interests of this study. Additionally, data from the system can be trusted, as the BRFSS has been operative for over 35 years, covering all 50 U.S. states as well as the District of Colombia and the three territories (CDC, 2019a). The richness and vast amount of information in the CDC database also made it ideal for this study (CDC, 2019a). In the past, many researchers have also utilized BRFSS data, a testament to its validity and reliability. Additionally, the interactive nature of the CDC database made it easy to access and transfer data to the analysis tools, which minimized error. For instance, within the CDC database, diabetes data were categorized by demographics, including age, gender, and education, and location, broken down by county, state, and national levels (CDC, 2019e). Data collected for this study aligned with the DV and IVs.

Published reliability and validity values. For credible research, reliability and validity are the two most fundamental indicators used to measure instruments (Haradhan Kumar Mohajan, 2017). Reliability speaks to the stability of research findings, whereas validity alludes to the truthfulness of the results (Haradhan Kumar Mohajan, 2017). All CDC data are collected using the required standards for reliability and validity and processed to protect participants' confidentiality (CDC, 2019c). Because this data was collected with tools tested by the BRFSS, a reputable public research agency, I considered the data to be reliable and valid. Several studies have been conducted using the CDC and BRFSS data, which speaks to this source's validity and reliability. For instance, Luo, Chen, Xu, and Bell (2019) used data from the BRFSS on adults with diabetes aged 18 to 64 years from 22 states, and they established that while

Medicaid expansion improved health care access, no significant improvement was seen on clinical care receivership among people with diabetes. Using data collected from the BRFSS, Towne et al. (2017) established that the likelihood of diabetes was higher among racial and ethnic minority groups, men, those with lower incomes, and those with lower education. It was also established that the prevalence of diabetes and forgone medical care among those diagnosed with diabetes was higher among these groups (Town et al., 2017). Further, Liu et al., (2016) used BRFSS data and concluded that additional efforts were needed to increase the proportion of the population engaged in all five health-related behaviors and eliminate geographic variation. Research findings and recommendations like those cited would not have been arrived at had it not been for the available data from the BRFSS. The CDC covers various topics and populations in the United States, speaking to its applicability, reliability, and validity as a data source.

Previous use of the instrument and establishment of validity/reliability. Several studies have been conducted using CDC databases as sources of data, some of which have been discussed. Various researchers within the United States and across the world have access to the CDC instruments and can utilize the data sets for multiple categories of populations in their studies. Being secondary datasets, as opposed to primary datasets, the tools have undergone scrutiny to establish their validity and reliability. The CDC databases are the largest and continuously updated surveys to which national and state-based data is added monthly (CDC, 2014). Aside from diabetes, the CDC databases play an essential role in monitoring and recording various chronic diseases as well as Healthy People 2020 objectives (CDC, 2019h). The CDC data have

been invaluable and vastly utilized by researchers in the United States and worldwide in building their studies. Various topics have been covered as well as different populations within the U.S.

Since 2011, CDC data collected by state health personnel or contractors using both landline and cellphone responses reflect a weighting methodology (CDC, 2014; CDC, 2018a; CDC, 2019c). Data are transmitted to the CDC for editing, processing, weighting, and analysis, and thereafter sent to each participating state health department for each year of collection. Weighting (raking) accounts for the probability of selection, adjusts for non-response bias and non-coverage errors. Raking also helps adjust for demographic differences between the sample and the population represented. Weighting is necessary if generalization is to be made from the sample to the population (CDC, 2019c).

Operationalization

The study had one DV and six IVs. The IVs included neighborhood crime, the absence of community health centers, lack of culturally competent providers, lack of public transportation, the residential setting, and distance to T2DM education classes. Based on the data collected from the BRFSS, all the selected variables were categorical or nominal and are defined in the following sections.

Dependent variable: Access to tertiary level prevention. The ability to get to a location where the required medical attention is provided or where health care providers are located for purposes of preventing further complications (HealthyPeople, 2019).

Independent variables. The IVs were neighborhood crime, community health centers, culturally competent providers, public transportation, distance to T2DM classes, and residential setting. Neighborhood crime referred to the presence of crime that can affect the people who live there (Kneeshaw-Price et al., 2015; Wilson, Brown, & Schuster, 2009). Community health centers are places that provide access to care despite barriers to medical attention like distance and cost (National Association of CHCs, 2019). Culturally competent providers meet the needs of diverse patients (Flores, 2017; Health Policy Institute, n.d.; Jin et al., 2017). Distance to T2DM classes referred to distance and time to obtain diabetes knowledge (Kelly, Hulme, Farragher, & Clarke, 2016).

Table 1

Variables, Level of Measurement, and Values Analyzed

Name of variable	Level of Measurement	Assigned Values
Dependent Variable		
Access to tertiary level prevention	Nominal/Categorical	0 = Access; 1 = No access
Independent Variable		
Neighborhood crime	Nominal/Categorical	0 = Present; 1 = Absent
Community health centers	Nominal/Categorical	0 = Present; 1 = Absent
Culturally competent providers	Nominal/Categorical	0 = Present; 1 = Absent
Public transportation	Nominal/Categorical	0 = Available; 1 = Unavailable
Residential setting	Nominal/Categorical	0 = Urban; 1 = Rural
Distance to T2DM classes	Nominal/Categorical	0 = Near; 1 = Far

Data Analysis Plan

Software used. I used the Statistical Package for the Social Sciences (SPSS) version 25 to analyze data collected for this study to examine if there was an association between the IVs and DV. I expected the SPSS statistical software to provide meaningful insights from the dataset and predict the statistical significance of the variables used in

this study (IBM, n.d). Data were downloaded from the CDC websites and was transferred as a file to SPSS. SPSS as a tool can provide both inferential and descriptive statistics using all the statistical tests available to address the research question (Kent State University, 2020b). Descriptive statistics, including tables, were used to present the study findings. I used Pearson's Chi-square tests of independence to determine if the variables were linked in any way. All testing was conducted using an alpha level of .05 for statistical significance. If the p-value was less than or equal to .05, the null hypothesis would be rejected, and the alternative accepted. If the p-value was greater than .05, the null hypothesis would be accepted, and the alternative rejected.

Data cleaning and screening procedures. Since data were collected from the CDC databases, it was considered valid and reliable as it was weighted or raked (CDC, 2019c). CDC data are weighted to ensure that all eligible participants have the probability of being selected (CDC, 2019c). The data are also weighted to eliminate any potential non-response bias, non-coverage errors and ensure the inclusion of more demographic variables (CDC, 2018c; CDC, 2019c). Weighting also helps in adjusting for the demographic differences between the sample and the population represented, which is necessary if generalization is to be made from the sample to the population (CDC, 2019c). The above-described steps speak for the validity and reliability of the CDC data. For data screening and cleaning, I collected and sorted data by variable, coded, and stored it in a data management system. The data were reviewed to ensure that only complete and available data was transferred to SPSS for analysis. To ensure that data were correctly entered in the software, there was thorough checking of the completed inputs.

Research question and hypotheses. RQ: Is there an association between neighborhood crime, absence of community health centers, residential setting, lack of public transportation, lack of culturally competent providers, distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM?

H_0: There is no association between neighborhood crime, absence of community health centers, residential setting, lack of public transportation, lack of culturally competent providers, distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM.

H_a: There is an association between neighborhood crime, absence of community health centers, residential setting, lack of public transportation, lack of culturally competent providers, distance to T2DM education classes, and access to tertiary level prevention among Hispanics diagnosed with T2DM.

Statistical testing. The statistical testing was predicated by the research question and the hypothesis. I tested each IV against the DV to establish if there was an association between the two variables. When attempting to investigate the association between categorical variables, Pearson's Chi-square test of independence is used (Frankfort-Nachmias & Leon-Guerrero, 2018; Kent State University, 2020; Suresh, 2019). The Pearson's Chi-square test assumes that the participants are randomly picked from the population during data collection, the variables being tested are mutually exclusive with each subject fitting in only one category, the data are in the form of frequencies that are countable, and the observations are independent of each other (McHugh, 2013; Suresh, 2019). The assumptions need to be fulfilled before Pearson's

Chi-square tests can be carried out. For this study, I used Pearson's Chi-square test, and the alpha level (p-value) of .05 was applied in testing for statistical significance. If the p-value was less than or equal to .05, the null hypothesis was rejected (and the alternative accepted), concluding a relationship between the two variables existed. If the p-value was greater than .05, the null hypothesis was accepted (and the alternative rejected), concluding that there was no significant relationship between the variables. While Pearson's Chi-square test of independence informs of the existence of an association or relationship between variables, it does not show causation or the strength of the relationship (Frankfort-Nachmias & Leon-Guerrero, 2018; Kent State University, 2020). I tested for the association in this study but not predictability or causation between the two categorical variables. During analysis, I carried out statistical testing to ensure that all conditions of the Pearson's Chi-square assumptions were met. I tested to determine if the categories were mutually exclusive, the data were categorized, the participants were randomly selected during data collection, and if the variables were independent of each other before carrying out Pearson's Chi-square test. In the event that the assumptions were not met or were violated, I planned to use Fisher's exact test of independence, which is a non-parametric test used when there are two nominal variables, and to determine how one variable affects the other (McDonald, 2014). This test is used when the sample size is less than 1,000 (McDonald, 2014; McHugh, 2013). As an alternative, I planned to use the maximum likelihood ratio Chi-square test which is used when the data set is too small to meet Pearson's Chi-square test's sample size assumption (McHugh, 2013).

If the Pearson's Chi-square analysis results were statistically significant and showed a relationship between the variables, a further test was to be carried out to test the strength of the association. Statistical significance between two variables is not enough unless it is substantively important (Acastat, 2015; McHugh, 2013). The Phi and Cramer's V coefficients are some of the measures of association used with Chi-square tests to establish the strength of the relationship between variables (Acastat, 2015; Laureate Education, 2016). I planned to apply Cramer's V in this study. According to McHugh (2013), Cramer's V is the most common strength test used in data testing following statistically significant Chi-square results. The Cramer's V is useful for comparing multiple Chi-square test statistics and can be generalizable across contingency tables of different sizes (Acastat, 2015). Also, Cramer's V is not impacted by sample size (Acastat, 2015). The coefficient is calculated by getting the square root of the Chi-square divided by the sample size, times m, which is the smaller of (rows–1) or (columns–1) (McHugh, 2013). The coefficient ranges from 0 to 1, with 0 indicating no relationship and 1 indicating a powerful perfect relationship between the variables (Laureate Education, 2016). A positive coefficient confirms the existence of a relationship.

Potential covariates and confounding variables: Rationale for inclusion. No covariates or confounding variables were included in this study. Confounding variables are factors other than the IVs that may affect the DV, causing effects on the observed association between exposure and outcome (Alexander, Lopes, Ricchetti-Masteron, & Yeatts, 2015). They are the extra variables that are not accounted for in a study (McDonald, 2014; Radaelli & Wagemann, 2019). Though available, data on factors like

socioeconomic status, insurance, and marital status, which could also potentially affect access to care, were not considered in this study. To make up for the exclusion of confounding variables in this study, I selected a large sample size (N = 4,977), which would increase the statistical power and create unbiased parameter estimations allowing for the validity of my analysis (Faber & Fonseca, 2014).

Interpretation of results. I conducted descriptive analyses where I presented secondary data in a meaningful way allowing for more straightforward interpretation (Taylor, 2018). I assessed the collected data looking out for patterns and describing them in ways that helped draw meaningful conclusions. Using descriptive statistics provided an opportunity to evaluate the study's demographic information and develop tables that summarized the data findings (CDC, 2018b; Trochim, 2020).

Threats to Validity

External Validity and How They Were Addressed

According to Creswell (2009), validity and reliability are critical principles in research and analysis. Validity alludes to users' ability to draw meaningful and useful inferences from instrument scores (Creswell, 2009). The threats to validity, which are both internal and external, must be identified to allow for the establishment of mitigants (Creswell, 2009). Threats to external validity occur when researchers draw incorrect inferences from a sample (Creswell, 2009). In this study, a potential threat to external validity was the non-inclusiveness of all variables influencing access to tertiary level prevention among Hispanics diagnosed with T2DM. While I choose six neighborhood factors for this study, they were not inclusive of all potential barriers to accessing tertiary

level prevention within this population, resulting in omitted bias. Omitted bias occurs when a variable is excluded as a predictor (IV) in the regression model that might impact the outcome (DV) (Radaelli & Wagemann, 2019). Also, I did not utilize all possible applicable models in this study. For instance, the SEM, which considers the individual, their affiliations with people, community, organizational, and environmental levels (Coreil, 2010), could be applicable in this study. However, I did not employ it because this study's interests would not utilize all the five components of the SEM. This study would only exploit one component of the SEM, rendering others redundant. Additionally, the SEM is not specific to access to tertiary level prevention. Further, the study findings would not be generalizable to all ethnic groups as the focus was on Hispanics diagnosed with T2DM, yet the disease affects other ethnicities. The results could be generalizable for Hispanics with T2DM residing in the United States. but not those in other countries. Finally, being a cross-sectional study, no causal relationships were established.

To minimize threats to external validity, I chose my design and methods mindful of the composition of the population of interest. I used a large sample (N = 4,977) representing the whole Hispanic population in the United States diagnosed with diabetes in 2018, with access to tertiary level prevention. I chose variables from the CDC database that were most aligned and closest in definition to the meaning of the intended variables under investigation.

Internal Validity and How They Were Addressed

Threats to internal validity occur when influences other than the IVs could explain study results (Gilston, 2015). A potential limitation of this study was that it excluded

Hispanics with diabetes who did not receive a formal diagnosis from a healthcare professional. Also, Hispanics diagnosed with T2DM below the age of eighteen and those residing outside the United States were excluded. Eligible participants with missing data and those of different ethnicities were also eliminated. Non-Hispanics with T2DM were omitted. According to Nohr and Liew (2018), selection bias occurs when participants have different probabilities of being selected based on exposure or outcomes of interest, creating biased results. Since I considered only Hispanics with a formal diagnosis of T2DM, selection bias was likely present in this study. Finally, I used 2018 data, which was the latest complete available data, but not from the most current year, creating a limitation as the statistics may have changed since the time of collection. To reduce this bias, I chose a large sample of participants ($N = 4,977$) based on the CDC's weighted data. Weighting accounted for selection bias (CDC, 2019c).

Confounding variables. A significant limitation of this study was the absence of potential confounding variables, which could affect internal validity. Confounding variables are those factors other than the IVs that may impact the observed associated outcome (Alexander et al., 2015). While data on other factors that could potentially affect access to tertiary level prevention was available, I only considered environmental factors. The selection of a large sample size ($N = 4,977$) increased the statistical power and created unbiased parameter estimations, allowing for the validity of my analysis (Faber & Fonseca, 2014).

Maturation bias. Physical, biological, or psychological changes among individuals could threaten the internal validity of a study's findings (Lund Research Ltd,

2012). Over time, people are affected by different factors that could jeopardize or influence access to tertiary care patterns among adults living with T2DM. To address this bias, I examined the results with the understanding that preexisting differences could play an unknown role in the study findings. I did not foresee any threats to construct or the statistical conclusion validity of this study and based on the results, there was no evidence of the influence of this bias.

Ethical Procedures

Data access. Data for this study were obtained from the free online publicly available CDC database, and no permission was needed to access it (CDC, 2018a). Although I did not sign any agreements to access the public data, as expected of all data users, I abided by the CDC's confidentiality agreements (2017b).

Treatment of human participants. In research, protecting participant's privacy and safety is critical and needs to be adhered to by all researchers. The Walden University Institutional Review Board (IRB) is responsible for ensuring that all researchers abide by the ethical standards and follow federal regulations involving data collection and analysis (Walden University, 2020b). This study used publicly available secondary data obtained from the CDC, therefore, no access to human participants was expected. Due to this, no IRB approvals were required to access participants. However, I followed and maintained all the ethical standards required by the IRB in obtaining secondary data. The IRB reviewed my proposal for compliance with all ethical protocols regarding my study participants.

Ethical concerns: Recruitment materials and processes and data collection. The use of secondary data for this study eliminated the need and processes for recruitment materials. Also, there was no intervention activity in this study. Secondary data were used, and I abided by all the ethical standards when requesting, collecting, and accessing the datasets.

Treatment of data. This research study utilized anonymous secondary data from the CDC database. The datasets were unidentified and did not include the name or identity of any of the participants. There was no access to any personal or identifying information to cause bias or conflict of interest. To further protect the participants' confidentiality, no attempts to attain any personal information were made. During data analysis, I upheld ethical judgment, fully aware of the contractual obligations established between the participants and the primary data collectors (the CDC).

Protection of confidential data. Even though the data were anonymous, the CDC required all data users to adhere to the data-use standards that allowed for the safeguarding and non-disclosure of confidential information (CDC, 2017c). I protected all data and records collected, allowing no access to anyone. Ethical practices were followed to preserve and store data so that its integrity was maintained for the duration allowed electronically. No one currently nor will in the future have access to my laptop on which all data were stored. The computer is password protected and is always under lock and key only accessed by me. Data will be deleted upon elapse of the five-year required period.

Other ethical issues. For the entire data collection and analysis process, I worked in my home office, eliminating work environment-related conflicts. None of the information collected or accessed was shared with anyone during the analysis. I upheld the highest virtue of academic integrity by honoring privacy and confidentiality requirements at all levels of the study. I did not allow any unauthorized transmissions, falsifications, alterations, or modifications to the confidential information in the dataset.

Summary

The primary purpose of this research study was to examine the association between specific environmental factors and access to tertiary level prevention among Hispanics diagnosed with T2DM. I used a cross-sectional retrospective quantitative design, utilizing secondary data from the CDC. I provided and discussed in detail information on the research method and design. A detailed description of the study methodology that included a description of the target population, the study participants, and the sampling procedures used to obtain the data were discussed. I also provided reasons and justification for the sampling strategy used in the study, including both the inclusion and exclusion criteria of the sampling framework. The operationalization for each of the variables was defined and discussed, plus their levels of measurement. I restated the research question and hypothesis, as well as described the statistical methods that were used to address the research question. I also identified the statistical software that was used in analyzing the data. The threats to validity, both external and internal threats, were discussed and how their effects were mitigated in this study. The ethical procedures and the agreements required to gain access to the secondary data were

discussed in detail. I also stipulated all the steps taken to meet IRB requirements as well as maintain participants' confidentiality.

In Chapter 4, I will report on the data collection measures, the characteristics of the sample, and overall study results. I will provide a detailed view of the statistical assumptions, analysis, and tests. This section will also include tables and figures as applicable. This segment will be followed by a summary of the research findings.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine the association between access to tertiary prevention among Hispanics diagnosed with T2DM and neighborhood crime, the absence of community health centers, the lack of culturally competent providers, the lack of public transportation, the residential setting, and the distance to T2DM education classes. The research question and hypotheses were designed to establish whether there was an association between the selected IVs and access to tertiary level prevention within this population. In this chapter, I will give a detailed description of the data collection process, the time frame, demographic characteristics of the sample, and sampling measures used. I will provide descriptive features of the sample and study results, including assumption testing and hypothesis testing results. The chapter will be concluded with a summary of the answer to the question, followed by a preview of Chapter 5.

Data Collection

The study relied primarily on publicly available electronic data already collected, sorted, and validated by the CDC (2015a) in examining the influence of the chosen IVs on access to tertiary level prevention. Data were extracted from the BRFSS, a nationwide system that holds health-related information collected by telephone surveys from all 50 U.S. states and territories, without revealing the participants' identity (CDC, 2019a, 2019d, 2020). For this study, the data used were available online with no permission required to access it (CDC, 2019b). Having followed all the Walden University protocols,

it was determined that the University IRB would oversee the data analysis, reporting of results, and review the dissertation upon completion. I was authorized to conduct my research using data from the CDC database, and my approval number was 08-19-20-0674533. Data were downloaded and transferred as a file directly to the analysis tool – SPSS.

Values were dropped for cases where the response was "Don't know / Not sure" or "refused." Upon completion of data collection, it was realized that for some variables, the measures used in the BRFSS data did not align with those of the study variables, resulting in the elimination of these variables from study testing. Data on neighborhood crime was not available in the 2018 BRFSS dataset. Additionally, BRFSS data collected referenced patients taking T2DM classes instead of the distance to where these classes were being offered. The mismatch in measures resulted in eliminating the variable distance to T2DM education classes from the analysis. The variable presence of community health centers was also eliminated as it was already used to explain access to care. In this study, access to care was defined as diabetes patients' ability to access a location where health care providers are or where the needed diabetes care is being provided (HealthyPeople, 2019) for purposes of preventing further complications. For the remaining three IVs—public transportation, competent providers, and residential setting—the measures aligned with the study variables. Elimination of the three variables did not impact the study's initial intent to fill a gap, which was understanding which neighborhood factors were associated with access to tertiary level prevention within the Hispanic population.

Time Frame and Response Rates

The BRFSS uses landlines and cellphones to administer surveys continuously throughout the year (CDC, 2019b). Access to care and race/ethnicity are standard annual core questions of the CDC, whereas diabetes diagnosis is an optional module. For this study, the timeframe of 2018 was chosen based on the most recent complete data available for all U.S. states and territories. In 2018, the BRFSS conducted a combined total of 437,436 surveys, of which 165,299 were landline interviews and 272,201 cell phone interviews with a median of 2,336 and 4,291, respectively. The mean response rates were 53.3% for landline interviews and 43.4% for cell phone interviews. The combined survey response rate was 49.9%. The response rate is the number of respondents who completed a survey each year as a proportion of all eligible participants (CDC, 2019b). There were no discrepancies in the data collection process, as I did not deviate from the initial approved data collection plan.

Descriptive and Demographic Characteristics of the Sample

Following the 2018 BRFSS survey, 36,941 people (8.5% of the total population) identified as Hispanic, Latina/Latino, or of Spanish origin. Of the total survey participants, 60,703 (14.2%) responded to the BRFSS survey question "ever been told you have diabetes." A total of 80,587 (49.5%) of the participants indicated that they had obtained care from a doctor's office, health department, or another clinic or health center, which qualified as having access to tertiary level prevention. The listed locations are the typical places people go to get preventive care. Of those who responded to the BRFSS survey questions "ever been told you have diabetes" and "at what kind of place did you

get your last flu shot or vaccine?," 4,977 were Hispanic, which determined the study sample size. All 4,977 participants responded to diabetes diagnosis questions and were Hispanics with access to tertiary level prevention in 2018 (CDC, 2019b).

Representativeness of the Sample

BRFSS data are collected from randomly selected non-institutionalized adults, 18 years or older, residing in the United States, and all responses are self-reported (CDC, 2018a, 2019c). The CDC applies stratified and simple random sampling using random digit dialing of all households in each state (2019c). CDC data are weighted to ensure that all eligible participants have the probability of being selected, to eliminate non-response bias and non-coverage errors, and ensure the inclusion of more demographic variables (CDC, 2018c, 2019c). Weighting adjusts for the demographic differences between the sample and the population and is necessary if generalization is to be made (CDC, 2019c). The BRFSS eliminates data on unweighted sample sizes are less than 50(CDC, 2019b).

Univariate Analysis

Study variables. The study variables needed to match the measures of the BRFSS, and because of that, variables were derived based on the BRFSS survey questions that addressed the study interests. Table 2 summarizes the selected variables, including a detailed explanation of why the variables were deemed suitable. The DV was access to tertiary level prevention. Selected IVs included public transportation, competent providers, and residential settings. Variables with measures that did not match or fit perfectly with the study variables were excluded from the study. Neighborhood crime, distance to T2DM classes, and the absence of community health centers were eliminated.

Table 2

Rationale for Choosing Variables

Variable	Survey question	Rationale for choice of variable	Response category	Recoded
Hispanic	Hispanic, Latino/a, or Spanish origin	Interest was on Hispanics diagnosed with diabetes or those of Hispanic, Latino/Latina or, of Spanish origin	1 = Hispanic 2 = Not Hispanic	0 = Hispanic (1) 1 = Not Hispanic (2)
Diabetes diagnosis	(Ever told) you have diabetes	Tertiary level prevention is for those already diagnosed with diabetes; therefore, a formal diagnosis was required. The BRFSS does not report specific types of diabetes (type 1 or 2) but breaks out pre-diabetes and those diagnosed during pregnancy, which were excluded. I assumed diabetes diagnosis to mean T2DM since it is the most likely diagnosed for this age (adults).	1 = Yes 2 = Yes, during pregnancy 3 = No	0 = Yes (1) 1 = No (3)
Access to care	At what kind of place did you get your last flu shot or vaccine?	Tertiary level prevention involves routine interactions between patients and providers. Places where preventive care is not provided for diabetes patients were not considered.	1 = Doctor's Office 2 = Health Department 3 = Another Clinic or Health Center 4 = Recreation or Community Center 5 = Drug Store 6 = Hospital (inpatient) 7 = Emergency Room 8 = Workplace 9 = Other place 10 = Canada/Mexico 11 = School	0 = Access (1 - 3) 1 = No access (4-10)
Public Transportation	Other than cost, have you delayed getting medical care for one of the following reasons in the past 12 months?	Participants indicated lack of transport as a hindrance to their accessing care. Those who had transport were delayed by other factors not related to lack of transportation.	1 = Couldn't get through on the phone 2 = No appointment on time 3 = Long wait time to see doc 4 = Doctor's Office closed 5 = No Transport	0 = Available (1-4) 1 = Unavailable (5)
Residential setting	Urban/Rural Status	One can either reside in an urban area or rural.	1 = Urban 2 = Rural	0 = Urban (1) 1 = Rural (2)
Competent providers	Do you have one person you think of as your personal doctor or health care provider?	Having more than one provider implied the availability of competent providers. Specialists are mostly seen at the tertiary level of prevention. Several providers deliver tertiary prevention to diabetic patients, including diabetic nurses, nurse practitioners, primary care physicians, and others.	1 = Yes, only one 2 = More than one 3 = No	0 = Present (1-2) 1 = Absent (3)

Study Results

Descriptive Analysis of the Sample Population

Per survey results, 4,977 participants were Hispanics diagnosed with T2DM in 2018 with access to tertiary level prevention (CDC, 2019b). Table 3 depicts the sample sizes and frequency distributions of all the variables evaluated. In 2018, 59% of Hispanics diagnosed with T2DM reported having access to tertiary level prevention. Sixty-one percent (61%) of Hispanics diagnosed with T2DM reported having public transportation. Eighty-five percent (85%) of the participants reported having access to competent care providers. Only 6% of the sample resided in rural areas, while 94% lived in urban areas.

Table 3

Frequency Distributions

		Frequency	%
Frequency for access to tertiary level prevention			
Valid	Access	1192	59.0
	No Access	829	41.0
	Total	2021	100.0
Missing	System	2956	
Total		4977	
Frequency of public transportation			
Valid	Available	102	61.4
	Unavailable	64	38.6
	Total	166	100.0
Missing	System	4811	
Total		4977	
Frequency of competent provider			
Valid	Present	3790	84.9
	Absent	672	15.1
	Total	4462	100.0
Missing	System	515	
Total		4977	
Frequency of residential setting			
Valid	Urban	3843	94.0
	Rural	246	6.0
	Total	4089	100.0
Missing	System	888	
Total		4977	

Evaluation of Statistical Assumptions

Pearson's Chi-square test of independence (X^2) was used in investigating the association between the categorical variables. The assumptions of the test are that the participants are randomly selected, the categories being tested are mutually exclusive with each subject fitting in only one category, the data are in countable frequency form, and the observations are independent of each other (McHugh, 2013; Suresh, 2019). Also, when more than 20% of the expected frequencies have a value < 5, then the Chi-square test cannot be used (Suresh, 2019). The assumptions were tested and confirmed since BRFSS data were categorized and each had frequencies in countable form, as shown in the univariate analysis. Each variable was independent, mutually exclusive, and the participants were randomly selected during data collection. To test deviations of differences between the expected and observed frequencies, I run expected frequencies for each variable. Since none of the expected frequencies was more than 20%, the final assumption of the Chi-square test of independence was confirmed.

Statistical Analysis Findings

The study's main interest was establishing the association between access to tertiary level prevention for Hispanics diagnosed with T2DM with the chosen IVs. Data collected on Hispanics diagnosed with T2DM were analyzed using SPSS version 25 to examine the relationship between the variables. All statistical testing was conducted at an alpha level ($\alpha = .05$). The decision to reject or accept the null hypothesis depended on the *p*-value. If the *p*-value was $\leq .05$, the null hypothesis was rejected and alternative

accepted, and if > .05, the null hypothesis was accepted and alternative rejected. Cross-tabulation analyses between the DV and each of the IVs are provided below.

RQ: Is there an association between the lack of public transportation, lack of competent providers, residential setting, and access to tertiary level prevention among Hispanics diagnosed with T2DM?

Bivariate analysis. A bivariate analysis using Chi-square tests was run to test if there is an association between each of the IVs – public transportation, competent providers, and residential setting, and the DV – access to tertiary level prevention among Hispanics diagnosed with T2DM. Tables 4 through 9 depict the results of all cross-tabulation analyses of the variables. There was no statistically significant association between public transportation, competent providers, residential settings and access to tertiary level prevention among Hispanics diagnosed with T2DM.

Table 4

Cross-Tabulation of Access to Tertiary Level Prevention Among Hispanics Diagnosed with T2DM and Public Transportation

			Public Transportation		
			Available	Unavailable	Total
Access to Care	Access	Count	25	18	43
		Expected Count	28.0	15.0	43.0
		% within Access to Care	58.1%	41.9%	100.0%
	No Access	Count	20	6	26
		Expected Count	17.0	9.0	26.0
		% within Access to Care	76.9%	23.1%	100.0%
Total		Count	45	24	69
		Expected Count	45.0	24.0	69.0
		% within Access to Care	65.2%	34.8%	100.0%

Table 4 illustrates cross-tabulation results between access to tertiary level prevention among Hispanics diagnosed with T2DM and the availability of public

transportation. Results show that 58% of Hispanics diagnosed with T2DM having access to tertiary level prevention reported availability of public transportation, while 42% reported unavailability.

The results of the Chi-square test of independence in Table 5 show that there is no statistically significant association between access to tertiary level prevention among Hispanics diagnosed with T2DM and public transportation, X^2 (1, N = 69) = 2.52, p = .11*)*. Therefore, there is insufficient evidence to reject the null hypothesis.

Table 5

Chi-Square Test Results

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.520[a]	1	.112		
Continuity Correction[b]	1.760	1	.185		
Likelihood Ratio	2.604	1	.107		
Fisher's Exact Test				.127	.091
Linear-by-Linear Association	2.484	1	.115		
N of Valid Cases	69				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.04.

b. Computed only for a 2x2 table

As depicted in Table 6, cross-tabulation results show that of the total Hispanics with a T2DM diagnosis with access to tertiary level prevention, 89% acknowledged the presence of competent providers. Eleven (11%) of the participants reported the absence of competent providers. Ninety-one percent (91%) of Hispanics with a diabetes diagnosis and no access to tertiary level prevention reported the presence of competent providers.

Further, the Chi-square test of independence results in Table 7 show that there is no statistically significant association between Hispanics diagnosed with T2DM having

access to tertiary level prevention and the presence of competent providers, X^2 (1, N = 1,806) = .99, p =.32. There is, therefore, not enough evidence to reject the null hypothesis.

Table 6

Cross-Tabulation of Access to Tertiary Level Prevention Among Hispanics Diagnosed with T2DM and Competent Providers

			Competent Provider		
			Present	Absent	Total
Access to Care	Access	Count	955	116	1071
		Expected Count	961.3	109.7	1071.0
		% within Access to Care	89.2%	10.8%	100.0%
	No Access	Count	666	69	735
		Expected Count	659.7	75.3	735.0
		% within Access to Care	90.6%	9.4%	100.0%
Total		Count	1621	185	1806
		Expected Count	1621.0	185.0	1806.0
		% within Access to Care	89.8%	10.2%	100.0%

Table 7

Chi-Square Test Results

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.987[a]	1	.320		
Continuity Correction[b]	.837	1	.360		
Likelihood Ratio	.996	1	.318		
Fisher's Exact Test				.344	.180
Linear-by-Linear Association	.987	1	.320		
N of Valid Cases	1806				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 75.29.

b. Computed only for a 2x2 table

Table 8 shows cross-tabulation results between the residential setting and access to tertiary level prevention among Hispanics diagnosed with T2DM. Results show that

94% of Hispanics diagnosed with T2DM with access to tertiary level prevention resided in urban areas, whereas 6% lived in rural areas.

Table 8

Cross-Tabulation of Access to Tertiary Level Prevention Among Hispanics Diagnosed with T2DM and Residential Setting

			Residential Setting		
			Urban	Rural	Total
Access to Care	Access	Count	1014	67	1081
		Expected Count	1016.4	64.6	1081.0
		% within Access to Care	93.8%	6.2%	100.0%
	No Access	Count	590	35	625
		Expected Count	587.6	37.4	625.0
		% within Access to Care	94.4%	5.6%	100.0%
Total		Count	1604	102	1706
		Expected Count	1604.0	102.0	1706.0
		% within Access to Care	94.0%	6.0%	100.0%

Table 9

Chi-Square Test Results

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.252[a]	1	.616		
Continuity Correction[b]	.157	1	.692		
Likelihood Ratio	.254	1	.614		
Fisher's Exact Test				.672	.349
Linear-by-Linear Association	.252	1	.616		
N of Valid Cases	1706				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 37.37.

b. Computed only for a 2x2 table

The results of the Chi-square test of independence in Table 9 show that there is no statistically significant association between the residential setting and access to tertiary

level prevention among Hispanics diagnosed with T2DM, X^2 (1, N = 1,706) = .25, p = .62. The evidence is, therefore, insufficient to reject the null hypothesis.

Summary

The primary purpose of this research study was to examine the association between specific environmental factors and access to tertiary level prevention among Hispanics diagnosed with T2DM. In chapter 4, the research question was evaluated and addressed. The results examining the relationship between public transportation, competent providers, residential settings, and access to tertiary level prevention among Hispanics diagnosed with T2DM were found to be non-statistically significant. No statistical significance implies insufficient evidence to reject the null hypothesis. From the data used and study results, there is insufficient proof that the null hypothesis is false, although it does not imply that the null hypothesis is true.

In Chapter 5, I will discuss the findings and interpretations in relation to the research question and theoretical framework. I will address limitations and future study recommendations, highlighting how the study findings contribute to the public health field. I will summarize the implications for positive social change at the individual, organizational, and policy levels. Finally, I will identify theoretical and methodological implications, followed by recommendations for practice and conclusions of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to examine the association between neighborhood crime, the absence of community health centers, the lack of culturally competent providers, lack of public transportation, the residential setting, the distance to T2DM education classes, and access to tertiary prevention among Hispanics diagnosed with T2DM. The ABM was used as a theoretical framework to assess the relationship between these environmental (enabling) factors and access to preventative care at the tertiary level within this population. I applied a cross-sectional design on secondary data from the 2018 BRFSS database and used the IBM SPSS version 25 to analyze and generate results. The key findings revealed no statistically significant association between the tested enabling factors—public transportation, competent providers, residential setting, and access to tertiary level prevention among Hispanics diagnosed with T2DM. No testing was done for neighborhood crime and distance to T2DM classes due to a lack of data from the 2018 BRFSS database. The presence of community health centers was factored in the DV.

Interpretation of the Findings

The results provide insight into the burden Hispanics with a T2DM diagnosis in the United States face. The research findings also extend knowledge about the factors that influence access to preventive care at the tertiary level for Hispanics with a T2DM diagnosis. The findings are generalizable to Hispanics with a formal diabetes diagnosis residing in the United States. However, applying these results outside this population and

scope or to other ethnicities would not be prudent. In this study, there was no statistically significant relationship between the tested IVs and the DV, which is not enough evidence to reject the null hypothesis. Due to this, I could neither confirm nor disconfirm prior findings in the field. However, the results provide a basis for further research on the possible environmental factors that impact access to tertiary level prevention among Hispanics diagnosed with T2DM.

Statistical significance refers to the likelihood that the relationship between variables is caused by something other than chance and is confirmed when a dataset provides a small *p*-value typically < .05 (Kenton, 2020). Statistical significance does not mean practical significance (McGrath, 2016; Sauro, 2014). The results indicated high probability values (*p*-value = .11, .32, and .62 for public transportation, competent providers, and residential setting, respectively), which showed non-statistically significant relationships between the variables. Thus, there is a lack of credible evidence against the null hypothesis (Gates & Ealing, 2019; Lane, 2013; McGrath, 2016), which does not mean that there is no association between the independent and the DV but increases the possibility that the null hypothesis is false (Lane, 2013). In contrast, if the null hypothesis is true, the *p*-value shows the percentage chance of seeing those results or more extreme results (Resnick, 2019). Further, for every statistical test, a type II error rate is anticipated, which is the probability of obtaining a non-significant result if the null hypothesis is false (Gates & Ealing, 2019; McGrath, 2016). Typical causes of non-significant statistical effects are having few recruits or participants, more variability, and lower incidence of outcomes (Gates & Ealing, 2019; Visentin, Cleary, & Hunt, 2020).

But it is essential to draw the correct conclusions distinguishing between type II errors or other reasons and avoid deductions that influence public health interventions and practice (Gates & Ealing, 2019; McGrath, 2016). With non-statistically significant results, I did not find enough evidence against the null hypothesis; however, it is still likely that the tested environmental factors have association with tertiary level prevention access. In the following sections, I compare my findings with those in the literature in Chapter 2.

Access to Tertiary Level Prevention

Researchers in the field have approached the issue of access to preventive care for diabetes patients differently, with some focusing on the availability of services (Souliotis Hasardzhiev, & Agapidaki, 2016), affordability in terms of cost (Shartzer, Long, & Anderson, 2015), or ability (Simmons et al., 2015). For this study, access to tertiary level prevention was defined as diabetes patients' ability to access a location where health care providers are found or where the needed diabetes care is being provided (HealthyPeople, 2019) for preventing further complications. Regardless of the approach, preventive care is critical in avoiding complications and slowing the progress of a disease (Saunders, 2019). People with diabetes need to access clinical services and health professionals on an ongoing basis for preventive reasons (Gumber & Gumber, 2017; Lee et al., 2017; Luo et al., 2019). However, based on these study findings, in 2018, only 1.1% of the U.S. population who were Hispanics already diagnosed with diabetes had access to care. This further supports that access to this care is necessary to focus on (Gibson et al., 2015; Kauhl et al., 2016; Lachance et al., 2018; Mukona et al., 2017). Understanding barriers to access to care reduces the effects of diabetes, improving patients' health outcomes

(Gumber & Gumber, 2017). Among Latinos with diabetes, health interventions have led to improved access to care and health outcomes (Chang et al., 2018; Olsen & Laudicella, 2019; Perez-Escamilla et al., 2015), but they need to be able to access them.

Public Transportation

Previous research highlights the importance of transportation for those diagnosed with diabetes to have access to diabetes health services like specialists (Hildebrand et al., 2018; Luque et al., 2018; Madill et al., 2018; Timbie et al., 2019; van Gaans & Dent, 2018). For example, in Melbourne, Australia, transport and travel times played a crucial role in the management of diabetes (Madill et al., 2018). However, this study showed no statistically significant association between public transportation and access to tertiary level prevention among Hispanics diagnosed with T2DM. I found insufficient evidence that the lack of public transportation impacts access to tertiary level prevention within this population, calling for further investigation. Additional studies will help determine if these assertions align with the previous research or refute them completely.

Competent Providers

Diabetes patients need ongoing care, which requires access to health care providers, and these opportunities should be enhanced for the management of diabetes (Nicklett et al., 2017). Moreover, these providers need to be competent and well-trained to adequately and effectively meet the patients' needs (Geissler & Leatherman, 2015; Stoop et al., 2019). Well trained health providers can help with the proper management of diabetes and identify potential risks that can be prevented (Tang et al., 2015). Prior research has shown that healthcare providers' shortage hinders the likelihood that

diabetes patients will receive the recommended quality preventative care they need (Faul, Yankeelov, & McCord, 2015; Velasco-Mondragon et al., 2016). Further, some findings show that the lack of well-trained health providers can be detrimental to the health outcomes of people with diabetes (Jin et al., 2017). In this study, competent providers were defined based on qualifications only as their cultural backgrounds were not revealed in the BRFSS data. But study findings showed no statistical significance between competent providers and access to tertiary level prevention among Hispanics diagnosed with T2DM. These results do not confirm nor go against the assertions that qualified providers may be critical in accessing tertiary level preventive care. Due to insufficient evidence to reject the null hypothesis, more research on the subject may provide insight on these providers' impact on accessing tertiary level prevention.

Additionally, some researchers assert that culturally qualified providers are critical in education and community outreach programs within Hispanic communities (Flores, 2017; Mansyur et al., 2015). Further, culturally appropriate providers and interventions foster engagement among Hispanic diabetes patients and improve self-management (Gumber & Gumber, 2017; Oza-Frank et al., 2018; Rotberg et al., 2016). In areas where these personnel and programs are provided, Latinos with T2DM have increased access to the services (Baig et al., 2014), and positive health outcomes have been realized and encouraged (Zeh et al., 2018). But this study's results were not specific to culturally competent providers, and it is recommended that these assertions be further investigated. Where many Latino immigrant families are settling, the presence of

culturally relevant health and social service providers may be essential (Held, McCabe, & Thomas, 2018).

Residential Setting

Research has shown that residential settings matter in diabetes management (Hunt, Henderson, & Chapman, 2018; Smalls et al., 2015a, 2017; Tran et al., 2019). Moreover, prior research has shown that rural–urban differences in receiving diabetes care exist and remain a worldwide concern (Chen, Chen, & Cheng, 2017). Based on this study's results, the relationship between residential setting and access to tertiary level prevention among Hispanics with diabetes was statistically non-significant. Despite these findings, the prevention of risk factors among diabetes patients should be equally implemented in rural and urban settings (Arugu & Maduka, 2017). Additionally, the design of a neighborhood, including cycling paths, public transport, and well-built roads, influences the choices residents make in accessing tertiary care and should be further investigated (McCormack et al., 2019). Therefore, whether it is a rural or urban area, further research is required to establish how this influences access to tertiary level prevention, particularly among Hispanics with a T2DM diagnosis.

Analysis and Interpretation of Findings: Theoretical Context

The ABM helps understand how environmental and individual factors influence health outcomes (Holtzman et al., 2015). The model is hinged on the precepts that hospital services and their utilization are sought based on need, enabling factors, and predisposing factors (Andersen, 1968, 1995). In this study, the need referred to the ongoing long-term medical care that diabetes patients require to prevent further health

complications (Liddy et al., 2015; Saunders, 2019). Tertiary level preventive care cannot be obtained and utilized unless there is access to health services and providers. According to the constructs of the ABM, the elements required for this access are the enabling factors.

In this study's findings, there was not enough evidence to establish the association between public transportation, competent providers, residential settings, and access to tertiary level prevention among Hispanics diagnosed with T2DM. However, the study findings did not negate the ABM's assertions that there are enabling factors relevant to accessing and utilizing preventive care, specifically tertiary care for Hispanic diabetes patients. The lack of statistical significance with the chosen variables in this study confirms that there are enabling factors influential in the access to tertiary prevention. The model parameters that attempt to explain the role of specific environmental factors (enabling factors) and access to tertiary level prevention (utilization of services) have been utilized in this study and found to be relevant. Therefore, the constructs of the ABM were useful in assessing the factors that were critical in accessing tertiary level prevention among Hispanics diagnosed with T2DM. The model can be applied in further studies that attempt to link enabling factors to health services utilization for preventive purposes.

Limitations of the Study

A fundamental limitation of this study was that the data and results offered insufficient evidence to reject the null hypothesis. Thus, there was no association between public transportation, competent providers, residential setting, and access to tertiary level

prevention among Hispanics diagnosed with T2DM with the current data. The study's non-significant findings may support or contrast prior research findings calling for further research so that these differences can be reconciled. Future researchers can look at the same variables with a different population or test a different set of variables with the same population.

Another limitation of this study is the use of secondary data, which was not initially collected for this study and did not address all the study variables in detail. For instance, data on neighborhood crime and distance to T2DM classes were not available, and some data were not perfect measures of the study variables. Data on competent providers did not address the providers' culture, limiting the study. It is important to note that the BRFSS variables and data are subject to being interpreted differently by different researchers and could have alternate interpretations.

The data also excludes Hispanics with diabetes that did not receive a formal diagnosis from a healthcare professional in the United States (CDC, 2019b), limiting the transferability of the findings to those Hispanics in the United States without a proper diagnosis. Additionally, conclusions cannot be generalized to Hispanics outside the United States nor those of other ethnicities, who are also affected by diabetes. Further, BRFSS data are self-reported (CDC, 2018a, 2019h), limiting the ability to verify it and could have posed a limitation to this study.

Because the BRFSS collects data using landlines and cellphones for non-institutionalized adults (CDC, 2019b), it excludes individuals without landlines or cellphones, which could have impacted this study's outcomes. However, this is mitigated

using a weighting system by the BRFSS, which corrects for this potential non-response bias, non-coverage errors and ensures the inclusion of more demographic variables (CDC, 2018c, 2019c). Weighting also adjusts for the demographic differences between the sample and the population, allowing for the generalization from the sample to the community (CDC, 2019c). Finally, being a cross-sectional study, no causal relationships were established between the chosen variables.

Recommendations

While several limitations were pointed out, the study's strength is that it confirms the presence of factors that impact access to tertiary level prevention for Hispanics diagnosed with T2DM. These study findings are preliminary results that open new avenues for further research on the topic. More research is needed to investigate the impact of public transportation, culturally competent providers, and residential setting on access to tertiary level prevention among Hispanics diagnosed with T2DM. Future research should explore the impact of neighborhood crime and distance to T2DM classes on access to tertiary level prevention for this population since these factors were not investigated due to missing data. According to my review of the available literature, the influence of neighborhood crime and distance to T2DM classes needed to be explored within this population. Additionally, it would be valuable to extend this study interests to different geographic locations, specifically in areas where most of the population is Hispanic, which may provide more substantial and conclusive results on the barriers to access to tertiary level preventive care among Hispanics diagnosed with T2DM. The findings of the recommended future research may increase the study contributions to the

body of knowledge on access to preventive care among Hispanics with T2DM within the United States and possibly beyond.

As far as I am concerned, this is the first study to attempt to determine an association between public transportation, competent providers, residential setting, and access to tertiary level prevention among Hispanics diagnosed with T2DM. Since the results were not statistically significant, further investigation is advised. Replicating this study will address this study's question and either validate my findings or provide more information that will be used to draw acceptable conclusions. Access to tertiary preventive care for Hispanics diagnosed with T2DM may or may not be impacted by these factors. Since my results were not statistically significant, further research is needed to help establish the factors that matter within this population. Existing literature indicated a need to establish the impact of these environmental factors on access to tertiary level prevention within this population, and this gap needs to be filled. In support of observations made by O'Brien et al. (2015), among Hispanics with diabetes, there is a need for further exploration of the reasons why diabetes prevention programs and interventions have not been effectively utilized. Future studies addressing the low utilization of tertiary level prevention services and barriers among Hispanics without landlines/cellphones and those outside the United States need to be carried out.

Lastly, a qualitative research study could provide more in-depth results since the research questions can be designed and tailored to effectively obtain data from participants with specific details that address the issues under consideration. Using qualitative methods would eliminate the limitations of using secondary data like lack of

control of the dataset and limited availability of data on specific variables. Qualitative study results would likely advance the interests of this research. Having reviewed existing literature, my recommendation is that awareness of tertiary level prevention should be promoted using culturally centered programs. These programs should be made accessible to Hispanics diagnosed with T2DM. Also, when addressing tertiary level prevention among Hispanics, I recommend that interventions be designed with cultural factors taken into consideration, especially within the U.S. healthcare system.

Implications of the Study Findings

Impact for Positive Social Change

While conducting this study, Walden University's mission of promoting positive social change was at the forefront. Positive social change is about participating in activities that lead to an improvement in the individual's life, their communities, nation, and globally (Walden University, 2020b). Given that this study findings were non-statistically significant, the preliminary conclusion is that further investigation is needed to determine if there is a relationship between the selected environmental factors and access to tertiary level prevention within in population. With the establishment of an association between the variables, the study findings can increase knowledge on the importance of accessing tertiary level prevention among Hispanics. These study findings can also provide a better understanding of the burden the Hispanics diagnosed with T2DM face as pertains to accessing the care needed for diabetes-related complications. According to Garcia et al. (2015), identifying additional barriers unique to this population would reduce the population's prevalence and mortality rates. Understanding the role of

environmental factors in accessing tertiary level prevention could have wide-spread benefits among Hispanics with T2DM, limiting post diabetes diagnosis complications, improving health outcomes, and providing a better quality of life, consequently becoming a social change tool. With a better quality of life, productivity increases, leading to a better socioeconomic status of Hispanics diagnosed with T2DM as well as their communities (Al-Alawi, Al Mandhari, & Johansson, 2019; Grady & Gough, 2014), which would qualify as positive social change. These study findings could encourage and increase interest among Hispanics with T2DM in understanding the factors that impact access to tertiary level care, consequently saving more lives. T2DM Hispanic patients could feel empowered to manage the disease, which allows them to feel more involved in planning more appropriate care, thus resulting in better compliance. Also, there could be reduced diabetes complications that send T2DM patients to the Emergency Rooms, which reduces the burden on the health systems while improving the patients' quality of life. Further, the costs of caring for diabetes patients could reduce with decreased diabetes-related complications. With diabetes patients more involved, it could allow for the development of effectively targeted intervention programs at the policy level. To further positive social change, the results of this study can provide preliminary evidence on the environmental barriers to access to tertiary level prevention and be used as a basis to enhance existing diabetes prevention programs and support the development of new culturally focused programs, which will help improve health outcomes.

Theoretical and Methodological Implications

The ABM constructs were useful in drawing conclusions for this study and can be used in further studies that seek to address the access and utilization of preventive care. The theory addresses the utilization of health services and factors that impact access to these services; therefore, it is appropriate that this model is used continuously regarding access to care, mainly focusing on those factors that allow patients to access preventive health care. While the results were not statistically significant, the ABM helped me investigate the association between the enabling factors (public transportation, competent providers, and residential setting) and access to tertiary level prevention within the chosen population. The model can be applied in future studies attempting to link enabling factors to the utilization of health services for preventive purposes at any level. Researchers could also consider using the SEM as a model in addressing this research problem. According to Coreil (2010), the SEM considers individual, community, organizations, and environmental components, which can be applied in addressing this research question. Methodologically, it is recommended that qualitative methods be used to collect and analyze data addressing specific questions for this population, leading to more in-depth conclusions.

Recommendations for Practice

As far as professional practice is concerned, the study results can help plan and implement public health prevention programs for Hispanics with T2DM, explicitly focusing on establishing and addressing enabling factors. Identifying specific environmental barriers to preventive care access may better inform intervention and

prevention programs for diabetes, creating change at the individual, community, and policy levels. Additionally, stakeholders can design inexpensive measures and strategies that allow T2DM patients to access care at the tertiary level, inhibiting further complications, and improving health outcomes. If culturally tailored educational programs are designed, Hispanics diagnosed with T2DM can access tertiary level prevention by overcoming identified barriers, allowing for positive health outcomes. The study findings can be a basis for future research on diabetes and access to tertiary level prevention, mainly focusing on enabling factors. Care providers can also effectively provide their services if they are culturally trained, benefiting Hispanics diagnosed with T2DM. The results of these policy changes can lead to positive social changes at the individual, community, and policy levels.

Conclusion

For diabetes patients, managing the disease is an on-going daily uphill battle and finding ways of retarding the disease's progression makes a huge difference. An attempt was made in this study to examine the association between neighborhood crime, the absence of community health centers, the lack of culturally competent providers, lack of public transportation, the residential setting, and the distance to T2DM education classes, and access to tertiary prevention among Hispanics diagnosed with T2DM. Chi-square tests of independence revealed no statistically significant relationships between the three tested IVs with access to tertiary level prevention. There was not enough evidence in this study to conclude that there was no relationship between the variables tested. While the results were not statistically significant, it, for diabetes patients, regardless of race, access

to post-diagnosis care on an on-going basis is critical. Identification of the influential environmental factors is vital, and recognizing these factors is essential in increasing knowledge of enabling factors and utilization of healthcare services for tertiary level prevention. The availability of quality care offered by culturally trained professionals, or the availability of public transportation, and the residential setting, though not statistically significant, are inevitably likely to help prevent further complications for these patients, consequently improving their lives and creating positive social change at various levels. More research on the subject is recommended to increase tertiary level prevention access, which is a much-needed service for diabetes patients. Increased access to this care will reduce the post-diagnosis complications that Hispanics with a diabetes diagnosis face. Racial disparities in accessing this care indicate inadequacies in the U.S. health care systems, and these need to be addressed. Finally, culturally tailored public health education on the importance of tertiary preventive care needs to be emphasized and increased for Hispanics' positive health outcomes.

References

Acastat. (2015). Coefficients of measuring association. Retrieved from http://www.acastat.com/statbook/chisqassoc.htm

Al-Alawi, K., Al Mandhari, A., & Johansson, H. (2019). Care providers' perceptions towards challenges and opportunities for service improvement at diabetes management clinics in public primary health care in Muscat, Oman: A qualitative study. *BMC Health Services Research, 19*(1). doi:10.1186/s12913-019-3866-y

Alexander, L. K., Lopes, B., Ricchetti-Masterson, K., & Yeatts, K. B. (2015). Confounding bias, part 1. Retrieved from https://sph.unc.edu/files/2015/07/nciph_ERIC11.pdf

Allen, M. (2017). *The sage encyclopedia of communication research methods* (Vols. 1-4). doi:10.4135/9781483381411

Alvarado, M. M., Hye-Chung Kum, Coronado, K. G., Foster, M. J., Ortega, P., Lawley, M. A., . . . Gonzalez Coronado, K. (2017). Barriers to remote health interventions for type 2 diabetes: A systematic review and proposed classification scheme. *Journal of Medical Internet Research, 19*(2), 1. doi:10.2196/jmir.6382

Alzubaidi, H., McNamara, K., Browning, C., & Marriott, J. (2015). Barriers and enablers to healthcare access and use among Arabic-speaking and Caucasian English-speaking patients with type 2 diabetes mellitus: a qualitative comparative study. *BMJ OPEN, 5*(11). doi:10.1136/bmjopen-2015-008687

American Diabetes Association. (2017). Fast facts: Data and statistics about diabetes. Retrieved from

https://professional.diabetes.org/sites/professional.diabetes.org/files/media/fast_facts_8-2017_pro_3.pdf

American Diabetes Association. (2019). Statistics about diabetes. Retrieved from https://www.diabetes.org/resources/statistics/statistics-about-diabetes

American Diabetes Association. (2020). Diabetes diagnosis. Retrieved from https://www.diabetes.org/a1c/diagnosis

Andersen, R.M. (1968). *Families' use of health services: A behavioral model of predisposing, enabling and need components* (Doctoral dissertation). Retrieved from https://docs.lib.purdue.edu/dissertations/AAI6902884/

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health & Social Behavior, 36*(1), 1–10. doi:10.2307/2137284

Aponte, J., & Nokes, K. M. (2017). Electronic health literacy of older Hispanics with diabetes. *Health Promotion International, 32*(3), 482–489. doi:10.1093/heapro/dav112

Arugu, G. M., & Maduka, O. (2017). Risk factors for diabetes mellitus among adult residents of a rural district in southern Nigeria: Implications for prevention and control. *Nigerian Journal of Clinical Practice, 20*(12), 1544–1549. doi:10.4103/njcp.njcp_154_17

Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen's behavioral model of health services use: A systematic review of studies from 1998-2011. *Psycho-social medicine, 9*, Doc11. doi:10.3205/psm000089

Baig, A. A., Locklin, C. A., Campbell, A., & Chin, M. H. (2014). Community health center access to resources for their patients with diabetes. *Journal of Immigrant Minority Health 16*, 553–558. doi:10.1007/s10903-013-9775-y

Bailey, S. R., O'Malley, J. P., Gold, R., Heintzman, J., Marino, M., & DeVoe, J. E. (2015). Receipt of diabetes preventive services differs by insurance status at visit. *AMERICAN JOURNAL OF PREVENTIVE MEDICINE, 48*(2), 229–233. doi: 10.1016/j.amepre.2014.08.035

Baldwin, S. A. 1. (2015). A neighborhood-centered clinical project: Improving diabetes and cardiovascular outcomes in Hispanic women. *Journal of Nursing Education, 54*(3), 159–163. doi:10.3928/01484834-20150218-16

Bech, L. K., Borch Jacobsen, C., Mathiesen, A. S., & Thomsen, T. (2019). Preferring to manage by myself: A qualitative study of the perspectives of hardly reached people with type 2 diabetes on social support for diabetes management. *Journal of Clinical Nursing (John Wiley & Sons, Inc.), 28*(9/10), 1889–1898. doi:10.1111/jocn.14783

Bigdeli, M., Jacobs, B., Men, C. R., Nilsen, K., Van Damme, W., & Dujardin, B. (2016). Access to treatment for diabetes and hypertension in rural Cambodia: Performance of existing social health protection schemes. *Plos One, 11*(1), e0146147. doi: 10.1371/journal.pone.0146147

Blay, S.L., Schulz, A.J., & Mentz, G. (2015). The relationship of built environment to health-related behaviors and health outcomes in elderly community residents in a middle-income country. *Journal of Public Health Research*, (2).

doi:10.4081/jphr.2015.548

Bobitt, J., Aguayo, L., Payne, L., Jansen, T., & Schwingel, A. (2019). Geographic and social factors associated with chronic disease self-management program participation: Going the "extra-mile" for disease prevention. *Preventing Chronic Disease*, 16, E25. doi:10.5888/pcd16.180385

Brown, S. A., García, A. A., Steinhardt, M. A., Guevara, H., Moore, C., Brown, A., & Winter, M. A. (2015). Culturally tailored diabetes prevention in the workplace: Focus group interviews with Hispanic employees. *The Diabetes Educator, 41*(2), 175–183. doi:10.1177/0145721714567233

Brown, S. A., Perkison, W. B., García, A. A., Cuevas, H. E., Velasquez, M. M., Winter, M. A., & Hanis, C. L. (2018). The Starr County Border Health Initiative: Focus groups on diabetes prevention in Mexican Americans. *Diabetes Educator, 44*(3), 293–306. doi:10.1177/0145721718770143

Centers for Disease Control and Prevention. (2001). Updated guidelines for evaluation public health surveillance systems. Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm

Centers for Disease Control and Prevention. (2003). HIPAA privacy rule and public health. Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/su5201a1.htm

Centers for Disease Control and Prevention. (2014). About the Behavioral Risk Factor Surveillance System (BRFSS). Retrieved from https://www.cdc.gov/brfss/about/about_brfss.htm

Centers for Disease Control and Prevention. (2015a). Data validation & testing. Retrieved from https://www.cdc.gov/nhsn/cdaportal/datavalidation.html

Centers for Disease Control and Prevention. (2015b). Glossary. Retrieved from https://www.cdc.gov/nchs/nhis/rhoi/rhoi_glossary.htm

Centers for Disease Control and Prevention. (2017a). Access to health care. Retrieved from https://www.cdc.gov/nchs/fastats/access-to-health-care.htm

Centers for Disease Control and Prevention. (2017b). National Diabetes Statistics Report. Retrieved from https://www.cdc.gov/diabetes/data/statistics/statistics-report.html

Centers for Disease Control and Prevention. (2017c). Office of Science: Assurances of confidentiality. Retrieved from https://www.cdc.gov/os/integrity/confidentiality/index.htm

Centers for Disease Control and Prevention. (2018a). Behavioral risk factor surveillance system (FAQs). Retrieved from https://www.cdc.gov/brfss/about/brfss_faq.htm

Centers for Disease Control and Prevention. (2018b). Evaluation briefs: Analyzing quantitative data for evaluation. Retrieved from https://www.cdc.gov/healthyyouth/evaluation/pdf/brief20.pdf

Centers for Disease Control and Prevention. (2018c). Health, United States, 2017- data finder. Retrieved from https://www.cdc.gov/nchs/hus/contents2017.htm

Centers for Disease Control and Prevention. (2019a). Behavioral Risk Factor Surveillance System. Retrieved from https://www.cdc.gov/brfss/index.html

Centers for Disease Control and Prevention. (2019b). Behavioral Risk Factor Surveillance System: 2018 data. Retrieved from

https://www.cdc.gov/brfss/annual_data/annual_2018.html

Centers for Disease Control and Prevention. (2019c). Behavioral Risk Factor Surveillance System: 2019 BRFSS survey data and documentation. Retrieved from https://www.cdc.gov/brfss/annual_data/annual_2018.html

Centers for Disease Control and Prevention. (2019d). Data & Statistics. Retrieved from https://www.cdc.gov/diabetes/data/index.html

Centers for Disease Control and Prevention. (2019e). Diagnosed diabetes. Retrieved from https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html#

Centers for Disease Control and Prevention. (2019f). Health, United States. Retrieved from https://www.cdc.gov/nchs/hus/index.htm

Centers for Disease Control and Prevention. (2019g). Health, United States, 2018 – Data finder. Retrieved from https://www.cdc.gov/nchs/hus/contents2018.htm

Centers for Disease Control and Prevention. (2019h). Healthy people 2020. Retrieved from https://www.cdc.gov/nchs/healthy_people/hp2020.htm

Centers for Disease Control and Prevention. (2020). Diabetes. Retrieved from https://www.cdc.gov/diabetes/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fdiabetes%2Fhome%2Findex.html

Chang, A., Patberg, E., Cueto, V., Li, H., Singh, B., Kenya, S., … Carrasquillo, O. (2018). Community health workers, access to care, and service utilization among Florida Latinos: A randomized controlled trial. *American Journal of Public Health, 108*(9), 1249–1251. doi:10.2105/AJPH.2018.304542

Chang, E., & Chan, K. S. (2016). Understanding pathways to usual source of care among

Asian Americans. *Journal of Health Care for the Poor & Underserved, 27*(2), 793–814. doi:10.1353/hpu.2016.0095

Chapman, A., Yang, H., Thomas, S. A., Searle, K., & Browning, C. (2016). Barriers and enablers to the delivery of psychological care in the management of patients with type 2 diabetes mellitus in China: a qualitative study using the theoretical domains framework. *BMC Health Services Research*, *16*, 106. doi:10.1186/s12913-016-1358-x

Chen, B. K., Hibbert, J., Cheng, X., & Bennett, K. (2015). Travel distance and sociodemographic correlates of potentially avoidable emergency department visits in California, 2006-2010: an observational study. *INTERNATIONAL JOURNAL FOR EQUITY IN HEALTH*, 14. doi:10.1186/s12939-015-0158-y

Chen, C.C., Chen, L.W., & Cheng, S.H. (2017). Rural-urban differences in receiving guideline-recommended diabetes care and experiencing avoidable hospitalizations under a universal coverage health system: Evidence from the past decade. *Public Health (Elsevier),* 151, 13–22. doi: 10.1016/j.puhe.2017.06.009

Cherry, K. (2019). Cross-sectional research method: How does it work? Retrieved from https://www.verywellmind.com/what-is-a-cross-sectional-study-2794978

Colby, S.L., & Ortman, J.M. (2015). Projections of the size and composition of the U.S. population: 2014 to 2060. Retrieved from https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf

Coreil, J. (Ed.). (2010). Social and Behavioral Foundations of Public Health (2nd ed.).

Thousand Oaks, CA: Sage.

Crawford, T. (2017). Identifying barriers that prevent US insured adults at-risk for and diagnosed with type 2 diabetes from accessing primary care services: An exploratory study. *Journal of Health and Social Sciences*, (3), 279. doi:10.19204/2017/dntf5

Creswell, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods approach. (3rd Ed). Thousand Oaks, California: Sage Publications.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods (5th ed.). Thousand Oaks, CA: Sage.

Cuesta, H. A., Coffman, D. L., Branas, C., & Murphy, H. M. (2019). Using decision trees to understand the influence of individual- and neighborhood-level factors on urban diabetes and asthma. *Health and Place, 58*. doi:10.1016/j.healthplace.2019.04.009

Cuevas, H. E., & Brown, S. A. (2017). Cuban Americans (CAs) and Type 2 Diabetes: An Integrative Review of the Literature. *JOURNAL OF IMMIGRANT AND MINORITY HEALTH, 19*(5), 1245–1252. doi:10.1007/s10903-016-0488-x

Cunningham, J.B., & McCrum-Gardner, E. (2007). Power, effect and sample size using G*Power: Practical issues for researchers and members of research ethics committees. *Evidence Based Midwifery 5*(4): 132-6

Dansinger, M. (2019). How to use the glycemic index. Retrieved from https://www.webmd.com/diabetes/guide/glycemic-index-good-versus-bad-carbs

Daros, N. (2019). Qualitative inquiry into the experiences of diabetes management

among low-income women in Singapore. *International Journal of Integrated Care (IJIC), 19*(S1), 1. doi:10.5334/ijic.s3422

de Vries McClintock, H. F., Wiebe, D. J., O'Donnell, A. J., Morales, K. H., Small, D. S., & Bogner, H. R. (2015). Neighborhood social environment and patterns of adherence to oral hypoglycemic agents among patients with type 2 diabetes mellitus. Family & Community Health: *The Journal of Health Promotion & Maintenance, 38*(2), 169–179. doi:/10.1097/FCH.0000000000000069

Dennis, J. M., Shields, B. M., Jones, A. G., Pearson, E. R., Hattersley, A. T., & Henley, W. E. (2018). Evaluating associations between the benefits and risks of drug therapy in type 2 diabetes: a joint modeling approach. *Clinical Epidemiology*, 10, 1869.

Ely, E. K., Gruss, S. M., Luman, E. T., Gregg, E. W., Ali, M. K., Nhim, K., Rolka, D. B., & Albright, A. L. (2017). A National effort to prevent type 2 diabetes: Participant-level evaluation of CDC's National Diabetes Prevention Program. *DIABETES CARE, 40*(10), 1331–1341. doi:10.2337/dc16-2099

Erskine, N.A., Waring, M.E., McManus, D.D., et al. (2018). Barriers to healthcare access and long-term survival after an acute coronary syndrome. *J GEN INTERN MED 33* (543). doi:10.1007/s11606-018-4555-y

Faber, J., & Fonseca, L. M. (2014). How sample size influences research outcomes. *Dental Press J Orthod., 19*(4):27-9. doi:10.1590/2176-9451.19.4.027-029.ebo

Faul, F., Erdfelder, E., Lang, A.-G. & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical

sciences. *Behavior Research Methods*, 39, 175-191.

Faul, A. C., Yankeelov, P. A., & McCord, L. R. (2015). Inequitable access to health services for older adults with diabetes: Potential solutions on a state level. *Journal of Aging & Social Policy, 27*(1), 63–86. doi:10.1080/08959420.2015.969114

Flores, A. (2017). How the U.S. Hispanic population is changing. Retrieved from https://www.pewresearch.org/fact-tank/2017/09/18/how-the-u-s-hispanic-population-is-changing/

Fortmann, A., Gallo, L., & Philis-Tsimikas, A. (2011). Glycemic control among Latinos with type 2 diabetes: The role of social-environmental support resources. *Health Psychology, 30*, 251-258. doi:10.1037/a0022850

Fradgley, E. A., Paul, C. L., & Bryant, J. (2015). A systematic review of barriers to optimal outpatient specialist services for individuals with prevalent chronic diseases: What are the unique and common barriers experienced by patients in high income countries? *International Journal for Equity in Health, 14*(1), 1–15. doi:10.1186/s12939-015-0179-6

Francis, P.T. (2019). Transgenerational preventive practices of diabetes mellitus type II patients attending a tertiary care hospital in Cochin, India. *Indian Journal of Community Medicine*, (5), 7. doi:10.4103/ijcm.IJCM_17_19

Frankfort-Nachmias, C., & Leon-Guerrero, A. (2018). Social statistics for a diverse society (8th ed.). Thousand Oaks, CA: Sage Publications.

Gallin, J.I. (2018). Principles and practice of clinical research (Fourth Edition). Academic Press, 1-15. doi:10.1016/B978-0-12-849905-4.00001-0.

Garcia, L., Lee, A., Al Hazzouri, A. Z., Neuhaus, J., Epstein, M., & Haan, M. (2015). The impact of neighborhood socioeconomic position on prevalence of diabetes and prediabetes in older Latinos: The Sacramento Area Latino Study on Aging. *Hispanic Health Care International, 13*(2), 77–85. doi:10.1891/1540-4153.13.2.77

Gates, S., & Ealing, E. (2019). Reporting and interpretation of results from clinical trials that did not claim a treatment difference: Survey of four general medical journals. *BMJ open, 9*(9), e024785. doi:10.1136/bmjopen-2018-024785

Geissler, K. H., & Leatherman, S. (2015). Providing primary health care through integrated microfinance and health services in Latin America. *Social Science & Medicine, 132,* 30–37. doi:10.1016/j.socscimed.2015.03.013

Gibson, O., Lisy, K., Davy, C., Aromataris, E., Kite, E., Lockwood, C., Riitano, D., McBride, K., & Brown, A. (2015). Enablers and barriers to the implementation of primary health care interventions for Indigenous people with chronic diseases: A systematic review. *IMPLEMENTATION SCIENCE,* 10. doi:10.1186/s13012-015-0261-x

Gibson, D. M. (2017). Frequency and predictors of missed visits to primary care and eye care providers for annually recommended diabetes preventive care services over a two-year period among U.S. adults with diabetes. *Preventive Medicine,* 105, 257–264. doi:10.1016/j.ypmed.2017.09.019

Gilston, A. (2015). Internal validity in Psychology: Threats, definition & examples. Retrieved from https://study.com/academy/lesson/internal-validity-in-psychology-

threats-definition-examples.html.

Grady, P. A., & Gough, L. L. (2018). Self-management: A comprehensive approach to management of chronic conditions. *American Journal of Public Health*, 108, S430–S436. doi:10.2105/AJPH.2014.302041

Graves, B. A., Thompson, E., Liu, G., Kunberger, J., Canaday, L., & Bambis, B. (2019). Access to diabetes self-management education in a rural state: A GIS analysis. *Online Journal of Rural Nursing & Health Care, 19*(2), 98. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edo&AN=140909263&site=eds-live&scope=site

Green. L.S, Marshall, K.K, Sigrid, G.D., & Kay. B.P. (1980). Health education planning: A diagnostic approach. Palo Alto, CA: Mayfield.

Guerra, G., Gutiérrez-Calderón, E., Salgado de Snyder, N., Borja-Aburto, V. H., Martínez-Valle, A., & González-Block, M. Á. (2018). Loss of job-related right to healthcare associated with employment turnover: Challenges for the Mexican health system. *BMC Health Services Research, 18*(1), 457. doi:10.1186/s12913-018-3283-7

Gumber, A., & Gumber, L. (2017). Improving prevention, monitoring, and management of diabetes among ethnic minorities: Contextualizing the six G's approach. *BMC Research Notes, 10*, 1–5. doi:10.1186/s13104-017-3104-9

Haradhan Kumar Mohajan. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University Economic Series, 17*(4),

59–82. doi:10.26458/1746

Haslbeck, J., Zanoni, S., Hartung, U., Klein, M., Gabriel, E., Eicher, M., & Schulz, P. J. (2015). Introducing the chronic disease self-management program in Switzerland and other German-speaking countries: Findings of a cross-border adaptation using a multiple-methods approach. *BMC Health Services Research,* 15, 1–19. doi:10.1186/s12913-015-1251-z

Health Policy Institute. (n.d.). Cultural competence in health care: Is it important for people with chronic conditions? Retrieved from https://hpi.georgetown.edu/cultural/

HealthyPeople.Gov. (2019). Access to health services. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services#1

HealthyPeople.Gov. (2019b). Diabetes management: Interventions engaging community health workers. Retrieved from https://www.healthypeople.gov/2020/tools-resources/evidence-based-resource/diabetes-management-interventions-engaging-community

Heard, E., Mutch, A., & Fitzgerald, L. (2020). Using Applied Theater in Primary, Secondary, and Tertiary Prevention of Intimate Partner Violence: A Systematic Review. *Trauma, Violence, & Abuse*, *21*(1), 138–156. doi:10.1177/1524838017750157

Held, M. L., McCabe, J., & Thomas, L. (2018). Latino immigrants in a new destination state: A qualitative study of provider experiences. *Journal of Social Work*

Education, 54(4), 641–656. doi:10.1080/10437797.2018.1486256

Hemed, M. (2015). Cross-sectional studies. Retrieved from https://www.gfmer.ch/SRH-Course-2015/research-methodology/pdf/Cross-sectional-studies-Hemed-2015.pdf

Henry, H. K. M., & Schor, E. L. (2015). Supporting Self-Management of Chronic Health Problems. *PEDIATRICS, 135*(5), 789–792. doi:10.1542/peds.2014-3431

Herberholz, C., & Phuntsho, S. (2018). Social capital, outpatient care utilization and choice between different levels of health facilities in rural and urban areas of Bhutan. *Social Science & Medicine, 211*, 102–113. doi:10.1016/j.socscimed.2018.06.010

Hess, D.R. (2004). Retrospective studies and chart reviews. *Respir Care 49*(10):1171–1174. Retrieved from http://www.rcjournal.com/contents/10.04/10.04.1171.pdf

Hildebrand, J. A., Billimek, J., Olshansky, E. F., Sorkin, D. H., Jung-Ah Lee, & Evangelista, L. S. (2018). Facilitators and barriers to research participation: Perspectives of Latinos with type 2 diabetes. *European Journal of Cardiovascular Nursing, 17*(8), 737–741. doi:10.1177/1474515118780895

Hirshfield, S., Downing, M. J., Jr., Horvath, K. J., Swartz, J. A., & Chiasson, M. A. (2018). Adapting Andersen's behavioral model of health service use to examine risk factors for hypertension among US MSM. *AMERICAN JOURNAL OF MEN'S HEALTH, 12*(4), 788–797. doi:10.1177/1557988316644402

Hirshon, J. M., Risko, N., Calvello, E. J., de Ramirez, S. S., Narayan, M., Theodosis, C., & O'Neill, J. (2013). Health systems and services: The role of acute care. *Bulletin of the World Health Organization, 91*(5), 386–388. doi:10.2471/BLT.12.112664

Ho, J., Bachman-Carter, K., Thorkelson, S., Anderson, K., Jaggi, J., Brown, C., Nelson, A. K., Curley, C., King, C., Atwood, S., & Shin, S. (2018). Glycemic control and healthcare utilization following pregnancy among women with pre-existing diabetes in Navajo Nation. *BMC Health Services Research, 18*(1), 629. doi:10.1186/s12913-018-3434-x

Holden, C.D., Chen, J., & Dagher, R.K. (2015). Preventive care utilization among the uninsured by race/ethnicity and income. *American Journal of Preventive Medicine*, *Volume 48*, Issue 1, 13 – 21. doi:10.1016/j.amepre.2014.08.029

Holtzman, C. W., Shea, J. A., Glanz, K., Jacobs, L. M., Gross, R., Hines, J., … Yehia, B. R. (2015). Mapping patient-identified barriers and facilitators to retention in HIV care and antiretroviral therapy adherence to Andersen's Behavioral Model. *AIDS Care, 27*(7), 817–828. doi:10.1080/09540121.2015.1009362

Hong, Y., Samuels, S. K., Huo, J., Lee, N., Mansoor, H., & Duncan, R. P. (2019). Patient-centered care factors and access to care: A path analysis using the Andersen behavior model. *Public Health, 171*, 41–49. doi:10.1016/j.puhe.2019.03.020

Hsueh, L., Peña, J. M., Hirsh, A. T., de Groot, M., & Stewart, J. C. (2019). Diabetes risk perception among immigrant and racial/ethnic minority adults in the United States. *Diabetes Educator, 45*(6), 642–651. doi:10.1177/0145721719873640

Hunt, C. W., Henderson, K., & Chapman, R. (2018). Using technology to provide diabetes education for rural communities. *Online Journal of Rural Nursing & Health Care, 18*(2), 134–151. doi:10.14574/ojrnhc.v18i2.525

Hurtado, M. D., & Vella, A. (2019). What is type 2 diabetes? Medicine, 47(1), 10–15. doi:/10.1016/j.mpmed.2018.10.010

Hussein, M., Diez Roux, A. V., Mujahid, M. S., Hastert, T. A., Kershaw, K. N., Bertoni, A. G., & Baylin, A. (2018). Unequal exposure or unequal vulnerability? Contributions of neighborhood conditions and cardiovascular risk factors to socioeconomic inequality in incident cardiovascular disease in the multi-ethnic study of atherosclerosis. *American Journal of Epidemiology, 187*(7), 1424. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edb&AN=130465326&site=eds-live&scope=site

IBM. (n.d). IBM SPSS statistics. Retrieved from https://www.ibm.com/products/spss-statistics

Jacklin, K. M., Henderson, R. I., Green, M. E., Walker, L. M., Calam, B., & Crowshoe, L. J. (2017). Health care experiences of Indigenous people living with type 2 diabetes in Canada. *CMAJ: Canadian Medical Association Journal, 189*(3), E106–E112. doi:10.1503/cmaj.161098

Jackson, S. L., DesRoches, C. M., Frosch, D. L., Peacock, S., Oster, N. V., & Elmore, J. G. (2018). Will use of patient portals help to educate and communicate with patients with diabetes? *PATIENT EDUCATION AND COUNSELING, 101*(5), 956–959. doi:10.1016/j.pec.2017.11.004

Jang, M., Johnson, C. M., D, E.-M. G., & Vorderstrasse, A. A. (2018). Participation of racial and ethnic minorities in technology-based interventions to self-manage type

2 diabetes: A scoping review. *Journal of Transcultural Nursing, 29*(3), 292–307. doi:10.1177/1043659617723074

Ji, L., Thompson, T.J., Cheng, Y.J., Zhuo, X., Zhang, P., Gregg, E., & Rolka, D. (2018). Projection of the future diabetes burden in the United States through 2060. *Population Health Metrics*, (1), 1. doi:10.1186/s12963-018-0166-4

Jin, Y., Zhu, W., Yuan, B., & Meng, Q. (2017). Impact of health workforce availability on health care seeking behavior of patients with diabetes mellitus in China. *INTERNATIONAL JOURNAL FOR EQUITY IN HEALTH*, 16. doi:10.1186/s12939-017-0576-0

Juarez, L.D., Gonzalez, J.S., Agne, A.A., Kulczycki, A., Pavela, G., Carson, A.P., Shelley, J.P., & Cherrington, A.L. (2018). Diabetes risk scores for Hispanics living in the United States: A systematic review. *Diabetes Res Clin Pract.* 142:120-129. doi: 10.1016/j.diabres.2018.05.009.

Kashima, S., Inoue, K., Ishida, R., Matsumoto, M., Hatano, Y., & Akimoto, K. (2020). Levels of fasting plasma glucose in non-hospitalized older people with high hemoglobin A1c levels. *Journal of diabetes investigation*, *11*(3), 750–751. doi:10.1111/jdi.13169

Kauhl, B., Schweikart, J., Krafft, T., Keste, A., & Moskwyn, M. (2016). Do the risk factors for type 2 diabetes mellitus vary by location? A spatial analysis of health insurance claims in Northeastern Germany using kernel density estimation and geographically weighted regression. *INTERNATIONAL JOURNAL OF HEALTH GEOGRAPHICS*, 15. doi:10.1186/s12942-016-0068-2

Kelly, C., Hulme, C., Farragher, T., & Clarke, G. (2016). Are differences in travel time or distance to healthcare for adults in global north countries associated with an impact on health outcomes? A systematic review. *BMJ Open6*: e013059. doi: 10.1136/bmjopen-2016-013059

Kent State University. (2020). SPSS Tutorials: Chi-square test of independence. Retrieved from https://libguides.library.kent.edu/SPSS/ChiSquare

Kent State University. (2020b). SPSS tutorials: Analyzing data. Retrieved from https://libguides.library.kent.edu/SPSS/AnalyzeData

Kenton, W. (2020). Statistical significance. Retrieved from https://www.investopedia.com/terms/s/statistically_significant.asp

Kneeshaw-Price, S. H., Saelens, B. E., Sallis, J. F., Frank, L. D., Grembowski, D. E., Hannon, P. A., Smith, N. L., & Chan, K. C. (2015). Neighborhood crime-related safety and its relation to children's physical activity. *Journal of Urban Health*: *Bulletin of the New York Academy of Medicine, 92*(3), 472–489. doi:10.1007/s11524-015-9949-0

Koce, F., Randhawa, G., & Ochieng, B. (2019). Understanding healthcare self-referral in Nigeria from the service users' perspective: A qualitative study of Niger state. *BMC Health Services Research, 19*(1), 209. doi:10.1186/s12913-019-4046-9

Konerding, U., Bowen, T., Elkhuizen, S. G., Faubel, R., Forte, P., Karampli, E., … Torkki, P. (2017). The impact of travel distance, travel time and waiting time on health-related quality of life of diabetes patients: An investigation in six European

countries. *Diabetes Research & Clinical Practice*, 126, 16–24. doi:10.1016/j.diabres.2017.01.014

Kurpas, D., Gwyther, H., Szwamel, K., Shaw, R. L., D'Avanzo, B., Holland, C. A., & Bujnowska-Fedak, M. M. (2018). Patient-centered access to health care: A framework analysis of the care interface for frail older adults. *BMC Geriatrics, 18*(1), 273. doi:10.1186/s12877-018-0960-7

Lachance, L., Kelly, R. P., Wilkin, M., Burke, J., & Waddell, S. (2018). Community-based efforts to prevent and manage diabetes in women living in vulnerable communities. *Journal of Community Health: The Publication for Health Promotion and Disease Prevention, 43*(3), 508–517. doi:10.1007/s10900-017-0444-2

Lagisetty, P. A., Wen, M., Choi, H., Heisler, M., Kanaya, A. M., & Kandula, N. R. (2016). Neighborhood social cohesion and prevalence of hypertension and diabetes in a South Asian population. *Journal of Immigrant and Minority Health, 18*(6), 1309–1316. doi:10.1007/s10903-015-0308-8

Lan, V. T. H., Hoang, L. T., Linh, N. T., & Quyen, B. T. T. (2017). Blood glucose disorders and access to health care services among adults aged 30 to 69 years in Chi Linh, Hai Duong, Vietnam. *Asia-Pacific Journal of Public Health, 29*(5, Suppl), 45S–52S. doi:10.1177/1010539517709069

Lane, D. M. (2013). Interpreting non-significant results. Introduction to Statistics: An interactive e-book. Online Statistics Education: A multimedia course of study. Retrieved from

http://onlinestatbook.com/2/logic_of_hypothesis_testing/nonsignificant.html

Larimer, K. A., Gulanick, M., & Penckofer, S. (2017). Understanding determinants of cardiovascular death in a Mexican American community. *Health Promotion Practice, 18*(4), 534. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edb&AN=123700967&site=eds-live&scope=site

Laureate Education (Producer). (2016). *Bivariate categorical tests* [Video file]. Baltimore, MD: Author

Lee, L.T., Bowen, P.G., Mosley, M.K., & Turner, C.C. (2017). Theory of planned behavior: Social support and diabetes self-management. *Journal for Nurse Practitioners, 13*(4), 265-270. doi:10.1016/j.nurpra.2016.07.013

Liddy, C., Johnston, S., Irving, H., Nash, K., & Ward, N. (2015). Improving awareness, accountability, and access through health coaching: Qualitative study of patients' perspectives. *Canadian Family Physician, 61*(3), e158–e164. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=mnh&AN=25932483&site=eds-live&scope=site

Lindley, L. C. (2015). Determinants of access to pediatric hospice care. *Journal of Hospice & Palliative Nursing, 17*(2), 113–118. doi:10.1097/NJH.0000000000000132

Liu, Y., Croft, J. B., Wheaton, A. G., Kanny, D., Cunningham, T. J., Lu, H., ...Giles, W. H. (2016). Clustering of five health-related behaviors for chronic disease

prevention among adults, United States, 2013. *PREVENTING CHRONIC DISEASE*, 13. doi:10.5888/pcd13.160054

Lo, C., Ilic, D., Teede, H., Fulcher, G., Gallagher, M., Kerr, P. G., … Zoungas, S. (2016a). Primary and tertiary health professionals' views on the healthcare of patients with co-morbid diabetes and chronic kidney disease - a qualitative study. *BMC Nephrology, 17*(1), 50. doi:10.1186/s12882-016-0262-2

Lo, C., Teede, H., Ilic, D., Russell, G., Murphy, K., Usherwood, T., … Zoungas, S. (2016b). Identifying health service barriers in the management of co-morbid diabetes and chronic kidney disease in primary care: A mixed-methods exploration. *Family Practice, 33*(5), 492–497. doi:10.1093/fampra/cmw041

Lo, T. K. T., Parkinson, L., Cunich, M., & Byles, J. (2016). Factors associated with the health care cost in older Australian women with arthritis: An application of Andersen's behavioral model of health services use. *Public Health, 134*, 64–71. doi:10.1016/j.puhe.2015.11.018

Lopez, L., Tan-McGrory, A., Horner, G., & Betancourt, J. R. (2016). Eliminating disparities among Latinos with type 2 diabetes: Effective eHealth strategies. *Journal of Diabetes & Its Complications, 30*(3), 554–560. doi:10.1016/j.jdiacomp.2015.12.003

Lopez, M.H., Krogstad, J.M., & Passel, J.S. (2019). Who is Hispanic? Retrieved from https://www.pewresearch.org/fact-tank/2019/11/11/who-is-hispanic/

Lund Research Limited. (2012). Maturation effects and internal validity. Retrieved from http://dissertation.laerd.com/internal-validity-p3.php

Luo, H., Chen, Z. A., Xu, L., & Bell, R. A. (2019). Health care access and receipt of clinical diabetes preventive care for working-age adults with diabetes in states with and without Medicaid expansion: Results from the 2013 and 2015 BRFSS. *Journal of Public Health Management and Practice*, (4), 34. doi:10.1097/PHH.0000000000000832

Luque, J. S., Soulen, G., Davila, C. B., & Cartmell, K. (2018). Access to health care for uninsured Latina immigrants in South Carolina. *BMC Health Services Research, 18*(1), 310. doi:10.1186/s12913-018-3138-2

Lynch, C. P., Gebregziabher, M., Axon, R. N., Hunt, K. E., Payne, E., & Egede, L. E. (2015). Geographic and racial/ethnic variations in patterns of multimorbidity burden in patients with type 2 diabetes. *JOURNAL OF GENERAL INTERNAL MEDICINE, 30*(1), 25–32. doi:10.1007/s11606-014-2990-y

Madill, R., Badland, H., Mavoa, S., & Giles-Corti, B. (2018). Comparing private and public transport access to diabetic health services across inner, middle, and outer suburbs of Melbourne, Australia. *BMC Health Services Research, 18*(1), 286. doi:10.1186/s12913-018-3079-9

Majeed-Ariss, R., Jackson, C., Knapp, P., & Cheater, F. M. (2015). A systematic review of research into black and ethnic minority patients' views on self-management of type 2 diabetes. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy, 18*(5), 625–642. doi:10.1111/hex.12080

Malambo, P., Kengne, A. P., De Villiers, A., Lambert, E. V., & Puoane, T. (2016). Built

environment, selected risk factors and major cardiovascular disease outcomes: A systematic review. *Plos One, 11*(11), e0166846. doi:10.1371/journal.pone.0166846

Malambo, P., De Villiers, A., Lambert, E. V., Puoane, T., & Kengne, A. P. (2018). Associations of perceived neighborhood safety from traffic and crime with overweight/obesity among South African adults of low-socioeconomic status. *Plos One, 13*(10), e0206408. doi:10.1371/journal.pone.0206408

Manski-Nankervis, J.-A., Furler, J., Audehm, R., Blackberry, I., & Young, D. (2015). Potentially preventable hospitalizations: Are they a useful marker of access to and experience of care in general practice among people with type 2 diabetes? *Australian Journal of Primary Health, 21*(2), 214–220. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=mnh&AN=24491142&site=eds-live&scope=site

Mansyur, C. L., Rustveld, L. O., Nash, S. G., & Jibaja-Weiss, M. L. (2015). Social factors and barriers to self-care adherence in Hispanic men and women with diabetes. *PATIENT EDUCATION AND COUNSELING, 98*(6), 805–810. doi:10.1016/j.pec.2015.03.001

Mathew, T. K. & Tadi, P. (2020). *Blood glucose monitoring*. Treasure Island, FL: StatPearls Publishing. Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK555976/

Matsumoto, M., Wimer, G., & Sethi, A. (2019). Health needs of refugees: Port of arrival

versus permanent camp settings. *Eastern Mediterranean Health Journal, 25*(5), 306. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edo&AN=137759354&site=eds-live&scope=site

McBrien, K. A., Naugler, C., Ivers, N., Weaver, R. G., Campbell, D., Desveaux, L., … Manns, B. J. (2017). Barriers to care in patients with diabetes and poor glycemic control-A cross-sectional survey. *Plos One, 12*(5), e0176135. doi:10.1371/journal.pone.0176135

McCormack, G. R., Koohsari, M. J., Oka, K., Friedenreich, C. M., Blackstaffe, A., Alaniz, F. U., & Farkas, B. (2019). Differences in transportation and leisure physical activity by neighborhood design controlling for residential choice. *Journal of Sport and Health Science, 8*(6), 532–539. doi:10.1016/j.jshs.2019.05.004

McDonald, J.H. (2014). Handbook of Biological Statistics (3rd ed.). Sparky House Publishing, Baltimore, Maryland. pages 247-253. Retrieved from http://www.biostathandbook.com/multiplelogistic.html.

McGrath, A. (2016). Searching for Significance in the Scholarship of Teaching and Learning and Finding None: Understanding Non-Significant Results. *Teaching & Learning Inquiry, 4*(2).

McHugh M. L. (2013). The chi-square test of independence. *Biochemia medica*, *23*(2), 143–149doi:10.11613/bm.2013.018

Mechanic, D. (1979). Correlates of physician utilization: Why do multivariate studies of

physician utilization find trivial psychosocial and organizational effects? *Journal of Health and Social behavior 20*(4):387-96. doi: 10.2307/2955413

Mendenhall, E., & Norris, S. A. (2015). Diabetes care among urban women in Soweto, South Africa: A qualitative study. *BMC Public Health, 15*, 1300. doi:10.1186/s12889-015-2615-3

Mendoza Catalán, G., Juárez Medina, L., Pimentel Jaimes, J. A., Higuera Sainz, J. L., & Gutiérrez Valverde, J. M. (2017). Sociocultural barriers in the management of diabetes in men of Mexican origin: Systematic review. *NURE Research*, *14*(91), 1–10. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=rzh&AN=126536289&site=eds-live&scope=site

Mogre, V., Johnson, N. A., Tzelepis, F., & Paul, C. (2019). Barriers to diabetic self□ care: A qualitative study of patients' and healthcare providers' perspectives. *Journal of Clinical Nursing (John Wiley & Sons, Inc.), 28*(11/12), 2296–2308. doi:10.1111/jocn.14835

Moore, M., Gibbons, C., Cheng, N., Coffman, M., Petterson, S., & Bazemore, A. (2016). Complexity of ambulatory care visits of patients with diabetes as reflected by diagnoses per visit. *Primary Care Diabetes, 10*(4), 281–286. doi:10.1016/j.pcd.2015.11.006

Moradi, S., Sahebi, Z., Ebrahim Valojerdi, A., Rohani, F., & Ebrahimi, H. (2017). The association between the number of office visits and the control of cardiovascular risk factors in Iranian patients with type2 diabetes. *Plos One, 12*(6), e0179190.

doi:10.1371/journal.pone.0179190

Moreno, G., Morales, L., Nunez-deJaimes, F., Tseng, C., Isiordia, M., Noguera, C., & Mangione, C. (2014). Neighborhood perceptions and health-related outcomes among Latinos with diabetes from a rural agricultural community. *Journal of Community Health, 39*, 1077-1084. doi:10.1007/s10900-014-9854-6

Mui, A.C., Choi, N.G., & Monk, G. (1998). Long term care and ethnicity. Westport, CT: Auburn House.

Mukona, D., Munjanja, S. P., Zvinavashe, M., & Stray-Pederson, B. (2017). Barriers of adherence and possible solutions to nonadherence to antidiabetic therapy in women with diabetes in pregnancy: Patients' perspective. *Journal of Diabetes Research*. doi:10.1155/2017/3578075

Murayama, H.J., Spencer, M.S., Sinco, B.R., Palmisano, G., & Kieffer, E. C. (2017). Does racial/ethnic identity influence the effectiveness of a community health worker intervention for African American and Latino adults with type 2 diabetes? *Health Education & Behavior, 44*(3), 485–493. doi:10.1177/1090198116673821

Mwavua, S. M., Ndungu, E. K., Mutai, K. K., & Joshi, M. D. (2016). A comparative study of the quality of care and glycemic control among ambulatory type 2 diabetes mellitus clients, at a tertiary referral hospital and a regional hospital in Central Kenya. *BMC Research Notes,* 9, 12. doi:10.1186/s13104-015-1826-0

National Association of Community Health Centers. (2019). What is a community health center? Retrieved from http://www.nachc.org/about/about-our-health-

centers/what-is-a-health-center/

National Institute of Diabetes and Digestive and Kidney Diseases. (2018). The A1C test and diabetes. Retrieved from https://www.niddk.nih.gov/health-information/diabetes/overview/tests-diagnosis/a1c-test

National Institute of Diabetes and Digestive and Kidney Diseases. (2019). Diabetes discovery and practice blog: Every person with diabetes needs ongoing self-management education and support. Retrieved from https://www.niddk.nih.gov/health-information/professionals/diabetes-discoveries-practice/diabetes-self-management-education-support

NCSS Statistical Software. (n.d). Chapter 250: Chi-square tests. Retrieved from https://ncss-wpengine.netdna-ssl.com/wp-content/themes/ncss/pdf/Procedures/PASS/Chi-Square_Tests.pdf

Nedjat-Haiem, F. R., Carrion, I. V., Gonzalez, K., Quintana, A., Ell, K., O'Connell, M., … Mishra, S. I. (2017). Implementing an advance care planning intervention in community settings with older Latinos: A feasibility study. *JOURNAL OF PALLIATIVE MEDICINE, 20*(9), 984–993. doi:10.1089/jpm.2016.0504

Nguyen, A. L., Sepulveda, E., & Angulo, M. (2017). "It feels good to know that someone cares": Hispanic adults' motivations for attending diabetes education classes. *Hispanic Health Care International, 15*(2), 52–57. doi:10.1177/1540415317698701

Nguyen, A. L., Yan, T., Ell, K., Gonzalez, J., & Enguidanos, S. (2017b). Care transitions among Latino diabetics: Barriers to study enrollment and transition care. *Ethnicity*

& Health, 22(4), 361–371. doi:10.1080/13557858.2016.1244626

Nicklett, E. J., Omidpanah, A., Whitener, R., Howard, B. V., & Manson, S. M. (2017). Access to care and diabetes management among older American Indians with type 2 diabetes. *Journal of Aging & Health, 29*(2), 206–221. doi:10.1177/0898264316635562

Njeru, J., Formea, C., Osman, A., Goodson, M., Hared, A., Capetillo, G., … Wieland, M. (2016). Diabetes knowledge, attitudes and behaviors among Somali and Latino immigrants. *Journal of Immigrant & Minority Health, 18*(6), 1432–1440. doi:10.1007/s10903-015-0335-5

Nohr, E.A., & Liew, Z. (2018). How to investigate and adjust for selection bias in cohort studies. *Acta Obstet Gynecol Scand; 97*:407–416. doi: 10.1111/aogs.13319.

Nour, S. & Plourde, G. (2019). Pharmacoepidemiology and pharmacovigilance. Academic Press, 25-65. doi:10.1016/B978-0-12-816183-8.00003-2.

O'Brien, M. J., Perez, A., Alos, V. A., Whitaker, R. C., Ciolino, J. D., Mohr, D. C., & Ackermann, R. T. (2015). The feasibility, acceptability, and preliminary effectiveness of a Promotora-Led Diabetes Prevention Program (PL-DPP) in Latinas: A pilot study. *The Diabetes Educator, 41*(4), 485–494. dooi:10.1177/0145721715586576

Office of Disease Prevention and Health Promotion. (2020). Diabetes. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/diabetes

Office of Minority Health. U.S. Department of Health and Human Services. (2016). Diabetes and Hispanic Americans. Retrieved from

https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=63

Olsen, K. R., & Laudicella, M. (2019). Health care inequality in free access health systems: The impact of non-pecuniary incentives on diabetic patients in Danish general practices. *Social Science & Medicine*, 230, 174–183. doi:10.1016/j.socscimed.2019.03.005

Oza-Frank, R., Conrey, E., Bouchard, J., Shellhaas, C., & Weber, M. B. (2018). Healthcare experiences of low-income women with prior gestational diabetes. *Maternal and Child Health Journal, 22*(7), 1059–1066. doi:10.1007/s10995-018-2489-y

Paduch, A., Kuske, S., Schiereck, T., Droste, S., Loerbroks, A., Sørensen, M., … Icks, A. (2017). Psychosocial barriers to healthcare use among individuals with diabetes mellitus: A systematic review. *Primary Care Diabetes, 11*(6), 495–514. doi:10.1016/j.pcd.2017.07.009

Pancholi, B., Dunne, M., & Armstrong, R. (2009). Sample size estimation and statistical power analyses. Retrieved from https://www.researchgate.net/publication/265399772_Sample_size_estimation_and_statistical_power_analyses

Paul, C. L., Piterman, L., Shaw, J. E., Kirby, C., Barker, D., Robinson, ...Sanson-Fisher, R. W. (2016). Patterns of type 2 diabetes monitoring in rural towns: How does frequency of HbA1c and lipid testing compare with existing guidelines? *Australian Journal of Rural Health, 24*(6), 371–377. doi:10.1111/ajr.12283

Penchansky, R. (1976). Book review: Access to medical care. *Medical Care 16*, 642. Retrieved from https://www.jstor.org/stable/2137284?seq=1

Peremislov, D. (2017). Patient use of the electronic communication portal in management of type 2 diabetes. CIN: *Computers, Informatics, Nursing, 35*(9), 473–482. doi:10.1097/CIN.0000000000000348

Perez, L. G., Ruiz, J.M., & Berrigan, D. (2019). Neighborhood environment perceptions among Latinos in the U.S. *International Journal of Environmental Research and Public Health*, (17), 3062. doi:10.3390/ijerph16173062

Perez-Escamilla, R., Damio, G., Chhabra, J., Fernandez, M. L., Segura-Pérez, S., Vega-López, S., … D'Agostino, D. (2015). Impact of a community health workers-led structured program on blood glucose control among Latinos with type 2 diabetes: *The DIALBEST Trial. Diabetes Care, 38*(2), 197–205. doi:10.2337/dc14-0327

Petrovic, K., & Blank, T. O. (2015). The Andersen–Newman behavioral model of health service use as a conceptual basis for understanding patient behavior within the patient–physician dyad: The influence of trust on adherence to statins in older people living with HIV and cardiovascular disease. Cogent Psychology, 2(1), 1-9.

Piccolo, R. S., Duncan, D. T., Pearce, N., & McKinlay, J. B. (2015). The role of neighborhood characteristics in racial/ethnic disparities in type 2 diabetes: Results from the Boston Area Community Health (BACH) Survey. *Social Science & Medicine, 130,* 79–90. doi:10.1016/j.socscimed.2015.01.041

Pratley, R. E. (2013). The early treatment of type 2 diabetes. *Supplement Review, 126*(9), 2-9. doi:10.1016/j.amjmed.2013.06.007

Public Health Action Support Team. (2020). Introduction to study designs. Retrieved from https://www.healthknowledge.org.uk/e-learning/epidemiology/practitioners/introduction-study-design-css

Purnell, T., Lynch, T., Bone, L., Segal, J., Evans, C., Longo, D., & Bridges, J. (2016). Perceived barriers and potential strategies to improve self-management among adults with type 2 diabetes: A Community-Engaged Research Approach. *Patient, 9*(4), 349–358. doi:10.1007/s40271-016-0162-3

Radaelli, C.M., & Wagemann, C. (2019). What did I leave out? Omitted variables in regression and qualitative comparative analysis. *Eur Polit Sci* 18, 275–290. doi:10.1057/s41304-017-0142-7

Resnick, B. (2019). P-values and "statistical significance" are widely misunderstood. Here's what they actually mean. Retrieved from https://www.vox.com/latest-news/2019/3/22/18275913/statistical-significance-p-values-explained

Roberts, D. P. (2017). Accessibility and outcomes from a rural diabetes nurse-educator led self-management program. *Australian Journal of Advanced Nursing, 34*(4), 26–33. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=rzh&AN=123551127&site=eds-live&scope=site

Rodriguez, H., Chen, J., & Rodriguez, M. (2010). A national study of problematic care experiences among Latinos with diabetes. *Journal of Health Care for the Poor and Underserved*, *21*, 1152-1168

Rotberg, B., Greene, R., Ferez-Pinzon, A. M.., Mejia, R., & Umpierrez, G. (2016).

Improving diabetes care in the Latino population: The Emory Latino Diabetes Education Program. *American Journal of Health Education, 47*(1), 1–7. doi:10.1080/19325037.2015.1111177

Ruiz, J. M., Hamann, H. A., Mehl, M. R., & O'Connor, M. (2016). The Hispanic health paradox: From epidemiological phenomenon to contribution opportunities for psychological science. *Group Processes & Intergroup Relations, 19*(4), 462–476. doi:10.1177/1368430216638540

Rundall, T.G. (1981). A suggestion for improving the behavioral Model of physician utilization. *Journal of Health and Social Behavior* 22:103-104

Rushforth, B., McCrorie, C., Glidewell, L., Midgley, E., & Foy, R. (2016). Barriers to effective management of type 2 diabetes in primary care: qualitative systematic review. *BRITISH JOURNAL OF GENERAL PRACTICE, 66*(643), E114–E127. doi:10.3399/bjgp16X683509

Ryvicker, M., & Sridharan, S. (2018). Neighborhood environment and disparities in health care access among urban Medicare beneficiaries with diabetes: A retrospective cohort study inquiry: *A Journal of Medical Care Organization, Provision, and Financing, 55*, 46958018771414. doi:10.1177/0046958018771414

Sapra, A., & Bhandari, P. (2020). *Diabetes mellitus*. Treasure Island, FL: StatPearls Publishing. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK551501/

Saunders, T. (2019). Type 2 diabetes self-management barriers in older adults: An integrative review of the qualitative literature. *Journal of Gerontological Nursing, 45*(3), 43.

Sauro, J. (2014). What does statistically significant mean? Retrieved from https://measuringu.com/statistically-significant/#:~:text=Not%20Due%20to%20Chance,result%20that%20large%20or%20larger

Scruggs, C. (2017). How to determine the sample in a quantitative research study. Retrieved from https://sciencing.com/determine-size-quantitative-research-study-8072459.html

Selvin, E., Wang, D., Lee, A.K., Bergenstal, R.M., & Coresh. J. (2017). Identifying trends in undiagnosed diabetes in U.S. adults by using a confirmatory definition: A cross-sectional study. *Ann Intern Med. 167*(11):769–776. doi:10.7326/M17-1272

Seo, J. Y., Bae, S.-H., & Dickerson, S. S. (2016). Korean immigrant women's health care utilization in the United States. *Asia-Pacific Journal of Public Health, 22*(2), 107–133. doi:10.1177/1010539515626266

Setia, M. S. (2016). Methodology series module 3: Cross-sectional Studies. *Indian Journal of Dermatology, 61*(3), 261–264. doi:10.4103/0019-5154.182410

Shartzer, A., Long, S. K., & Anderson, N. (2015). Access to care and affordability have improved following Affordable Care Act implementation; Problems remain. *HEALTH AFFAIRS, 35*(1), 161–168. doi:10.1377/hlthaff.2015.0755

Shu-Li, C., Wen-Chuan, C., & Ran-Chou, C. (2018). Chronic disease prevention: Present and future. *Journal of Nursing, 65*(5), 13–19. doi:10.6224/JN.201810_65(5).03

Silfee, V. J., Rosal, M. C., Sreedhara, M., Lora, V., & Lemon, S. C. (2016).

Neighborhood environment correlates of physical activity and sedentary behavior among Latino adults in Massachusetts. BMC Public Health, 16, 966. doi:10.1186/s12889-016-3650-4

Simmons, C. A., Lindsey, L., Delaney, M. J., Whalley, A., & Beck, J. G. (2015). Real-world barriers to assessing and treating mental health problems with IPV survivors: A qualitative study. *Journal of Interpersonal Violence, 30*(12), 2067–2086. doi:10.1177/0886260514552275

Smalls, B. L., Gregory, C. M., Zoller, J. S., & Egede, L. E. (2015a). Assessing the relationship between neighborhood factors and diabetes related health outcomes and self-care behaviors. *BMC Health Services Research, 15*, 445. doi:10.1186/s12913-015-1086-7

Smalls, B. L., Gregory, C. M., Zoller, J. S., & Egede, L. E. (2015b). Direct and indirect effects of neighborhood factors and self-care on glycemic control in adults with type 2 diabetes. Journal of Diabetes and Its Complications, 29(2), 186–191. doi:10.1016/j.jdiacomp.2014.10.008

Smalls, B.L., Gregory, C.M., Zoller, J.S., Egede, L.E. (2017). Conceptualizing the effect of community and neighborhood factors on type 2 diabetes health outcomes. *Environment and Behavior. 49*(5):560-582. doi:10.1177/0013916516652440.

Souliotis, K., Hasardzhiev, S., & Agapidaki, E. (2016). A Conceptual framework of mapping access to health care across EU countries: The patient access Initiative. *Public Health Genomics, 19*(3), 153–159. doi:10.1159/000446533

Stoop, C., Pouwer, F., Pop, V., Den Oudsten, B., & Nefs, G. (2019). Psychosocial health care needs of people with type 2 diabetes in primary care: Views of patients and health care providers. *Journal of Advanced Nursing (John Wiley & Sons, Inc.), 75*(8), 1702. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edb&AN=137640319&site=eds-live&scope=site

Sun, D., Zhou, T., Li, X., Heianza, Y., Shang, X., Fonseca, V., & Qi, L. (2018). Diabetes co-morbidity and all-cause, cardiovascular, and cancer mortality in US adults. *DIABETES, 67*. doi:10.2337/db18-1580-P

Suresh, A.J. (2019). What is the chi-square test and how does it work? An intuitive explanation with R code. Retrieved from https://www.analyticsvidhya.com/blog/2019/11/what-is-chi-square-test-how-it-works/

Suresh, N., & Thankappan, K. R. (2019). Gender differences and barriers women face in relation to accessing type 2 diabetes care: A systematic review. *Indian Journal of Public Health, 63*(1), 65–72. doi:10.4103/ijph.IJPH_26_18

Tamayo, A., Karter, A. J., Mujahid, M. S., Warton, E. M., Moffet, H. H., Adler, N., … Laraia, B. (2016). Associations of perceived neighborhood safety and crime with cardiometabolic risk factors among a population with type 2 diabetes. *HEALTH & PLACE, 39*, 116–121. doi:10.1016/j.healthplace.2016.03.007

Tamayo, A., Mujahid, M.S., Laraia, B., Warton, M., Blanchard S.D., Kelly, M., Moffet, H.H., Adler, N., Schillinger, D., & Karter, A.J. (2016b). Police-recorded crime

and perceived stress among patients with type 2 diabetes: The diabetes study of Northern California (DISTANCE). *Journal of Urban Health, 93*(5), 745-757. doi:10.1007/s11524-016-0069-2

Tang, J., Foster, K., Pumarino, J., Ackermann, R., Peaceman, A., & Cameron, K. (2015). Perspectives on prevention of type 2 diabetes after gestational diabetes: A qualitative study of Hispanic, African American and White women. *Maternal & Child Health Journal, 19*(7), 1526–1534. doi:10.1007/s10995-014-1657-y

Taylor, C. (2018). The levels of measurement in Statistics. Retrieved from https://www.thoughtco.com/levels-of-measurement-in-statistics-3126349

Testerman, J., & Chase, D. (2018). Influences on diabetes self-management education participation in a low-income, Spanish-speaking, Latino population. *Diabetes Spectrum, 31*(1), 47. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edb&AN=128026552&site=eds-live&scope=site

Thomas, L. V., Wedel, K. R., & Christopher, J. E. (2018). Access to transportation and health care visits for Medicaid enrollees with diabetes. *JOURNAL OF RURAL HEALTH, 34*(2), 162–172. doi:10.1111/jrh.12239

Timbie, J. W., Kranz, A. M., Mahmud, A., & Damberg, C. L. (2019). Specialty care access for Medicaid enrollees in expansion states. *American Journal of Managed Care, 25*(3), e83–e87.

Titus, S. K., & Kataoka-Yahiro, M. (2019). A systematic review of barriers to access-to-care in Hispanics with type 2 diabetes. *Journal of Transcultural Nursing, 30*(3),

280. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edb&AN=135815343&site=eds-live&scope=site

Tiwari, Vijay Kumar, Piyush Verma, & Sherin Raj. (2016). Factors associated with diabetes mellitus among tuberculosis patients attending tertiary care hospital in Delhi, India. *Indian Journal of Community Health 28* (4): 369–73. https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=rzh&AN=121108099&site=eds-live&scope=site

Toivakka, M., Laatikainen, T., Kumpula, T., & Tykkylainen, M. (2015). Do the classification of areas and distance matter to the assessment results of achieving the treatment targets among type 2 diabetes patients? *INTERNATIONAL JOURNAL OF HEALTH GEOGRAPHICS*, 14. doi:10.1186/s12942-015-0020-x

Toulouse, C., & Kodadek, M. (2016). Continuous access to medication and health outcomes in uninsured adults with type 2 diabetes. *Journal of the American Association of Nurse Practitioners, 28*(6), 327–334. doi:10.1002/2327-6924.12326

Towne, S. D., Jr., Bolin, J., Ferdinand, A., Nicklett, E. J., Smith, M. L., & Ory, M. G. (2017). Assessing diabetes and factors associated with foregoing medical care among persons with diabetes: Disparities facing American Indian/Alaska Native, Black, Hispanic, low income, and southern adults in the U.S. (2011-2015). *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND*

PUBLIC HEALTH, 14(5). doi:10.3390/ijerph14050464

Tran, P., Tran, L., & Tran, L. (2019). Impact of rurality on diabetes screening in the US. *BMC Public Health, 19*(1), N.PAG. doi:10.1186/s12889-019-7491-9

Trochim, W.M.K. (2020). Research methods knowledge base: Descriptive statistics. Retrieved from https://conjointly.com/kb/descriptive-statistics/

True, W. R., Romeis, J. C., Heath, A. C., Flick, L. H., Shaw, L., Eisen, S. A., … Lyons, M. J. (1997). Genetic and environmental contributions to healthcare need and utilization: A twin analysis. *Health services research, 32*(1), 37–53.

Tung, E. L., Johnson, T. A., O'Neal, Y., Steenes, A. M., Caraballo, G., & Peek, M. E. (2018). Experiences of community violence among adults with chronic conditions: Qualitative findings from Chicago. *JOURNAL OF GENERAL INTERNAL MEDICINE, 33*(11), 1913–1920. doi:10.1007/s11606-018-4607-3

U.S. Census Bureau. (2018). Selected population profile in the United States: 2017 American Community Survey 1-Year Estimates. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

United Health Foundation. (2019). America's health rankings analysis of CDC: Behavioral risk factor surveillance system. Retrieved from https://www.americashealthrankings.org/explore/annual/measure/Diabetes/state/MA

van Gaans, D., & Dent, E. (2018). Issues of accessibility to health services by older Australians: A review. *Public Health Reviews (2107-6952), 39*(1), N.PAG.

doi:10.1186/s40985-018-0097-4

Velasco-Mondragon, E., Jimenez, A., Palladino-Davis, A. G., Davis, D., & Escamilla-Cejudo, J. A. (2016). Hispanic health in the USA: A scoping review of the literature. *Public Health Reviews (2107-6952), 37*(1), 1–27. doi:10.1186/s40985-016-0043-2

Visentin, D. C., Cleary, M., & Hunt, G. E. (2020). The earnestness of being important: Reporting non-significant statistical results. *Journal of Advanced Nursing, 76*(4), 917–919. doi:10.1111/jan.14283

Wagner E. H. (2000). The role of patient care teams in chronic disease management. *BMJ (Clinical research ed.), 320(7234)*, 569-572. doi:10.1136/bmj.320.7234.569

Walden University. (2019). Community health education: PhD in public health. Retrieved from https://www.waldenu.edu/online-doctoral-programs/phd-in-public-health/curriculum/track-ii/community-health-education

Walden University. (2020a). Databases A-Z: Public health. Retrieved from https://academicguides.waldenu.edu/az.php?s=83802

Walden University. (2020b). Research ethics and compliance: Welcome to the IRB. Retrieved from https://academicguides.waldenu.edu/researchcenter/orec

Walden University. (2020c). Social change: A mission for all seasons. Retrieved from https://www.waldenu.edu/connect/newsroom/publications/articles/2017/01-social-change-a-mission-for-all-seasons

Walden University. (2020d). What types of content are in the library databases, google scholar and internet? Retrieved from

https://academicanswers.waldenu.edu/faq/148458

Wandera, S.O., Kwagala, B., & Ntozi, J. (2015). Determinants of access to healthcare by older persons in Uganda: A cross-sectional study. *International Journal of Equity in Health, 14* (26). https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-015-0157-z

Whittemore, R., Vilar-Compte, M., De La Cerda, S., Marron, D., Conover, R., Delvy, R., … Perez-Escamilla, R. (2019). Challenges to diabetes self-management for adults with type 2 diabetes in low-resource settings in Mexico City: A qualitative descriptive study. *International Journal for Equity in Health, 18*(1), N.PAG. doi:10.1186/s12939-019-1035-x

Wilson R.E., Brown, T.H., & Schuster, B. (2009). Preventing Neighborhood crime: Geography matters. Retrieved from https://nij.ojp.gov/topics/articles/preventing-neighborhood-crime-geography-matters

World Health Organization. (2019). Classification of diabetes mellitus. Geneva: License: CC BY-NC-SA 3.0 IGO. Retrieved from https://apps.who.int/iris/bitstream/handle/10665/325182/9789241515702-eng.pdf

World Health Organization. (2020). Diabetes. Retrieved from https://www.who.int/health-topics/diabetes#tab=tab_1

World Health Organization. (2020a). Mortality. Retrieved from https://www.who.int/topics/mortality/en/

Yenipinar, A., Koc, S., Canga, D., & Kaya, F. (2019). Determining sample size in logistic regression with G-power. Black Sea Journal of Engineering and Science 2(1): 16-

22. https://www.researchgate.net/publication/330668033_DETERMINING_SAMPLE_SIZE_IN_LOGISTIC_REGRESSION_WITH_G-POWER

Yinzi Jin, Weiming Zhu, Beibei Yuan, & Qingyue Meng. (2017). Impact of health workforce availability on health care seeking behavior of patients with diabetes mellitus in China. *International Journal for Equity in Health,* 16, 1–10. doi:10.1186/s12939-017-0576-0

Yue, J., Mao, X., Xu, K., Lü, L., Liu, S., Chen, F., & Wang, J. (2016). Prevalence, awareness, treatment and control of diabetes mellitus in a Chinese population. *Plos One, 11*(4), e0153791. doi:10.1371/journal.pone.0153791

Zangirolami-Raimundo, J., Echeimberg, J.O., Leone, C. (2018). Research methodology topics: Cross-sectional studies. *Journal of Human Growth and Development. 28*(3):356-360. doi:10.7322/jhgd.152198

Zeh, P., Cannaby, A.-M., Sandhu, H. K., Warwick, J., & Sturt, J. A. (2018). A cross-sectional survey of general practice health workers' perceptions of their provision of culturally competent services to ethnic minority people with diabetes. *Primary Care Diabetes, 12*(6), 501–509. doi:10.1016/j.pcd.2018.07.016

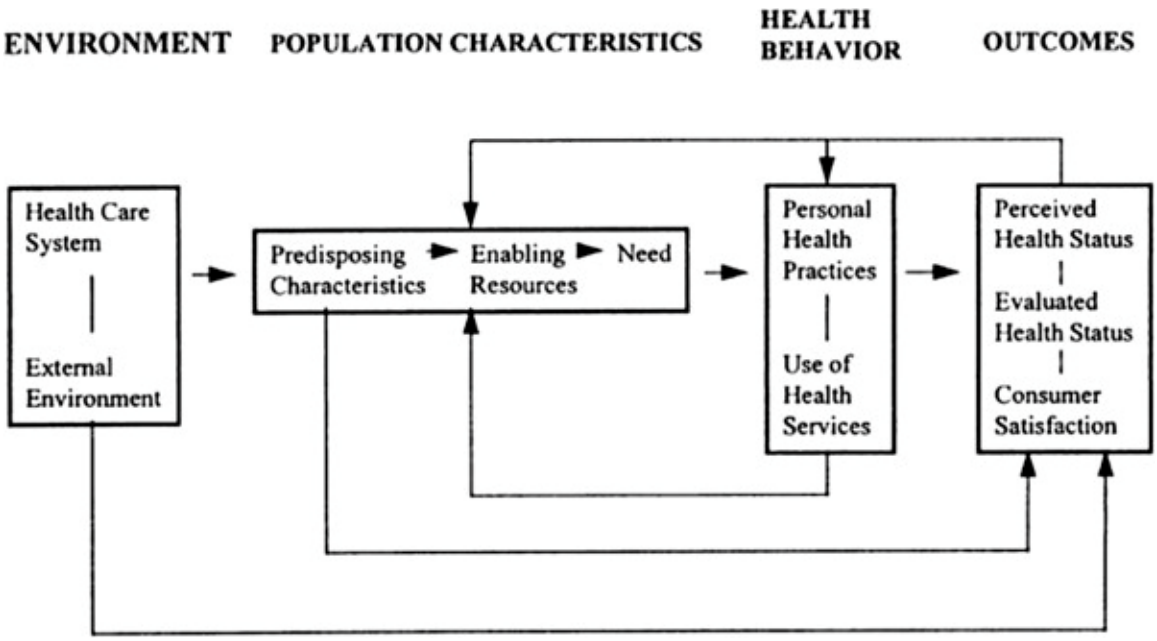
Zhang S, Chen Q, & Zhang B. (2019). Understanding healthcare utilization in China through the Andersen Behavioral Model: Review of evidence from the China health and nutrition survey. *Risk Management and Healthcare Policy,* 209. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edsdoj&AN=edsdoj.b05

87ae4b61b4ed6abcdaf282218768b&site=eds-live&scope=site

Appendix A: Search Terms and Phrases (All Databases and Google Scholar)

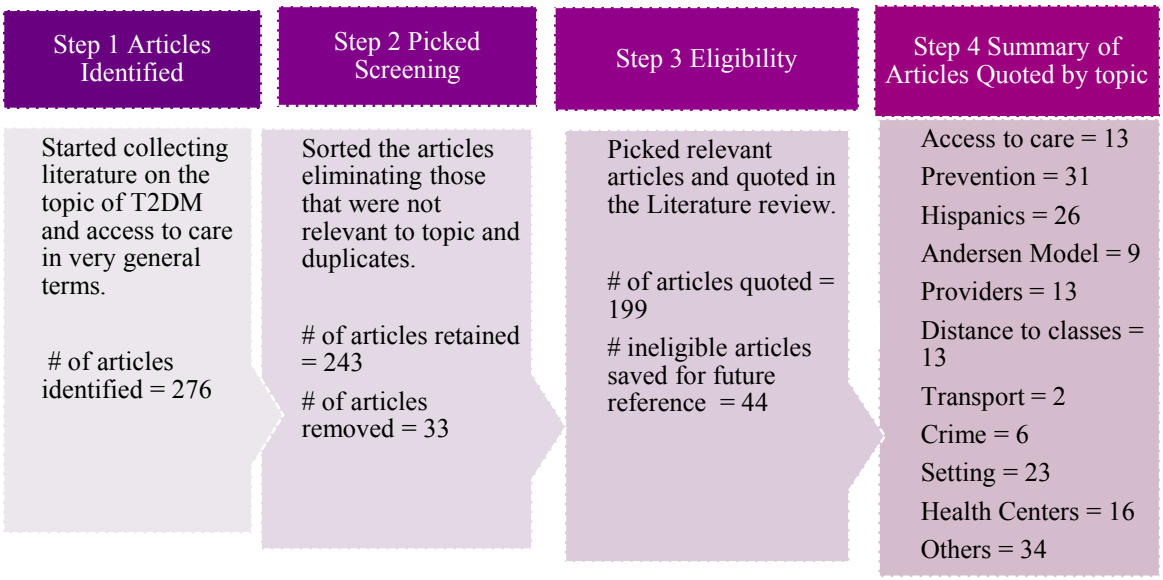
ABM	Dietary Therapy	Non-adherence
Access to care	Diets	Non-adherence to diets
Access to health care	Distance to health centers	Non-adherence to medication
Accessibility to health care	Environmental factors	Nutritional Therapy
Adherence	Factors	Perceived neighborhood problems
Andersen Behavioral Model	Female Hispanics	Pharmacotherapy
Andersen Model	Health centers	Presence of pharmacies
Association between diabetes	Hispanics	Preventative health care
Barriers	Hispanics or Latinos	Prevention of diabetes
Barriers to tertiary level prevention	Inadequate providers	Preventive care
Barriers to tertiary prevention	Lack of health insurance	Qualitative analysis
Beliefs	Lack of knowledge	Qualitative research
Competent providers	Lack of providers	Qualitative study
Cost of services	Latinas	Quantitative analysis
Crime	Latinos	Quantitative or experimental
Cultural beliefs	Latinos or Hispanics or Chicanos or Latinas or Mexican	Quantitative research
Culturally competent providers	Lifestyle modification	Quantitative Study
Culture	Limited appointment schedules	Quasi-experimental
Culture and beliefs	Long distance to health care centers	Relationship with care provider
Descriptive or correlational	Long distance to hospitals	Social and cultural beliefs
Determinants of adherence	Long distance to providers	Systems
Diabetes	Medical access	Tertiary care
Diabetes and diet	Medical care	Tertiary level care
Diabetes management	Medical care access	Tertiary level prevention
Diabetes Mellitus	Medical insurance	Tertiary prevention
Diabetes or type 2 diabetes	Neighborhood crime	Therapy
Diabetes type 2	Neighborhood characteristics	Time constraints
Diabetes type 2 or diabetes mellitus type 2	Neighborhood factors	Understanding quantitative methods
Diet adherence	Neighborhood set-up	Understanding quantitative analysis
Diet and diabetes	Neighborhood violence	Work or family obligations

Appendix B: Andersen Behavioral Model (1995)



Note. From "Revisiting the Behavioral Model and Access to Medical Care: Does it Matter?" by Ronald M. Andersen, 1995, *Journal of Health and Social Behavior*, *36 (1), 1-10.* Reprinted with permission.

Appendix C: Literature Review Search Process: Flow Chart



Appendix D: Permission to use Andersen Behavioral Model 1995 version

Re: RP-2186 Re-use of a diagram in my dissertation
Stella <[redacted]>
Fri 8/14/2020 4:53 PM
To: Permissions <[redacted]>
Cc: Stella Biira <[redacted]>

Thank you for your prompt response.
Am not sure about publishing right now but if and when I decide to, I will seek the needed permission.

Thank you so much.

Regards
Stella

On Fri, Aug 14, 2020, 3:10 PM Permissions <[redacted]> wrote:

Dear Stella,
The ASA allows reproduction of its material for teaching and research purposes without permission and without fee. This includes use in dissertations. However, you will need the permission of the ASA if you plan to publish your dissertation.

Regards,
Jamie

Jamie Lynn Panzarella
Publishing and Employment Services Manager
American Sociological Association

Sent: Tuesday, August 11, 2020 8:52 PM
To: Permissions <[redacted]>
Cc: [redacted]
Subject: Re: RP-2186 Re-use of a diagram in my dissertation
Hello,
My name is Stella Biira and I am a PhD candidate currently enrolled in the Public Health Program at Walden University. I am in the process of writing my dissertation. As shown in the email exchange below, I am conducting a study on the environmental barriers to accessing tertiary level prevention among Hispanics diagnosed with type 2 diabetes in the United States. I would like to use the diagram of the 1995 version of the Andersen Behavioral Model published in your journal (J*ournal of Health and Social Behavior; Mar 1995; 36, 1; ProQuest Central*). I reached out to Dr. Andersen and he granted me permission to use it but recommended that I reach out to JSHB for permission. I was then directed to SAGE who are now directing me to you (SA). This email is to seek your permission to use the Andersen model (1995 version) published in your journal (in the attached article- Figure 7) in my dissertation. I do not intend to change it in any way, but plan to insert it in my Appendix simply for illustration purposes. Your support will contribute a lot to my success.

Please let me know your opinion and I look forward to your response.

Thank you and kind regards
Stella

From: Craig Myles <[redacted]>
Sent: Monday, August 10, 2020 12:32 PM
To: Stella Biira <[redacted]>
Subject: RP-2186 Re-use of a diagram in my dissertation

Dear Stella Biira,
Thank you for your request. Because this particular article published in 1995, permission in this instance will need to be sought directly from the American Sociological Association instead of SAGE Publishing as the ASA holds the rights. You can contact the ASA Permissions team directly at [redacted] .

If we can be of any further assistance, please let us know.

Best regards,
Craig Myles
Senior Rights Coordinator
SAGE Publishing

Re: Permission to use 1995 Andersen Behavioral Model diagram
Stella Biira <[redacted]>
Wed 8/5/2020 7:40 PM
To: Ron Andersen <[redacted]>

Thank you so much Dr. Andersen for getting back to me and letting me use the drawing. Let me find a way of reaching out to the journal. Thank you for the latest version too, let me review it as well.

Much regards and very grateful.
Stella

From: Ron Andersen <[redacted]>
Sent: Wednesday, August 5, 2020 2:02 PM
To: Stella Biira <[redacted]>
Cc: 'Andersen, Ronald M.' <[redacted]>
Subject: RE: Permission to use 1995 Andersen Behavioral Model diagram
Dear Stella,
You are welcome to insert the drawing of the model in your dissertation. If this is the drawing in the 1995 article published in JHSB journal you might want to seek the journal's permission as well. FYI, I am attaching a book chapter showing a more recent version of the model. Best wishes for the successful completion of your dissertation.

Regards,
Ron Andersen

From: Stella Biira [mailto:[redacted]]
Sent: Tuesday, August 4, 2020 7:57 PM
To: [redacted]
Cc: [redacted]; Stella Biira <[redacted]>
Subject: Permission to use 1995 Andersen Behavioral Model diagram
Dear Dr. Andersen,
Greetings and I hope this finds you well!
My name is Stella Biira and I am a PhD candidate currently enrolled in the Public Health Program at Walden University. I am in the process of writing my dissertation. My study in on the environmental barriers to accessing tertiary level prevention among Hispanics diagnosed with type 2 diabetes in the United States. The key aspect of my study is to examine the association between certain environmental factors and access to this care and I am using the Andersen Behavioral Model. While the model is readily available in public domains, I would like to use it as the theoretical model in my study. I am hereby seeking your permission to use the drawing of the 1995 version of the model in my dissertation as a way to clearly illustrate its applicability in my study. I do not intend to change it in any way, but plan to insert it in my Appendix.
Your generosity in letting me use the model will contribute significantly to my completion of the dissertation.
I look forward to hearing from you and thank you in advance for your support.

Kind regards
Stella Biira, PhD Candidate