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The Chance of Complications From Type 2 Diabetes as Perceived by Some Black Seventh-Day Adventists who Follow a Plant-Based Diet.

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Abstract

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Dissertation Submitted in Partial Fulfillment

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Abstract

Type 2 diabetes has more than doubled in the past decade among Black Americans. Researchers have suggested that Black Seventh-day Adventists, who follow a plant-based diet, are concerned about preventing the complications from this disease. The purpose of this qualitative ethnographic study was to explore the chance and perceptions of complications from type 2 diabetes among 10 purposefully sampled Black Seventh-day Adventists. The health belief model (HBM) served as the conceptual framework. Two constructs, education and income, were chosen for this study. Education was chosen to increase understanding about the chronic nature of the disease, and income was chosen because it is not inexpensive to maintain a plant-based diet as someone with type 2 diabetes. Data were collected through in-depth semi-structured interviews which were inductively coded and then categorized around emerging themes. The key finding of this study revealed that these 10 participants relied on the Adventist lifestyle as an antidote to the complications of type 2 diabetes. The implications for positive social change include increased awareness and education of complications, and decreased risk for chances of complications among informants in this study.

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Dedication

This dissertation is dedicated to my God (the God of Abraham, Isaac, and Jacob) who has, and continues to show Himself strong on my behalf. This work is also dedicated to my family, especially my three daughters: Ruth, Naomi, and Miriam, for their love and encouragement. I must finally acknowledge as well my colleagues, friends, well-wishers who were praying for me.

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Chapter 1: Introduction

Background of the Problem

Diabetes mellitus is a group of metabolic disorders characterized by hyperglycemia due to defects in insulin secretion, insulin action, or both (American Diabetes Association [ADA], 2013; Georgoulis, Kontogianni, & Yiannakouris, 2014). There are 29.1 million (9.3%) people living with diabetes in the United States. Of these, 8.1 million are undiagnosed and are unaware of their condition (National Diabetes Statistics Report, 2014; Centers for Disease Control and Prevention [CDC], 2014). National estimates suggest that by the year 2050, the number of people who will be diagnosed with diabetes will reach 39 million (a 225% increase), and the prevalence will increase from 4.4% to 9.7% (a 120% increase) (Fonseca, 2006). While these figures and numbers are alarming, they are even more disturbing and worrisome in Black Americans, who are 1.8% more likely to develop diabetes complications, than Non-Hispanic whites (Steinhardt, Mamerow, Brown, & Jolly, 2009). The purpose of this study was to explore the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists who follow a plant-based diet. Although the literature suggests that both genetic and environmental factors contribute to the development and progression of type 2 diabetes (Murea, Ma, and Freedman,2012), the recent increases in prevalence (1995-2012) is a consequence of lifestyle changes in modern societies (Qi, Hu,F. & Hu, G. 2008). Barnard, Katcher, Cohen, & Turner-McGrievy (2009) commented that plant-based diets offer advantages to individuals with type 2 diabetes. Furthermore, researchers have noted that type 2 diabetes is less prevalent among Seventh-Day Adventists and

Black Seventh-Day Adventist who follow a plant--based diet (Snowdon & Phillips, 1985; Montgomery et al., 2014; Bryan, Johnson, Dawes, & Samuel, 2012; Kwok, Umar, Myint, Mamas, & Loke, 2014; Fraser et al., 2014). Melby, Hyner and Zoog, as cited by Berkow & Barnard (2006) wrote that researchers have taken an interest in studying this population because all Seventh-Day Adventists avoid tobacco, caffeine, alcohol, and endorse a healthy lifestyle that supports and promotes a plant-based diet. There is general agreement in the literature that increased adherence to plant-based diet prevents and protects against diabetes complications (Tonstad, Butler, Yan, & Fraser, 2009; Snowdon & Phillips, 1985; Kahleova et al., 2011; Kwok et al., 2014).

Notwithstanding the impressive evidence and benefits that Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet enjoy, no studies explored the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists. This study is needed because it could make a unique contribution to existing diabetes knowledge in general, but especially in a population that may be overly confident of its overall health due to a life style that is applauded in most studies. Type 2 diabetes is a chronic disease with long-term implications and complications. Any study of diabetes that does not explore the chance for complications is ignoring the impact of long-term complications on families and the healthcare system.

Statement of the Problem

Diabetes and its complications are prevalent in the African American community, especially among those with less education and lower income (Dray-Spira, Gary, &

Brancati, 2008; Skelly et al.; 2006 Williams & Jackson, 2005). Lack of access to healthcare, poor neighborhoods, low socioeconomic status (SES), poverty, and the vestiges of racial discrimination all tend to contribute to increased complications in this population (Williams et al., 2005).

Obesity due to poor nutrition is another major risk factor for complications of type 2 diabetes in the African American community. There is a growing body of evidence that plant-based diets play a significant role in preventing these complications (Berkow et al., 2009; Trapp, Barnard, & Katcher, 2010; Ferdowsian & Barnard, 2009; Barnard et al., 2009; Trapp & Levin, 2012). While there is no single, optimal diet for preventing or delaying the complications of type 2 diabetes (Salas-Salvado, Martinez-Gonzalez, Bullo, & Ros, 2011), plant-based diets have shown significant promise (Esposito & Giugliano, 2014; Ferdowsian & Barnard, 2009; Ware, 2014; Turner-McGrievy et al., 2011). While research continues to show the significant advantages of a plant-based diet on Black Seventh-Day Adventists with type 2 diabetes, their perceptions about the risk of complications has not been explored. Perceptions are important motivators and tend to influence, inform and regulate behaviors as well as outcomes (Petrie, Jago, & Devcich, 2007).

Purpose of Study

The purpose of this qualitative, exploratory study was to explore the chance of complications from type 2 diabetes as perceived by some Black Seventh-Day Adventists who follow a plant-based. The objective was to understand beliefs about type 2 diabetes and the associated complications in this population, using the health belief model.

Research Questions

Four research questions guided this study in understanding the perceptions of complications of patients with type 2 diabetes among Black Seventh-Day Adventists

Research Question 1: What are the perceptions of complications of type 2 diabetes in Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet?

Research Question 2: What do Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet, know about the potential for complications of diabetes?

Research Question 3: How does income levels impact perceptions of complications of type 2 diabetes among Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet?

Research Question 4: How does education impact the perception of complications of type 2 diabetes among Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet?

Conceptual Framework

This study was conducted within the framework of the Health Belief Model (HBM) to explore the potential for the perceptions of type 2 diabetes complications, in Black Seventh-Day Adventists who follow a plant-based diet. The HBM was one of the first models to adapt theory from the behavioral sciences to health problems (Morgan, 2001). It is a framework for motivating people to take positive health actions that underscore the desire to avoid negative health consequences. Avoiding a negative health

outcome is a key element in the HBM. It is predicated on and assumes value expectancy. In other words, the patient's behavior is a function of the value that he or she places on the outcome (Strecher & Rosenstock, 1997). This model was developed in the 1950s by social psychologists as a way of explaining why medical screenings offered by the Public Health Services was not particularly successful (Morgan, 2001). The HBM has been used to deal with a broad spectrum of health behaviors for preventive purposes. One of the assumptions of the HBM is that it is the individual's perceptions that influence behavior. In its simplest terms, the HBM states that people's beliefs influence their health-related behavior. In other words, the benefits of the health action should outweigh the risks before any action is taken to improve the anticipated health outcomes (Chin, Polonsky, Thomas, & Nerney, 2000). The HBM posits that a patient's propensity or likelihood of taking a specific health-related action is primarily motivated by the following perceptions: perceived susceptibility of that individual to the illness, perceived severity of that individual to that illness, perceived threat of that individual to that illness, perceived benefits associated with the health behavior, perceived barriers to engage in the health behavior, cues to action, self-efficacy, and modifying factors that influence perception of disease.

Perceived susceptibility is subjective and tends to influence and prompt people to adopt healthier behaviors. The greater the perceived risk, the greater the likelihood that a healthy behavior would be adopted although that is not always the case. Belcher, Sternberg, Wolotski, Halkitis, & Hoff (2005) commented that condom use is an effort to decrease susceptibility to HIV infection especially with homosexuals. However, the

corollary is also true. When people do not consider themselves to be at risk, they tend to engage in unhealthy behaviors. This trend has been observed in older adults and HIV prevention behavior. Researchers found that because older people do not consider themselves to be at risk for HIV infection, they tend not to practice safe sex (Rose, 1995; Maes, & Louis, 2003). Furthermore, Courtenay 1998; Lewis, & Malow, (1997) noted that in college students, the perception of risk is hardly linked to the adoption of healthier sexual practices even though the perception of risk is high. However, when perceived susceptibility leads to perceived severity, it becomes a threat to the individual (Stretcher et al., 1997). Perceived threat to health, almost always leads to a change in behavior because this threat now becomes the fulcrum upon which all the other perceptions revolve. Among children of parents with type 2 diabetes who are overweight, the threat of acquiring the disease increases when these persons are more likely to engage in behaviors that help them to lose or control their weight (Forsyth, 1997). Perceived benefit is usually a person's opinion of a threat that leads to healthy behavior that effectively deals with the threat. As a general rule, most people tend to adopt a healthier behavior when they perceive that it would diminish the threat and decrease the chances of developing the disease. The construct of perceived barrier is the individual's own assessment and evaluation of the obstacles that stand in the way of adopting a new healthy behavior. Here the individual has to be convinced that the benefit of adopting the new behavior outweighs the consequences of continuing the old behavior (CDC, 2004).

Cues to action are variables that may influence behavior indirectly. They may be events, people, health messages (fear appeals) or things that cause people to change their

behavior such as the illness of a family member, death of a close family member from drunk driving or from lung cancer following excessive smoking. All of these may impact a person's perception of health and cause him to alter his behavior. In addition, the following modifying factors may influence a person's perception of health behavior: education, culture, past experiences. Finally, self-efficacy is the belief that one is capable and confident of taking preventive action (Montanaro, & Bryan, 2014). Two theories were under investigation for this study: the health belief model, and the theory of reasoned action. Both these theories are value expectant. However, the HBM was considered a better choice for this study because it is health behavior focused (Ajzen, 1998). Furthermore, the TRA lacks the threat component, which is central to the HBM, and is framed at higher levels of generalizations (Ajzen, 1998). The HBM is relevant to my study of exploring the perceptions of complications for diabetes complications in Black Seventh-Day Adventists with type 2 diabetes on a plant-based diet because it explores how perceptions can inform and even threaten health outcomes. It also helps to identify barriers and to provide the opportunity for a provider to enhance health-promoting behaviors (Shapiro, 2008). Core constructs of the HBM will be used in this study to explore perceptions of diabetes complications among Black seventh-day Adventists with type 2 diabetes, through the use of in-depth interviews, and semi-structured questions.

Nature of the Study

This qualitative, descriptive, and ethnographic study explored the perceptions of diabetes complications of some Black Seventh-Day Adventists with type 2 diabetes on a

plant-based diet. Purposive sampling, in-depth interviews, and semi-structured questions were used. Focus groups were not considered in this study because I wanted informants to discuss their experiences in a private setting and avoid the tendency of not being completely honest because of what others in a group setting might think. The interviews were transcribed from the recordings. Using the HBM, open and axial coding were used to develop categories and themes. Member checks and triangulation were used to verify the data.

Definition of Terms

Basic metabolic index: *cardiovascular disease*: Basic metabolic index refers to a relationship between weight and height that is associated with body fat and health risks. While cardiovascular disease refers to a group of diseases and disorders that impact blood vessels of the heart (AHA, 2012).

Hypertension: This is a long- term medical condition in which blood pressure in the arteries is persistently elevated. When the systolic blood pressure (SBP) readings are higher than 140, and diastolic blood pressure (DBP) are greater than 90 due to thickening of arteries (CDC, 2014).

Insulin resistance: When the cells (now malfunctioning) in the body are not able to use insulin for energy (Whitaker, 2001).

Macrovascular complications: Diseases that are a result of poor blood sugar control (Hyperglycemia) that results in injury to large blood vessels leading to stroke, myocardial infarction, peripheral arterial disease, and congestive heart failure (CDC, 2014).

Microvascular complications: Diseases that are a result of poor blood sugar control (Hyperglycemia) that results in injury to small blood vessels leading to Nephropathy, Retinopathy, and Neuropathy (CDC, 2014).

Obesity: BMI of greater than 30.

Plant-based diet: Anyone who avoids meat, fish, poultry or eggs in their diet (Vegans) Lacto-ovo-vegetarian: Consumes milk and eggs but no red meat or poultry: Pesco vegetarian: Consumes fish, milk, and eggs but no red meat or poultry (Fraser, 2009).

Prevalence: The total number of people living with a disease (CDC, 2014).

Risk factors: Any factor that may create the condition for disease development or cause existing disease to get even worse (CDC, 2014).

Seventh-Day Adventist: A born- again Christian who believes in keeping the seventh day (Saturday) Sabbath Holy, avoids eating pork in obedience to the Bible as well as other meats, avoids alcohol, does not use tobacco products in any form, avoids coffee, some teas, caffeine, and is awaiting the Second coming of Jesus Christ.

Socioeconomic status: Individuals in society who are deprived of basic needs due to ethnicity, lack of education racism, and low income (Vegahari et al., 2010.

Type 2 diabetes: A chronic progressive disease that is characterized by excessively high blood glucose (ADA, 2013).

Health Belief Model Constructs

Perceived susceptibility: This is one's opinion of the potential seriousness and what it could mean to be impacted by a disease condition. This helps to determine action or inaction (Glanz et al., 2002).

Perceived barrier: This is the individual's own assessment and evaluation of the obstacles that may stand in the way of adopting a new health promoting behavior. It takes into consideration the tangible and psychological costs (Glanz et al., 2002; CDC, 2004).

Perceived benefit: This is a person's opinion of a threat and the value of adopting the new behavior designed to diminish the threat and the chances of getting the disease (Glanz et al., 2002; Conner, 2005).

Perceived severity: This is a person's opinion that the threat of this disease may kill him or her. This threat always leads to a change in behavior (Glanz et al., 2002; Conner, 2005).

Cues to action: These are actions that are needed to influence healthy outcomes. These behaviors activate a person's readiness to action. Death, fear appeals, Cancer from smoking (Conner, 2005).

Self-efficacy: This is one's opinion in his/her confidence in adopting preventive action (Montanaro & Bryan, 2014; Conner, 2005).

Assumptions

This study relied on three assumptions. (a)Participants had some basic knowledge and understanding of type 2 diabetes and its complications. (b) Participants used self-management practices for dealing with their diabetes (c) Participants were honest in

responding to questions. These assumptions were important because participants were assured that their responses would be kept confidential, and that they were considered volunteers who could have withdrawn from the study at any time with no repercussions

Scope and Delimitation

The study's aim was to explore in order to understand the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists, who follow a plant-based diet. The reason was to explore whether Black Seventh-Day Adventists were aware of the risk of complications of type 2 diabetes; and to determine whether income and education influenced their perception of complications. Bracketing was used to minimize threats to internal validity since I am a practicing Black Seventh-Day Adventist. This study did not include people who had not been on plant-based diets for at least 10 years because complications like poor eye sight, failing kidneys, tend to express themselves after at least 10 years, especially with uncontrolled blood glucose due to insulin resistance (Campbell & Campbell, 2006; CDC, 2012). These inclusion criteria included that the participants were able to speak in English and were a Black Seventh-Day Adventist between ages 24-84, and had a current diagnosis of type 2 diabetes. This age group of 24-85 was chosen as a criterion, to ensure that all age groups were represented so that any differences in perspectives based on age could also be explored (Ritchie et al., 2003). Pregnant women were excluded, as well as anyone with a diagnosis of mental illness. The reason for these exclusionary criteria was to deliberately avoid unusual cases that Patton (2008) describes as intensity sampling. Intensity sampling according to Patton, is where you have rich examples of the phenomenon of interest but

they should not be extreme or deviant cases. Pregnancy and mental illness met the criteria of deviant cases. The health belief method (HBM) was chosen as the conceptual model for its focus on behavior and health perceptions. I finally decided not to use the theory of reasoned action (TRA) because the objective of this study was not to influence behavior but to explore perception of complications. The potential for generalizability was not possible because that is usually not the goal of a qualitative study. However, if the sampling method, coding, and data analysis employed in this study were to be replicated, some aspects of the findings could be transferrable to similar settings.

Limitations

This study was subject to three limitations. (a) Twenty-four participants agreed to take part, but only 10 participated. Although the sample size of 10 would not be considered a limitation per se, some practitioners tend to take the findings of a small number of participants with some reservations. To find additional participants, I encouraged participants to contact friends and family who met criteria for this study through snowball sampling. There was no success in this regard. Saturation was achieved in this study with 10 participants. Saturation is when the ability to obtain additional new information has been attained (Guest, Bunce, and Johnson, 2006). Saturation made a huge difference because no new information was attained in the follow-up visits, which would have changed the narrative. That is why I stopped after meeting with four participants.

(b) It is in the nature of qualitative studies and especially the use of semi-structured interviews that personal experiences cannot be verified. However, member

checks, and triangulation were used to authenticate the information (c) Generalization of the findings was not possible because the study was conducted with a small sample size in one city in Alabama, and more importantly, the study did not serve the purpose of generalizability. However, small sample sizes have not been a problem in qualitative studies as long as saturation is achieved as it was in this study.

Significance of the Study

This study provides the potential for important and additional insights into the overall knowledge of type 2 diabetes and in this population in particular.

This study sought to close the gap in the literature about the chance of complications from type 2 diabetes as perceived by some Black Seventh-Day Adventists who follow a plant-based diet. In the recent past, there has been a flurry of studies on the importance of plant-based diet and its potential for decreasing the risk of complications in people with type 2 diabetes. This study adds to that importance and could provide the basis for innovative strategies and interventions in type 2 diabetes management. Numerous studies have consistently shown that the prevalence of type 2 diabetes is considerably lower among people on plant-based diets. However, no qualitative study was found that explored the perceptions of complications among Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet. The three-cohort Adventist Health Studies were all quantitative. They are all relevant to a point because they examined a large Adventist population, but none of these studies were unique to Black Seventh-Day Adventists with type 2 diabetes. This study built on the fact that adopting a plant-based diet has been shown to decrease or prevent complications from diabetes (Barnard et al.,

2009). It also has the potential to improve attitudes and perceptions about complications in this community, who follow a plant-based diet. As a Black Seventh-Day Adventist myself, there are among some members of this community a misguided belief, that because we avoid animal products, do not smoke, and avoid alcoholic beverages, that our health cannot be improved. This study has the potential to disabuse this misunderstanding.

This study has five implications for social change. (a)). The first social change implications was the notion that the Adventist lifestyle was perceived to avoid complications of type 2 diabetes among these 10 informants. This finding has profound implications for social change because it could improve self-management practices of Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet. Because a failure to appreciate the cultural traditions of the Adventist lifestyle in this population could impact Black Seventh-Day Adventist in a negative way (b) The Adventist lifestyle also has the potential to impact family members of participants about the connectedness of personal involvement and spirituality in diabetes management. The Adventist lifestyle is closely aligned with the NEWSTART approach, which emphasizes personal choices in diabetes management and trust in divine power. (c) Lifestyle modification was another finding that could promote positive social change in this population. It consists of a set of activities like daily exercise and plant-based diet that is nutrient dense, and has the potential to improve weight loss among this population. Given the high cost of diabetes $245 billion in 2014 (CDC, 2014) lifestyle changes that have been noted to decrease complications, could potentially reduce the cost of diabetes care to

Black Seventh-Day Adventists and the health care system. (d) Knowledge of diabetes complications was another finding that has the potential to impact social change in a positive way. This finding has the potential to help decrease mortality among Black Seventh-Day Adventists with type 2 diabetes because increasing awareness and understanding of complications, could help maintain consistency in their personal involvement with their self-management practices. (e) Participants were not influenced by how much income they had or did not have to purchase their plant-based foods. This notion that cost of food could determine whether they continued with their Adventist lifestyle could impact this population especially their faith. Faith in their lifestyle could help other members of this population to live out their faith in other aspects of their spiritual lives.

The NEWSTART approach practiced by Black Seventh-Day Adventists in this study, has been shown to be effective in decreasing complications in this population. Therefore my first recommendation would be the use of NEWSTART in future type 2 diabetes studies because its emphasis is holistic. Type 2 diabetes is a chronic lifestyle disease that requires a drastic change in lifestyle. NEWSTART is one approach that can improve diabetes complications and indeed over-all health in this and other populations. It is becoming increasingly important that the healthcare system and providers allow the communities and populations they serve to bring their own input into management strategies. I would further recommend that Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet, identify approaches to treatment that are important to them. This will increase cooperation and collaboration, improve

relationships between providers and patients, and thereby increase mutual understanding. Exercising after every meal, (for those who can) which was something that participants credited with maintaining normal blood sugars in this study, is a recommendation that should be considered by health care providers and future research. According to Whitaker (2001) increased and uncontrolled blood glucose is what creates the condition for complications in those with type 2 diabetes. A normal daily blood sugar reading of 70-110 mg/dl in patients will decrease the anxiety (of high blood sugars) that helps to increase blood sugars and improve the quality of life for those patients. In the face of societal challenges, it can be a very daunting endeavor to see possibilities for achieving a better future in the management of type 2 diabetes. Furthermore, the complex nature of diabetes management with its multiple stakeholders makes it difficult to implement changes from research. Somehow, society and some experts have been absorbed with the comfortable illusion that diabetes is an individual disease and requires only self-management. A final recommendation for future research is to involve the food industry, public health experts, clergy, insurance companies, exercise experts, academia, the social environment to all agree on how to deal with the epidemic of diabetes. This inclusive approach, which involves multiple stakeholders, will have profound and far-reaching benefits to society, healthcare organizations, healthcare system, patients, and the community at large. In fact, it could help guide future studies in this and other communities. A growing body of knowledge continues to buttress the positive outcomes and lower risks associated with those who follow a plant-based diet and cardiovascular diseases (Key, 2006; Barnard et al., 2009); improvement in prostate cancer treatment

(Berkow, Barnard, Saxe, & Ankerberg-Nobis, 2007); decreased medical care usage (Trapp & Levin, 2012); decreased cholesterol in patients with type 2 diabetes (Ferdowsian & Barnard, 2009. More studies (on a larger scale) on Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet are warranted.

Transition

African Americans suffer disproportionately from complications of type 2 diabetes (Skelly et al., 2006). Some Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet continue to show remarkable improvement in preventing and delaying the complications of diabetes (Berkow & Barnard, 2006; Barnard et al., 2009; Trapp, Barnard, & Katcher, 2010; Trapp & Levin, 2012). Despite the many advantages that a plant-based diet confers on this population, no study had explored the chance of complications from Black Seventh-Day Adventists. This study not only closes the gap in the literature but also provided an opportunity for increased understanding of type 2 diabetes in this population. The purpose of this qualitative ethnographic study was to explore in order to understand the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists who follow a plant-based diet. Three research questions explored the chance of developing complications with 10 Black Seventh-Day Adventists who follow a plant-based diet. Questions centered on knowledge of complications, impact of income on perceptions of complications, and impact of education on the chance of developing complications from type 2 diabetes. The health belief model HBM was chosen as the conceptual framework. Semi-structured interviews were used to collect self-reported information from 10 Black Seventh-Day Adventists

who had been on plant-based diet for at least 10 or more years. Responses from participants were audio recorded and transcribed into themes using open and axial coding. The results revealed that this population relied on the Adventist lifestyle as an antidote to developing complications of type 2 diabetes.

In chapter 1, I explored the link between plant-based diet and complications of type 2 diabetes, and the advantages that plant-based diets confer on vegetarians. I also provided the theoretical basis for the study, and introduced the methods that were used to conduct the study. Key terms of interest as used in the study were defined. I concluded the chapter by providing the significance of the study, the limitations of the research findings, and implications for social change.

Chapter 2, the literature review, offers details on the prevalence of type 2 diabetes in the African American community, the risk factors of type 2 diabetes in Black Americans, the complications of type 2 diabetes, the impact of plant-based diet on type 2 diabetes, the impact of the perceptions of diabetes and its complications, and the impact of a plant-based diet on Seventh-Day Adventist African Americans with type 2 diabetes and the gaps in the literature. Chapter 3 describes the methodology: sample size, sampling, data collection, instrumentation, and data analysis used to answer the research questions. I also discuss threats to internal and external validity

Chapter 2: Literature Review

Introduction

The purpose of this ethnographic, qualitative study was to explore in order to understand the risk of complications in type 2 diabetes as perceived by some Black Seventh-Day Adventists (ages 24-84) who were following a plant-based diet. Therefore, the objective of this study was to identify the relationship between plant-based diets and major complications among Black Seventh-Day Adventists with type 2 diabetes.

This chapter reviews the literature on (a) physiology of diabetes (b)prevalence of type 2 diabetes (c) risk factors of type 2 diabetes (d) Black Americans and type 2 diabetes (e) complications of type 2 diabetes, macro and micro (f) impact of perceptions to diabetes and the complications of type 2 diabetes (g) impact of plant-based diet on type 2 diabetes (h) SDA and plant-based diet and (i) the health belief model and type 2 diabetes. The findings discuss the benefits and challenges of adapting to a plant-based diet and how it affects people with type 2 diabetes, especially Black Seventh-Day Adventists.

Type 2 diabetes is a major cause of morbidity and mortality among African Americans, who suffer disproportionately from its complications (Skelly et al., 2006). Barnard, Katcher, Cohen, &Turner-McGrievy (2009) commented that plant-based diets offer specific advantages to individuals with type 2 diabetes. Furthermore, researchers have noted that type 2 diabetes is less prevalent in and among Seventh-Day Adventists and Black Seventh-Day Adventist who are mostly on plant-based diet (Snowdon & Phillips, 1985; Fraser, 2003; Montgomery et. al., 2014.; Bryan, et al., 2014; Fraser et al., 2014.). Berkow & Barnard (2006) claimed that researchers have taken an interest in

studying this population because all Adventists avoid the use of tobacco, caffeine, alcohol, and they endorse a healthy lifestyle that supports a plant-based diet. In addition, Barnard et al. (2009) claimed that Adventists have only 45% of the diabetes prevalence in the general population. There is general agreement in the literature that increased conformity to a plant-based diet protects against and prevents diabetes complications (Tonstad, Butler, Yan, & Fraser, 2009; Snowdon & Phillips, 1985; Kahleova, Matoulek, Malinska, Oliyarnik et al., 2011; Kwok, et al., 2014).

There is a growing body of evidence that plant-based diets play a significant role in preventing the major complications of type 2 diabetes (Berkow & Barnard, 2006; Trapp, Barnard, & Katcher 2010; Ferdowsian & Barnard, 2009; Barnard, Cohen, Jenkins, Turner-McGrievy et al., 2009; Trapp & Levin, 2012). While no diet can prevent the complications of type 2 diabetes (Salas-Salvado, Martinez-Gonzalez, Bullo, & Ros, 2011), a plant-based diet has shown significant promise in delaying complications among those who have adopted this diet (Jenkins et al., 2003; Esposito & Giugliano, 2014; Ferdowsian & Barnard, 2009; Ware, 2014; Turner-McGrievy, Jenkins, et al., 2011). Notwithstanding the impressive evidence and benefits that these studies confer and extend to Black Seventh-Day Adventists following a plant-based diet, none of them explored how the chance of complications in type 2 diabetes was perceived by this population.

Literature Search Strategy

The search was limited to studies of adults published in English from 1990 to the present (although one study from 1985 was included). The material I used consisted of

peer-reviewed journal articles, doctoral theses, and textbooks. Additional studies were identified from references lists and from personal communications.

The following databases were used: PubMed Central, CINAHL, Science Direct, Google Scholar, and Medline. The following keywords were used: *plant-based diet, type 2 diabetes, vegetarian diet, risks for diabetes, vegan, diabetes complications, fiber, health beliefs, African Americans Seventh-Day Adventist*. As stated earlier, this study built on a paucity of previous studies on Black Seventh-Day Adventist following a plant-based diet. Therefore, articles on type 2 diabetes and Black Seventh-Day Adventist, complications of diabetes, plant-based diet were considered appropriate for examination. There were no articles on "The Chance of Complications as Perceived by Black Seventh-Day Adventists Who Follow a Plant-Based (Vegetarian) Diet."

Physiology of Diabetes

Diabetes is a group of metabolic disorders, characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both (ADA, 2013). Diabetes can be understood as a function of the insulin hormone. Insulin is a hormone produced in the pancreas. When insulin is not produced at all due to immune-mediated destruction of pancreatic beta cells in the body, it leads to type 1 diabetes and is more predominant in children (Fonseca, 2006). On the other hand, type 2 diabetes, has to do with the inability of the body to use the available insulin in ways that enhances the distribution of glucose into the cells for energy. While type 1 diabetes deals with no insulin or deficient insulin, type 2 deals with insulin resistance. There are different types of diabetes which are classified based on their etiology including gestational diabetes that is prominent with

pregnant women (ADA, 2013). However, in this study, type 2 diabetes is the most common form of diabetes that impacts 90% of the people. It is almost always diagnosed in middle-aged (increased age) overweight and inactive people although genetics also plays a significant role. Insulin is responsible for opening the doors to the cells in our bodies so that glucose can be used for energy-producing chemical reactions that drive every cell in the body (Whitaker, 2001). In type 2 diabetes, there is no shortage of insulin which makes you wonder why some physicians encourage its use in patients with type 2 diabetes. Rather, there is some kind of block in the cells' ability to use insulin that is produced.

The inability of cells to use sugar (insensitive) for energy is what is called insulin resistance. This almost invariably leads to hyperglycemia which is responsible for most of the physical complications because the sugar in the body is not properly being used for energy. Increased concentrations of glucose lead to cellular accumulation of sorbitol, a by-product of glucose metabolism. This buildup of sorbitol accumulation has been strongly linked to damage in the eyes and nerves (Whitaker, 2001). Insulin resistance is the underlying cause of type 2 diabetes. Insulin resistance is being blamed for not only type 2 diabetes but also obesity, polycystic ovarian syndrome, hypertension, abnormalities in triglycerides and cholesterol and increased risk for heart disease (Whitaker, 2001). Type 2 diabetes is so widespread because there are several factors that contribute to the development of this resistance: obesity, inappropriate diet, inactivity, and deficiencies of some vitamins and minerals (Whitaker, 2001). Type 2 diabetes often goes undetected for several years and by the time it is diagnosed, more often than not, the

damage from very high blood glucose to blood vessels, nerves, eyes, kidneys and other main organs would have been done. The most used screening test to diagnose diabetes is the fasting glucose test. A person is asked to fast overnight and sugar is taken from any of his/her fingers. Readings of 70-110mg/dl are considered normal. In the event that your sugar is greater than 126mg/dl on two separate occasions, suggests a diagnosis for diabetes. That is why the ADA (ADA, 2013) recommends that screening be done for all Americans every three years. Increased understanding of the physiology of diabetes is germane for healthcare practitioners because improved understanding of the physiology of diabetes will greatly contribute to the sensible and sensitive care that is evidence-based, and will in turn impact the prevalence of the disease, which is frightening to say the least.

Prevalence of Type 2 Diabetes

There are 29.1 million or 9.3% people with diabetes in the United States of America. Of these, 8.1 million are undiagnosed and are unaware of their condition (National Diabetes Statistics Report, 2014; Centers for Disease Control and Prevention, 2014) Diabetes has become a global threat and an increasing health burden. According to the International Diabetes Federation (IDF), the prevalence of diabetes globally is estimated to rise from 382 million in 2013 to 592 million by 2035 (Guariguata, Whiting, Hambleton, Beagley, et al., 2014). In the United States, the prevalence of diabetes, especially type 2, has risen substantially over time since the mid-1990s (Fonseca, 2006; CDC, 2012; National Diabetes Statistics Report, 2014). This increase cuts both ways and is driven in part by improved medical advancement that promotes longer lifespan in the

general population. This has increased the aging population, which in turn has contributed to the increase in type 2 diabetes among seniors ages 65 and older. Almost 12 million seniors or 25.9% have type 2 diabetes in the United States (CDC, 2012). The increase or growth in minority ethnic groups with higher rates of pre-diabetes and type 2 diabetes (family history), obesity, sedentary lifestyles, socio-economic status, place of residence, increasing age, and diets that are rich in fats have all been recognized as the major drivers for the increased prevalence of type 2 diabetes in the U.S. and the world. (ADA, 2013; CDC, 2012 Jain & Saraf, 2010) National estimates suggest that by the year 2050, the number of people with a diagnosis of diabetes will reach 39 million (a 225% increase) and the prevalence from 4.4% to 9.7% (a 120% increase) (Fonseca, 2006). These figures and numbers are alarming. There are modifiable risk factors that can be changed with deliberate action like diet, physical inactivity, obesity, that have been noted to assuage the risk factors that impact prevalence of type 2 diabetes. Still, other risk factors that are considered irreversible include age, gender, family history, race and ethnicity (Steyn et al., 2004). Some ethnic groups have an increased predisposition to type 2 diabetes that could not be modifiable even if they wanted to. Type 2 diabetes is more prevalent among American Indians/Alaska Natives, Non-Hispanic Blacks, Hispanic Americans, Asian Americans, than Non-Hispanic Whites. In the United States; 15.9% of American Indians have type 2 diabetes, Non-Hispanic Blacks 13.2%, Hispanic Americans 12.8%, Asian Americans 9.0%, while Non-Hispanic Whites have 7.6% the lowest (National Diabetes Statistical Report, 2014). The incidence or new cases of diabetes in 2012 in the United States was 1.7 million. Furthermore, the pre-diabetes

category also increased from 79 million in 2010 to 86 million in 2012 for Americans age 20 and older. This trend is worrisome and alarming for minorities especially African Americans who are 1.8 times likely to have diabetes than Non-Hispanic Whites (Steinhardt, Mamerow, Brown, & Jolly, 2009). About 3.7 million African Americans aged 20 or older have diabetes (ADA, 2011b; Office of Minority Health, 2012, Women's Health.gov, 2012). However, in the United States, prevalence is considerably lower among vegetarians including Seventh-Day Adventists African Americans with type 2 diabetes (Trapp & Barnard, 2010). To develop an understanding of the risk factors associated with type 2 diabetes among African Americans requires increased awareness of how their cultural context may influence their perceptions of type 2 diabetes.

Risk Factors of Type 2 Diabetes

The prevalence of type 2 diabetes is higher among African Americans than in the general population (Skelly et al., 2006). Low socio-economic status (SES) in this population especially those living in rural areas tend to be exposed to a higher risk for developing type 2 diabetes (Walker, 2001). The prevailing view is that a low SES impacts the incidence of type 2 diabetes positively. There are several risk factors that have been identified and considered contributory factors to the onset of type 2 diabetes in this population (CDC, 2012). A primary risk factor for developing diabetes in this population is family history (Cheng et al., 2012). Research to date has demonstrated that type 2 diabetes in African Americans has a strong genetic component (Cheng et al. 2012; Erasmus, Blanco, Okesina, Arana, Gqweta et al., 2001; Cowie et al., 2006). Even after extensive adjustments for socioeconomic factors and behavioral risk factors were made in

the Atherosclerosis Risk in Communities (ARIC) study, African Americans were still twice as likely to develop type 2 diabetes than whites (Brancati, Kao, Folsom, Watson and Szklo, 2000). Furthermore, African American neighborhoods tend to be lacking in recreational facilities, educational resources, physical activity facilities, availability of grocery stores. According to Krishnan, Cozier, Rosenberg, and Palmer, 2010; Schootman et al. 2010; Moore, Diez-Roux, Evenson, McGinn, & Brines (2008), characteristics of a neighborhood can impact the health status of an individual independent of his or her SES. Krishnan et al. (2010) found that lower levels of education and income and lower levels of SES were a function of increased risk for type 2 diabetes in the prospective Black Women's Health Study. These associations were mediated by a high body mass index {BMI} (Krishnan et al., 2010). Low SES has been linked to higher rates of type 2 diabetes, and the putative reasons include lower levels of education, income, physical inactivity, decreased access to healthcare, lack of resources, and delay in seeking medical care often due to lack of health insurance, and poor dietary habits (Robbins, Vaccarino, Zhang, & Kasl, 2005; Williams & Jackson, 2005). However, using data from the same Women's Health Study, Lee, Glynn, Pena, Paynter, Conen et al. (2011) noted that advanced education and increasing income did not make a difference in these women developing type 2 diabetes. The high BMI was still considered the risk factor for the inverse relationship. This study by Lee et al., (2011) contradicted the results from previous studies that showed that low SES was responsible for the increased rate of type 2 diabetes in the African American community. In other words, higher education and increased income did not prevent the incidence of diabetes. While these studies

demonstrate that obesity may be one of the most serious risk factors in this community for developing type 2 diabetes, the relationship between these risk factors may be complex and not as simple as it appears.

The CDC (CDC, 2013) estimated that African American women had the highest rates of being overweight or obese compared to other groups in the United States. Data from the National Health and Nutritional Examination Survey (NHANES) claims that in 2011 African Americans (AA) were 1.5 times as likely to be obese than Non- Hispanic Whites. Between 2007-2010, AA girls were 80% more likely to be obese than Non-Hispanic White girls (CDC, 2012). In addition, the CDC reported that 70% of AA men 20 years and older, were considered overweight or obese (CDC, 2013). In 2011, the CDC averred that 38.7% of AA men 18 years and older, were overweight but not obese. The trend has not been encouraging for AA whether they are children, adolescents or adults. The percentage of AA High School students in the United States in 2012 who were obese were, 18.6% for girls and 17.7% for boys compared to 7.7% for white students and 15.0% for white girls (CDC, 2012). Studies continue to confirm the positive association between obesity and the development of type 2 diabetes (Ganz et al., 2014; Steyn et al.,2004; Abdullah, Peeters, de Courten, and Stoelwinder, 2010; Schienkiewitz, Schulze, Hoffmann, Kroke, and Boeing, 2006). These studies show that obesity may be the most obvious risk factor for developing type 2 diabetes not only in the African American community, but also in all communities. According to the CDC (2012), more than 80% of people with type 2 diabetes are overweight.

Importantly, diet is cultural. While it is true, that every ethnic group has diets or food choices that are unique to that culture. The African American (AA) diet has been known to be notoriously high in salt, fat, calories, and low in fruits, and whole grains. This unhealthy eating pattern may place some African Americans especially those with type 2 diabetes in a position that makes their control of diabetes untenable. In addition, the concept of soul foods in the AA community that promotes fried foods, pork, organ meats, sweet potatoes, corn, smoked meats, and green leafy vegetables, tends to increase the risk for poor blood sugar control (Bovell-Benjamin, Dawkin, Pace, & Shikany, 2009). James (2004) explored factors that influence food choices in this community, and found that there is a growing carelessness in the community about healthy eating. Eating healthy meant giving up part of their heritage and trying to conform to the dominant culture. The cultural symbolism of certain foods, expense of healthy foods, and lack of family support were identified as barriers to healthy eating. However, there is a sense in which Kumanyika, Whitt-Glove, Gary, Prewitt, Odoms-Young, et al., (2007) were correct in suggesting that research on dietary patterns in the African American community tends to come from etic perspectives and may be overlooking community insights and local understandings. These patterns of eating leads to hypertension, which is considered a risk factor for the complications of type 2 diabetes. The risk of type 2 diabetes increases with weight gain, and this usually leads to insulin resistance. Insulin resistance has been identified and responsible for the associated complications in type 2 diabetes (Whitaker, 2001). In the meantime, obesity remains the main risk factor for type 2 diabetes and is very widespread in the African American community.

Black Americans and Type 2 Diabetes

Diabetes is a major concern in the Black American community. Low SES, race, poor neighborhoods, obesity, inappropriate diet, increased inactivity, lower levels of income and education have been noted to increase the risk for type 2 diabetes in the African American community (Krishnan et al., 2010). These risks also account for the increased complications of type 2 diabetes in the African American community. The incidence and prevalence are higher in the Black American community than in the general population and Black Americans are 1.7 times more likely to develop diabetes than their Caucasian counterparts (CDC, 2014; and in low socioeconomic areas of society with increased poverty; (Hsu, Lee et al., 2012). Researchers also found that sociodemographic characteristics also affect the incidence and prevalence of diabetes in poverty-stricken areas (Vegahari et al., 2010). Wenzel, Utz, Steeves, Hinton, & Jones (2005) have commented that diabetes in this community is a classic example of a health disparity in the United States. Research indicates that diabetes and its complications are higher in the African American community especially in persons with low levels of education (Dray-Spira, Gary, & Brancati, 2008; Williams & Jackson, 2005). Hsu et al., (2012) also found that poverty was also responsible not only for increased incidence of diabetes in low SES areas but also for inequality of diabetes care in general. Diabetes knowledge and beliefs are also a serious impediment in the management of type 2 diabetes in the African American community. Mann, Ponieman, Leventhal, & Halm, (2009) noted that diabetes knowledge and beliefs were inconsistent with a chronic disease model in low-income minorities with diabetes. Furthermore, African Americans suffer

greatly from the vestiges of racial discrimination that lends itself to health disparities. Williams et al., (2005) noted that neighborhood residential conditions, SES and medical care all contribute to differences in disease.

The existing literature has sought not only to reinforce the notion but also to acknowledge the role that lack of access to health care, smoking, inactivity, obesity, inappropriate nutrition, low SES, low income, and education, and race all play to contribute to increased complications of diabetes, and make the burden of disease especially complex in the Black American community. However bleak this picture may appear, there are Black Seventh-Day Adventist Americans with type 2 diabetes who have adopted a lifestyle that is itself responsible for a different set of outcomes in the African community. Type 2 diabetes is a lifestyle disease and requires a change in lifestyle to address and manage the disease. Seventh-Day Adventists African Americans with type 2 diabetes, on a plant-based diet have shown consistently that diet and a dramatic lifestyle change can make a substantial difference in AA with type 2 diabetes.

Complications of Type 2 Diabetes (Macro & Micro)

Type 2 diabetes is associated with very severe complications, and is the seventh leading cause of death in the United States (National Diabetes Statistics Report, 2014; CDC, 2014). Estimates released by the National Diabetes Statistics Report (2014) reported that the total cost of diabetes in the United States in 2012 was 245 billion, 176 billion in direct medical costs and 69 billion in reduced productivity. The ADA found that this represents a 41% increase from 2007 estimate of 174 billion. According to Whitaker (2001), the complications of type 2 diabetes can be understood only as we

increase our knowledge of the causes of insulin resistance. Insulin resistance makes cells to be insensitive to insulin and its associated actions. Insulin resistance interferes with normal blood sugar regulation, upsets the normal metabolism of fat in the body, and orchestrates an increase in insulin in the blood stream. Elevated levels of glucose simultaneously increase the production of free radicals. This increase of free radical activity and the toxic effects of chronic hyperglycemia are the greatest reasons for the complications of type 2 diabetes (Whitaker, 2001). Obesity, inappropriate diet, and inactivity are factors that contribute to insulin resistance which are quite prominent in the African American community. The complications of type 2 diabetes are divided into macrovascular and microvascular disease. These complications are a result of injury to the blood vessels. Moreover, if the blood vessels are small, they are called microvascular and if they are large blood vessels, they are called macro vascular complications.

Macro vascular Complications

Macro vascular complications are the most severe and tend to be the cause of most fatalities in people with type 2 diabetes (National Diabetes Statistics Report, 2014). The main macro-vascular complications include coronary heart disease (CHD), stroke (cardiovascular accident), myocardial infarction (MI), peripheral arterial disease (PAD) heart failure (CHF). Coronary heart disease also called ischemic heart disease is caused by the thickening of the walls of the blood vessels that carry blood to the heart. It is the leading cause of death in the United States for both men and women (CDC, 2014). The American Heart Association (AHA) stated that on the basis of 2010 death rate data, >2150 Americans die of CHD each day an average of 1 death every 40 seconds.

Coronary heart disease alone caused 1 of every 6 deaths in the United States in 2010 (Virani, Wong, Woo, & Turner, 2013) Meanwhile, there is mounting evidence that diet and in particular vegetarian diets may be the answer to the disturbing increase in coronary artery disease in the United States especially those with type 2 diabetes (Barnard, Cohen, Jenkins, Turney-McGrievy, Gloede, et al., 2006; Barnard, Katcher, Jenkins, Cohen, & Turner-McGrievy, 2009; Ferdowsian & Barnard, 2009; Trapp & Levin, 2012; Trapp & Barnard, 2010). Heidenreich et al., (2011) have suggested that heart disease (CVD) is responsible for 17% of the national expenditure, and between 2010 and 2030, total direct medical costs of CVD are projected to triple from $272.5 billion to $818.1 billion. Hypertension, which is ubiquitous in the African American community due to diets high in salt and calories, poor dietary practices, is one of the many risk factors for heart disease. Coupled with increasing obesity, low SES, being African American, physical inactivity, and high cholesterol increases their risk for heart disease.

Researchers continue to demonstrate that the adherence to a Mediterranean diet improves cardiovascular risks in people with type 2 diabetes (Esposito, Maiorino, Ceriello, & Giugliano, 2010; Giugliano, Ceriello, & Esposito, 2008; Martinez-Gonzalez, de la Fuente-Arrillaga, Nunez-Cordoba, Basterra-Gortari, Beunza, & Vasquez, 2008). Cardiovascular accident or stroke happens, when there is a narrowing of blood vessels that carry blood to the brain. Sometimes this narrowing can result into an aneurism. In the United States on average, every 40 seconds someone has a stroke and someone dies of stroke approximately every 4 minutes. In 2010, 1 of 19 deaths were caused by stroke (Virani et al., 2013). Myocardial infarction results when there is decreased blood flow to

the heart. Peripheral arterial disease occurs when blood vessels in legs and feet are blocked by fatty acid. Poor circulation in lower extremities can also increase the risk for amputation in patients with type 2 diabetes. Patients with PAD also experience pain in legs and feet when walking, which is usually relieved with rest. The ADA (2003) claimed that cigarette smoking is the single most important modifiable risk factor for the development and exacerbation of PAD. They suggest that tobacco use increases the risk of amputation in patients with type 2 diabetes. Heart failure is a chronic condition in which the heart cannot pump blood properly. Often times increased amounts of blood glucose can damage the heart muscle and cause irregular heart beat (National Diabetes Information Clearinghouse, 2014). Adults with type 2 diabetes have death rates from (CHD) 2 to 4 times higher than adults without type 2 diabetes in the African American community (McKenzie & Skelly, 2010). People with type 2 diabetes have a higher and greater risk for developing coronary disease and stroke or cardiovascular accident (CVA). According to the National Diabetes Statistical Report (2014) the hospitalization rates for heart disease in 2010 for people with type 2 diabetes was 1.8 times higher among adults aged 20 years or older and hospitalization for strokes were 1.5 times higher among adults diagnosed with type 2 diabetes. These numbers are even worse for African Americans because of the poor quality of health care that ethnic minorities receive (Lanting et al., 2005). The result is that ethnic minorities have increased mortality rates and diabetes complications than the general population.

Microvascular Complications

The micro-vascular complications include nephropathy, retinopathy, and neuropathy, and these lead to renal failure, blindness, and lower extremity amputation (Moore, Gregory, Kumah-Crystal, & Simmons, 2009). According to the National Diabetes Statistics Report (2014), microvascular complications can be reduced with good blood sugar control. Nephropathy is a disease that can lead to End Stage Renal Disease (ESRD) requiring dialysis and transplant (Moore et al., 2009). These patients develop hypertension and have decreased glomerular function that leads to renal failure. Diabetes was listed as the primary cause of kidney disease failure in 44% of all new cases in 2011 (National Diabetes Statistics Report, 2014). Furthermore, African Americans tend to have an abundance of these complications including amputations, kidney failure to name but a few (Carter, Pugh, & Monterrosa, 1996). The rate of diabetic ESRD is 2.6 times higher among African Americans than whites (Perneger, Brancati, Whelton, & Kiag, 1994). Diabetes-related kidney failure impacts a much higher percentage of African Americans than whites (Perneger et al., 1994). Retinopathy impacts the retina and vision and leads to many cases of blindness. Diabetes retinopathy is considered the number one cause of blindness in people between ages 25 to 74 in the U.S (Whitaker, 2001; Moore et al., 2009; NDSR, 2014). Diabetic retinopathy is higher in African Americans than whites. Glaucoma and cataracts are also common in people with type 2 diabetes.

Nerve damage or diabetic neuropathy impacts 60-70 percent of all people with type 2 diabetes (Whitaker, 2001). Symptoms range from diminished painful sensation that leads to altered pressures and injury in lower extremity increases the chances of

lower extremity amputation. In 2010, about 73,000 non-traumatic lower limb amputations were performed in adults aged 20 years or older with diagnosed diabetes. About 60% of non-traumatic lower limb amputations among people aged 20 years or older occur in people with diagnosed diabetes (National Diabetes Statistics Report, 2014). Due to uncontrolled blood sugars, African Americans have a higher rate of amputations than their white counterparts following diabetic neuropathy. Microvascular complications from type 2 diabetes continue to be more common and more devastating in minority populations (Carter, Pugh, & Monterrosa, 1996). Diabetic nephropathy is seen commonly in African Americans than white Americans. Lanting, Joung, Mackenbach, Lamberts, and Bootsma (2005) commented that research on ethnic differences on mortality, end-stage complications and quality of care tends to focus on issues that are already well known in these populations like genetics, low SES, and sociocultural issues. They argue that studies on "ethnic differences in mortality and complications among diabetic patients are fragmented" (p.2280). Carter et al., (1996) also suggested that not too many studies have examined the risk factors for complications among ethnic minorities. Lanting et al., (2005) noted that the differences in mortality and morbidity in this population might be due to decreased access to healthcare. However, a study by Karter, Ferrara, Liu, Moffet, Ackerson, & Selby (2002) that examined ethnic disparities in diabetic complications in an insured population found that the incidence of end-stage renal disease among ethnic minorities despite uniform medical coverage was still higher in African Americans suggesting a possible genetic link.

Impact of Perceptions of Diabetes and its Complications

To successfully explore and develop increased understanding of the behavior of people with type 2 diabetes requires some knowledge of their belief towards diabetes and its complications (Clark, 2005). Illness perceptions are important motivators which tend to influence and regulate behaviors and outcomes (Petrie, Jago, & Devcich, 2007); and can be very instrumental in safeguarding positive outcomes (Petrie & Weinman, 2006). The chief trouble with illness perceptions is that no two individuals experience or interpret their feelings the same way (Otara, 2011) although groups of patients may have the same perceptions like type 2 diabetes patients (Petricek et al., 2009; AL Shafaee et al.,2008; Downs, & Ulbrecht, 2006). A cross-sectional study by Abubakari et al. (2011) evaluated African and European patients in London for the associations between knowledge, illness perceptions, self-management and metabolic control of type 2 diabetes. Researchers found that the perception of severe consequences was associated with poor self-management of diabetes. Improved knowledge was associated with poor dietary practices or control in both ethnic groups. However, the perception of having personal control over one's diabetes was associated with better self-management among African patients. This study demonstrates that diabetes education, although important, is not as effective in promoting positive outcomes as personal involvement. Previous studies also showed that perception of control and knowledge of diabetes resonated with positive feelings and improved personal functioning, Watkins, Klem et al., 2000; Eiser, Riazi, Eiser, Hammersley, & Tooke (2001). Furthermore, a study by Paddison, Alpass, and Stephens, (2010) examined the relationship between illness perception and illness

related distress in patients with type 2 diabetes in New Zealand. A sample of 1,015 was randomly selected from a primary care database. A mailed questionnaire was used to get psychological data from 615 patients. Researchers found that the perception of distress about diabetes was associated with the notion that diabetes has serious consequences. This study also indicated that patients believe that symptoms are cyclical and that they have difficulties making sense of diabetes (Paddison et al., 2010). Thoolen, De Ridder, Bensing, Gorter, & Rutten, (2008) in a systematic review also found that the perception of symptoms might affect emotional responses to the diagnosis of type 2 diabetes.

In a meta-analysis by French, Cooper, and Weinman, (2006), multiple studies were examined to determine illness perceptions and attendance at a cardiac rehabilitation center for patients with recent acute myocardial infarction. The findings show that if rehabilitation was perceived as able to promote cure or control symptoms, attendance was likely to increase.

Impact of Plant-based Diet on Type 2 Diabetes

Type 2 diabetes is a progressive chronic disease which if left uncontrolled almost always leads to complications that are life threatening and costly to treat. A diet that leads to obesity plays a significant role in not only bringing about type 2 diabetes but also managing type 2 diabetes. Cardiovascular disease is both the leading cause of morbidity and mortality and the most serious complication of type 2 diabetes (Ware, 2014). Cardiovascular diseases entail stroke and heart disease which are responsible for 34% of all deaths in the United States (Ware, 2014). The CDC (2011) reported that the annual direct and indirect costs of treating cardiovascular diseases were estimated at $273 billion

and $444 billion respectively. Unhealthy lifestyles and the epidemic of type 2 diabetes in the African American community is the interface through which plant-based diets can be examined to determine its impact on type 2 diabetes. A plant-based diet is a diet that encourages whole, plant-based foods, (fiber) fruits, vegetables, and discourages meats, dairy products, eggs as well as all refined foods (Tuso, Ismail, Ha, & Bartolotto, 2013). Jenkins et al., (2003) reviewed the role of a plant-based diet in treating type 2 diabetes and its complications. They found that a plant-based diet, showed reductions in blood glucose, triglycerides, cholesterol, weight loss, cardiovascular risk factors and mortality.

These aforementioned findings are consistent with other researchers (Tuso et al., 2013; Turner-McGrievy, Barnard, & Scialli, 2007; Barnard et al., 2006; Jenkins et al., 2006). Berkow et al., 2006; Barnard et al., 2009; Ferdowsian et al., 2009; Trapp et al., 2012) who reached similar findings about plant-based diet and type 2 diabetes as well as cardiovascular risk factors. Type 2 diabetes is a lifestyle disease that requires a lifestyle change that begins with diet. The plant-based-diet has a portfolio of natural phytochemicals that improves the metabolism of lipids, which impacts cardiovascular risk factors, including hypertension. Alburto, Hanson, Gutierrez, Hooper, Elliot, & Cappuccio (2013) noted that increased potassium in fruits and vegetables help to lower cardiovascular risks (hypertension) in patients with type 2 diabetes. In addition, plant-based diet improves weight loss because most plant foods are nutrient dense. However, (Kurotani et al., 2013; Villegas et al, 2008) found that fruits and vegetables did not help with incidence of type 2 diabetes. Instead, vegetables especially green leafy vegetables were noted to be associated with a reduction in the risk of developing type 2 diabetes.

Other researchers have noted similar results that showed that green leafy vegetables reduce the risk of type 2 diabetes (Carter, Gray, Troughton, Khunti, and Davies, 2010). Unfortunately, one of the weaknesses in the Japanese study by Kurotani et al., (2013) was the huge number of missing information in the survey. In addition, no baseline anthropometric measures were obtained. Furthermore, no informed consent was signed by participants. Also, the seasonal variation of fruits and vegetables may have skewed the results.

Considerable scholarly energy has been expended in examining the role that plant-based diets play in decreasing the risk factors of and complications of type 2 diabetes. However, some of the prominent advocates of plant-based diet like Barnard are known advocates of animal rights. There may be some hidden biases from him that may impact his advocacy of a plant-based diet. At the same time, it would be irresponsible to suggest that his only motivation for his study is the protection of animals. Dr. Barnard is a board certified physician who has seen results first hand stemming from his work with patients and conducting randomized controlled studies. While there may be a hidden agenda, we cannot overlook or minimize the huge contribution that he has made in bringing the advantages of plant-based diet to the forefront of research. Exploring the perceptions of type 2 diabetes among African American Seventh-Day Adventists on plant-based diet with type 2 diabetes places this study at the center of the ongoing debate and discussion about complications of type 2 diabetes and other chronic diseases that are on the rise in this society. Plant-based diet is about healthy eating, which impacts almost all chronic illnesses including bone health (Merrill & Aldana, 2009).

Seventh-Day Adventists and a Plant-based Diet

Since its inception in 1863, the Seventh-Day Adventist church has adopted and promoted a healthy lifestyle that includes a plant-based diet. As a faith-based community, SDA's are known for living longer than the general population, resulting from a lifestyle that emphasizes a plant-based diet rich in fruits, vegetables, nuts and grains (Buettner, 2005). Fraser (2009) commented that Adventists, who are vegetarians on (plant-based) diet, are healthier and live longer than Adventists who are not vegetarians. There are different types of vegetarians. Vegans do not include any meat, fish, poultry, dairy or eggs in their diet. Lacto-ovo-vegetarians include milk, and or eggs, but no red meat fish or poultry. Pesco-vegetarians consume fish, milk, and eggs but no red meat or poultry. Semi-vegetarians include red meat, poultry and fish. Non-vegetarians eat red meat, poultry, fish, milk, and eggs more than once a week. A plant-based diet is designed to increase the consumption of nutrient dense foods found in plant foods, while decreasing the consumption of processed foods.

Seventh-Day Adventists have been the subject of intense scientific study and scrutiny in three studies: Adventist Mortality Study, Adventist Health Study 1, and Adventist Health Study 2. However, other researchers have also taken an interest in examining their lifestyles and the impact it has on lifestyle diseases including diabetes (Barnard, 2009). These Adventist studies provide a very strong rationale that a plant-based diet can and does prevent lifestyle –related diseases including type 2 diabetes and tends to promote good health. Rizzo, Sabate, Jaceldo-Siegl, & Fraser (2011) examined the relationship between a vegetarian dietary pattern and the metabolic risk factors and

metabolic syndrome, using data from the AHS-2. Researchers found that a plant-based diet was associated with a more favorable profile of metabolic risk factors and a lower risk of metabolic syndrome as noted in the decrease in triglycerides, blood glucose, blood pressure, and waist circumference (Rizzo et al., 2011). Metabolic syndrome is a cluster of abnormalities that includes insulin resistance, dyslipidemia, visceral adiposity, and hypertension (Anderson, et al., (2009). Another study by Tonstad et al. (2009) that evaluated the incidence of diet to incident diabetes among Black and non-Black participants in the Adventist Health Study-2 also reported that the prevalence of type 2 diabetes increased from 2.9% in vegans to 7.6% in non-vegetarians. BMI was lowest in vegans (23.6kg/m^2) and increased in Lacto-ovo-vegetarians (25.7 kg/m^2), pesco-vegetarians (26.3kg/m^2), semi-vegetarians (27.3 kg/m^2) and non-vegetarians (28.8 kg/$m^{2)}$. These findings were consistent with other studies that point out that a plant-based diet does help to prevent type 2 diabetes and obesity. (Barnard et al., 2009; Kahleova, Hill, & Pelikanova, 2014; protect and prevent diabetes complications Jenkins et al., 2003; Berkow & Barnard, 2006; Barnard, Cohen et al.,2009; Snowdon & Phillip, 1985; Kahleova et al., 2011; Trapp & Levin, 2012; Ferdowsian & Barnard, 2009; Barnard, Katcher, Jenkins et al., 2009; Barnard, Cohen, Jenkins, Turnet-McGrievy et al., 2006). Lea & Worsley (2006) examined consumers' perceived benefits and barriers to the consumption of a plant-based diet and found that lack of information about a plant-based diet was a barrier. Researchers also noted that participants were able to associate plant-based diet with increased fiber, decreased intake of saturated fat, and disease prevention (Lea, & Worsley, 2006). Anderson et al., (2009) stated that dietary fiber which is found

in most plant food reduces the risk of coronary heart disease, stroke, hypertension, type 2 diabetes, and obesity and improves blood glucose control in patients with diabetes, lowers blood pressure, and promotes regularity. In addition, this study by Lea et al., (2006) also provided evidence, that there is increased confidence in the health benefits of a plant-based diet. Plant-based diets have been shown to increase insulin sensitivity. (Kahleova et al., 2011; Barnard, Scialli, Turney-McGrievy, Gloede, et al., 2006; Kuo, Lai, Ho, & Lin, 2004; reduce weight, Berkow & Barnard, 2006; Barnard, Scialli, Turner-McGrievy, Lanou, et Glass, 2005; decrease medical care usage Trapp, & Levin, 2012; improve glycemic control and cardiovascular risk factors Barnard et al., 2006; decrease plasma lipids Ferdowsian & Barnard, 2009) At the same time, numerous studies have shown consistently that meat consumption especially processed meats have tended to increase the incidence of type 2 diabetes (Song, Manson, Buring & Liu, 2004; Fung, Schulze, Manson, Willett, & Hu, 2004). Pounis et al. (2010) investigated the relationship between long-term animal protein intake and diabetes in the elderly. They found that protein from animals was associated with increased prevalence of type 2 diabetes among the elderly while protein from plant-based diet in the right amount, provided protection from diabetes (Pounis et al., 2010).

The Health Belief Model and Type 2 Diabetes

This study was conducted within the framework of the HBM to explore the potential for the perceptions of type 2 diabetes complications in Seventh-Day Adventists African Americans on plant-based diet. The HBM was one of the first models to adapt theory from the behavioral sciences to health problems (Morgan, 2001). It is a framework for motivating people to take positive health actions that underscore the desire to avoid negative health consequences. Avoiding a negative health outcome is a key element in the HBM. It is predicated on and assumes value expectancy. In other words, the patients' behavior is a function of the value that he or she places on the outcome. This model was developed in the 1950s by social psychologists, as a way of explaining why medical screenings offered by the Public Health Services was not particularly successful (Morgan, 2001). The HBM also has been used to deal with a broad spectrum of health behaviors for preventive purposes like smoking cessation, proper diet, exercise, vaccination, and contraceptive use (Adejoh, 2014). The HBM has been used in the past to develop pregnancy prevention programs for teenagers; Eisen, Zellman & McAlister 1992; Osteoporosis prevention programs Turner, Hunt, DiBrezzo, & Jones 2004; education program for foot care in diabetic patients Gh, MM, MH, S, & S, 2005 with considerable success. One of the assumptions of the HBM is that it is the individual's perceptions that influence behavior. In its simplest terms, the HBM states that people's beliefs influence their health-related behavior. In other words, the benefits of the health action should outweigh the risks before any action is taken to improve the anticipated health outcomes (Chin, Polonsky, Thomas, & Nerney, 2000). The HBM posits that a patient's propensity

or likelihood of taking a specific health-related action is primarily motivated by the following perceptions: perceived susceptibility of that individual to the illness, perceived severity of that individual to that illness, perceived threat of that individual to that illness, perceived benefits associated with the health behavior, perceived barriers to engage in the health behavior, cues to action, self-efficacy, and modifying factors that influence perception of disease.

Perceived susceptibility is subjective and tends to influence and prompt people to adopt healthier behaviors. The greater the perceived risk, the greater the likelihood that a healthy behavior would be adopted although that is not always the case. Belcher, Sternberg, Wolotski, Halkitis, & Hoff (2005) commented that condom use is an effort to decrease susceptibility to HIV infection especially with homosexuals. However, the corollary is also true. When people do not consider themselves to be at risk, they tend to engage in unhealthy behaviors. This trend has been observed in older adults and HIV prevention behavior. Researchers found that because older people do not consider themselves to be at risk for HIV infection, they tend not to practice safe sex (Rose, 1995; Maes, & Louis, 2003). Furthermore, Courtenay (1998) and (Lewis, & Malow (1997) noted that in college students, the perception of risk is hardly linked to the adoption of healthier sexual practices even though the perception of risk is high. However, when perceived susceptibility leads to perceived severity, it becomes a threat to the individual (Stretcher et al., 1997). Perceived threat usually leads to a change in behavior because this threat now becomes the fulcrum upon which all the other perceptions revolve. Among children of parents with type 2 diabetes who are overweight, the threat of

acquiring the disease increases, and these children are more likely to engage in behaviors that help them to lose or control their weight (Forsyth, 1997). Perceived benefit is usually a person's opinion of a threat that leads to a healthy behavior that effectively deals with the threat. Generally, most people tend to adopt a healthier behavior when they perceive that it would diminish the threat and decrease the chances of developing the disease. The construct of perceived barrier is the individual's own assessment and evaluation of the obstacles that stand in the way of adopting a new healthy behavior. Here the individual has to be convinced that the benefits of adopting the new behavior outweigh the consequences of continuing the old behavior (CDC, 2004). Cues to action are variables that may influence behavior indirectly. They may be events, people, health messages (fear appeals) or things that cause people to change their behavior for example the illness of a family member, death of a close family member from drunk driving or from lung cancer following excessive smoking. All of these may impact the perception of health and cause individuals to alter their behavior. In addition, modifying factors may influence health behavior like education, culture, past experiences. These can and do influence personal perceptions about health behaviors as well. Finally, self-efficacy is the belief that one is capable and confident of taking preventive action (Montanaro, & Bryan, 2014). Two theories were under investigation for this study, the HBM and the TRA (Theory of Reasoned Action). Both theories are value expectant. However, the HBM was considered a better choice for this study because it is health behavior focused (Ajzen, 1998). Furthermore, the TRA and the TPB lack the threat component that is very central to the HBM and are framed at higher levels of generalizations (Ajzen, 1998). The HBM

is relevant to my study of exploring the perceptions of complications for diabetes complications in African Americans with type 2 diabetes on plant-based diet because it helps to identify barriers, and provides the opportunity for a provider to enhance health promoting behaviors (Shapiro, 2008).

The HBM was used to investigate and identify the relationship between diabetes complication behaviors among Chinese individuals with type 2 diabetes and health beliefs (Tan, 2004). Participants were drawn from one Urban Hospital and four rural health centers in Malaysia. The sample included both genders, and 128 patients participated in the study. The research tool was a 60-item questionnaire with responses recorded on a 5-point Likert scale. A majority of the subjects had less than 6 years of education but 72% had some basic knowledge of the risk factors and diabetes complication. A crucial issue that may have been overlooked in this study is that the perception of seriousness is undergirded by basic medical knowledge of diabetes even though beliefs also play a substantial role. The notion that diabetes education status was not reviewed by investigators may be considered a serious limitation of this study. Deficient knowledge and understanding of diabetes complication due to a low level of education may have impacted the study in a negative way. In the final analysis, the results were not surprising. The study found that participants were not aware of the seriousness and significance of diabetes complications.

Another study by Dorman, Valdez, Liu, Wang, Rubinstein, et al., (2012) examined the perceived risks, worry, control, and severity about diabetes, coronary heart disease (CHD) and stroke among individuals at increased familial risk of diabetes. The

study found that among individuals at increased familial risk for diabetes, family members impacted with CHD and or stroke significantly influenced perceived risk and worry for type 2 diabetes, stroke and CHD. Since we know that there is a relationship between family history and developing diabetes, authors noted that emphasis should be placed on people with familial risk for developing type 2 diabetes rather than on pre-diabetes (Dorman et al.,2012). In addition, these researchers noted that although not clearly explicit, the health information to individuals with increased familial risk, may have increased the perception of fatalism or threat that led to healthy food choices by those who had strong familial risk for developing type 2 diabetes.

According to a study by Baghianimoghadam, Sharifirad, Afkhami-Ardekani, Mashahiri, Baghianimoghadam et al. (2011), the HBM helped to increase knowledge, understanding, and improve foot care in some Iranians with type 2 diabetes. This was a cross-sectional study designed to test the utility of the HBM in predicting the intentions of diabetic patients in preventing foot lesions and amputations. The researchers focused on how constructs from the HBM influenced proper foot care. The study had 100 Iranians with type 2 diabetes, and the researchers developed research-made questionnaires in four sections, specifically on educational level. All data was collected by direct interview. They found that a person who was more educated, the more likely he was able to pay close attention to foot care. These and most of the studies using the HBM examined, so far, continue to demonstrate the importance that education has in influencing health behavior especially with diabetes patients. However, even though this study was conducted in a University setting, (YAZD Diabetes Research Center), there were no

ethical considerations, no mention of informed consent signed by participants. Neither was there any mention of how long these interviews were conducted. Meanwhile, Chin, Huang, & Hsu (2012) also conducted a cross-sectional study to identify the effects of the HBM factors on daily foot-exam practices among diabetes mellitus patients with peripheral neuropathy in Taiwan. Researchers in this study found that action cues play a significant role in motivating daily foot exam in this population (Chin et al., 2012). In the previous study by Baghianimoghadam et al., (2011), education was clearly responsible for improving the practice of daily foot care awareness. Furthermore, Bayat, et al. (2013) in a randomized controlled trial showed that the Extended HBM was very effective and significant in the impact it had on perceived susceptibility, perceived benefits, perceived barriers and self-efficacy in patients with type 2 diabetes. However, education has not always made a difference with diabetes patients (Abubakari et al, 2011). Action cues may be a better predictor for promoting daily foot exams because it involves family members, friends, health professionals, and family support that tends to make a huge contribution towards compliance (Chin et al., 2012). In the end though, it is one's belief that regulates and predicts desired behavior.

A study by Koch (2002) found that the HBM was a predictor of health –related behaviors. The objective of this study was to determine whether aging African American women with a diagnosis of type 2 diabetes who maintain a regular exercise regimen benefitted from increased glycemic control than those women who did not exercise regularly. A convenience sample of 31 African American women from a medical clinic in Indiana who met inclusion criteria were recruited for this study. Participants who

exercised at least 3 or more times a week for at least 20 minutes were considered "exercisers" and those who did not exercise were considered "non-exercisers." In the final analysis, 17 participants (54.8%) were considered "exercisers" while 14 (45.2%) were considered "non-exercisers." The study was made up of only African American women who were at least 50 years or older. The study confirmed that perceived benefits increased the chances of participating in the desired health-related behavior. Women who had an exercise regimen had fewer barriers to exercise and perceived greater benefits than those women who did not exercise regularly. However, the problem with self-reports in health behaviors is that it may be influenced by a participant's reluctance to report non-adherence to a health-related behavior.

A study by Gutierrez and Long (2011) evaluated the reliability and validity of HBM scales, that were designed to determine what each of the HBM domains were for people with diabetes and Serious Mental Illness (SMI). The 152 patients were selected from Philadelphia and Bedford VA medical centers. The first 60 recruits were part of a pilot study and served as a convenient sample from the Philadelphia VA medical center, while the 92 other patients were part of an ongoing study that was designed to determine whether veterans with mental illness impacted their diabetes outcome. The surveys included the HBM domains of perceived susceptibility, severity, benefits, barriers, and self-efficacy. The average age was 57.7 years with 53% African Americans/Black, 40% White, 7% Latin-American, Native-American/ American Indian, Bi-racial. 81% were male and 70% were identified by providers as having schizophrenia (Gutierrez et al. 2011). The study found that scales assessing diabetes specific domains of the HBM

exhibit both reliability and validity in patients with both diabetes and SMI. However, because the HBM is relevant to behaviors that are under an individual's control, patients with schizophrenia and their self-reports may not be completely under their control because of their mental illness. This study was not specific in terms of what type of diabetes these subjects had.

Another study by Kartal and Ozsoy (2007) examined the HBM Scales in a diabetes Turkish population as a tool for predicting actions that regulated behavior. A convenience sample of 352 patients with a minimum age of 30 to maximum of 70 years from Western Turkey met the inclusion criteria. Data were collected with three goals in mind: "Sociodemographic data form," "Health Belief Model Scale," and the "Diabetes Management Self-Efficacy Scale." For validity studies, language, content, concurrent and construct validities were examined. For reliability studies, the tool's internal consistency reliability, Cronbach alpha reliability Coefficient, test-retest reliability was examined (Kartal et al., 2007). Perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and recommended health-related action were adequately covered by the HBM in this study. The researchers found that the HBM Scale in diabetic patients was determined to be valid and reliable for use in the Turkish population with diabetes. According to (Glanz & Bishop 2010; Morgan, 2001; Harrison, Mullen, and Green, 1992), the HBM was one of the first theories of health behavior and remains one of the most widely recognized dealing with behavioral change.

Transition

The perceptions of complications of type 2 diabetes among Black Seventh-Day Adventists who follow a plant-based diet was an important consideration to explore. It is important to know whether people on plant-based diet even consider complications in their day-to-day activities as they live with type 2 diabetes. Furthermore, this knowledge will enable practitioners to develop strategies to enhance the quality of life and forestall complications of type 2 diabetes in this population. However, because perceptions can be influenced by culture, age, education, religious orientation, income, SES, more emphasis should be placed on the behaviors that delay the complications rather than diabetes or the disease. This study explored what fuels, informs, and influences the perceptions of complications of type 2 diabetes in this population, using the HBM. The studies examined so far indicate that there is a moderate association between adopting a health-related behavior, and improved outcomes. In a study by French, Wade, & Farmer, (2013), it was determined that beliefs about the health-related behaviors like exercise and diet made a fairly significant contribution than beliefs about the disease (diabetes).Black Seventh-Day Adventists believe that personal involvement in behaviors that impact healthy choices is part of the lifestyle that enhances the quality of life. This study could add a new layer of evidence that while beliefs about type 2 diabetes are important, the perceptions that lead to behaviors that decrease complications are even more important and may lead to a new paradigm in dealing with type 2 diabetes in this population.

Black Seventh-Day Adventists clearly have other variables that promote positive health outcomes, such as advocating teetotalism, abstaining from smoking, belief in

GOD, exercising, drinking lots of water, rest, worshipping on the Sabbath, refraining from the consumption of pork, as part of their church doctrines. Given the increasing cost of managing the complications of type 2 diabetes, does adopting a plant-based diet expunge the possibility of experiencing the complications of type 2 diabetes? If not, what are the perceptions of complications of type 2 diabetes in this population? As a Seventh-Day Adventist myself, there is a misguided belief among some members that because they do not drink alcohol, eat pork, and are vegetarians that they cannot experience what others in similar circumstances are facing. In the end, this study will explore the perceptions of complications of type 2 diabetes but also disabuse this misunderstanding.

Chapter 3: Research Methodology

Introduction

This study explored the perception of complications among some Black Seventh-Day Adventists with type 2 diabetes (ages 24-85, men and women) on plant-based diet. The approval number for this study was 02-11-16-0241011 and was granted on February 11, 2016. This chapter will discuss the study's design and rationale, population, methodology, research questions, data collection procedures, sampling strategy, ethical considerations, and threats to validity.

Research Design and Rationale

This study used a qualitative, exploratory, and ethnographic approach. The objective was to understand beliefs about complications of type 2 diabetes from the individual's perspective.

Ethnography

The best way to explore and increase understanding about perceptions is to talk to participants face to face, so that they can tell their story directly from their experiences (Creswell, 2007). According to Pope (2005), ethnography constitutes several data collection methods and analytical strategies. Its practice involves a lengthy immersion in the everyday life of a chosen group of people. According to Atkinson and Pugsley (2005), ethnographic research is predicated on the principle that social life is meaningful, that it is changeable, and that meanings are subject to negotiations and redefinition (Atkinson et al., 2005). Leung (2002) wrote that ethnographic research is a social research method that occurs in a natural setting, which involves learning the culture of

those being studied closely and experiencing their way of life before attempting any explanations about their behavior or attitudes. Collecting data is largely dependent on participant observation and interviews.

LeCompte and Schensul (2010) wrote that there are " seven defining characteristics of ethnography and they include 1) conducted in natural settings not in a laboratory 2) must have face to face interactions with informants 3) findings must reflect accurate reflections of informants' perspectives 4) utilizing induction, interaction, and recursive data collection to build cultural theories. 5) using both qualitative and quantitative data 6) framing all human behavior within a sociopolitical and historical context 7) using culture as a lens through which to interpret study results". (p. 356). However, owing to the inherent relationship between researcher and informants, reflexivity is central to ethnography. This means that both researcher and the members of the culture he/she is studying experience a tension while trying to be objective. Furthermore, in ethnography, there must be a strong emphasis on exploring the nature of a particular social phenomenon rather than setting out to test a hypothesis and investigating a rather small number of cases (Reeves et al., 2008). In addition, analysis of data involves interpretations of meanings, functions of human actions, and the product of this analysis takes the form of verbal descriptions and explanations (Reeves et al., 2008). Finally, ethnographers tend to triangulate (i.e., compare and contrast) interview and observation methods and results to enhance the quality of their work (Reeves et al., 2008). Ethnography was considered appropriate for this study because it was likely to document the existence of alternative realities and to bring out important insights about

the perceptions of complications of type 2 diabetes in this cultural group. Personal involvement is important in the management of type 2 diabetes. Therefore, ethnography was chosen because the essence of this approach is to describe what people do in their daily lives, and it is sensitive to the location and context in which the research was conducted. Knowing how others think increases our understanding of life in a complex world, but also increases our knowledge of type 2 diabetes from a culture whose lifestyle is unique. It also affords any culture the opportunity to speak out for itself without being interpreted by the main culture. Finally, this approach was chosen because the goal was not to develop a theory, or describe a lived experience, which is the objective of phenomenology.

The premise is that beliefs regulate perceptions. A quantitative approach would not have been appropriate for this study because its goal is to control and predict, whereas the purpose of this study was to discover and understand the perceptions from the participants' point of view. In addition, a mixed method would not have been appropriate because the goal of a mixed method is to incorporate a qualitative component into a quantitative study and to build from one phase of a study into another (Creswell, 2012). That was not the intention of this study.

One of the objectives of this study was to explore beliefs about perceptions of complications of type 2 diabetes with semi-structured and in-depth interviews. DiCicco-Bloom & Crabtree (2006) stated that semi-structured and in-depth interviews allow the interviewer to delve into social and personal matters. Data from these interviews was obtained from approximately 10 Seventh-Day Adventist African Americans with type 2

diabetes on plant-based diet in Huntsville, Alabama, from four churches. These data were used to answer the four research questions that the study intended to address.

1. What are the perceptions of complications of type 2 diabetes in Black Seventh-
   day Adventists with type 2 diabetes on plant-based diet?
2. What do Seventh-Day Adventist African Americans with type 2 diabetes and on plant-based diet, know about the potential for complications of type 2 diabetes?
3. How does income levels impact perceptions of complications of type 2 diabetes in Black Seventh-Day Adventists with type 2 diabetes who are following a plant-based diet?
4. How does education impact the perceptions of complications of type 2 diabetes in Black Seventh-Day Adventists with type 2 diabetes following a plant-based diet?

Sample and Setting

The sample was drawn from four Seventh-Day Adventist churches in Huntsville, AL in Madison County. Purposive sampling was used to inform this study. Purposive sampling was chosen because specific participants can best inform the research question (Houser & Bokovoy, 2006) and provide information rich data (Patton, 2008). According to Ritchie, Lewis & Elam, (2003), purposive sampling is exactly what is implied in the name. Participants were members of a sample chosen with the purpose of representing a key criterion, Seventh Day Adventists on a plant based diet. Purposive sampling has two

main objectives. The first is to make sure that all key constituents of relevance to the subject matter being investigated are represented and second, to include diversity in this constituency (Ritchie et al., 2003). Each gender and age group was represented to ensure that there was a deliberate choice in the sample size as part of the purposive sampling and also to make sure that the sample will stand up to future inquiry and scrutiny (Ritchie et al., 2003). Further, this study was not designed to be generalized, although the results could be transferred to like subjects and settings (Houser et al., 2006).

The minimum number of participants anticipated was 24. However, there was a low response rate. I contacted volunteers to contact friends or family members, who may be interested in participating as informants in this study through snowball sampling. In snowball or referral sampling, each subject is asked to recruit other subjects who meet criteria for the study (Houser et al., 2006). I did not get any success with snowballing. Furthermore, 24 participants were considered enough to offset any impact on the study in the event of any significant drop out rate. However, only 10 participants were interviewed for this study. According to Patton (2008), there are no rules for sample size. Ritchie et al., (2003) stated that qualitative samples are usually small. They argue that if data are properly analyzed, no new information will be obtained from increasing the sample size. Any increase will lead to diminishing returns where new and additional informants no longer contribute to new evidence (Ritchie et al., 2003). In addition, sample size in qualitative research is not determined by fixed rules, but it depends on the objectives and aim of the study, and what is possible, given the time and resources available (AL- Busaidi, 2008).

Eligibility Criteria

The participants were Seventh-Day Adventist African American men and women ages 24-84 with self-reported diagnosis of type 2 diabetes for at least 10 years and who have been following a plant-based diet for at least 10 years, with a willingness and commitment to participate in all aspects of the study. Ages 24 -85 was chosen as a criterion to ensure that all age groups were represented, so that any differences in perspectives based on age could also be explored (Ritchie et al., 2003). Subjects were able to speak and write in English. Type 2 diabetes, like most chronic illnesses, is a progressive disease and complications tend to manifest after at least 10 years, especially when poorly controlled due to insulin resistance and poor glucose uptake by cells (Campbell & Campbell, 2006; CDC, 2012; Fowler, 2008). In addition, persons with type 2 diabetes are at great risk for heart disease, stroke, hypertension, kidney disease, blindness, and amputations (CDC, 2012).

Black Seventh-Day Adventists with a self-reported diagnosis of type 2 diabetes for less than 10 years were excluded even if they were on plant-based diet. Pregnancy, less than 24 years of age and more than 84 years of age, psychiatric illness, non-African American, and medical instability were the exclusionary criteria in this study. The goal for these exclusionary criteria were to deliberately avoid unusual cases that Patton (2008) describes as intensity sampling. According to Patton (2008), intensity sampling provides information rich data, which manifests the phenomenon of interest intensely but excludes unusual cases. Pregnancy, psychiatric illness, and medical instability all rise to the level of unusual cases.

Although a Black Seventh-Day Adventist, I am not a member of any of the four churches that were involved in this study. Familiarity with informants as a Black Seventh-Day Adventist, may compromise this study, and create unnecessary assumptions about the interview on the one hand but may also increase the potential for honesty during interaction. As a Black Seventh - day Adventist, I adopted bracketing to manage any researcher biases. Bracketing is when the researcher puts aside his or her personal beliefs by not making personal judgments about what one has observed and remain open to data as they are revealed (Houser et al., 2006).

Recruitment Strategy

The recruitment goal for this study was 24 informants. Initial contact was made with the pastors of these four churches to determine their interest and secure their cooperation. Recruitment for the study was made through messages in the church's bulletin for those interested in contacting the PI for further instructions. In addition, advertisements were made in Adventist publications as well as by word of mouth (Appendix A). Furthermore, flyers (Appendix B) were placed in strategic areas in the church offices including health ministries, Sabbath school departments, and extra copies of this study announcement were kept in the lobby of these churches. As soon as the minimum number who actually agreed to participate was secured, the PI sent out recruitment letters (Appendix C) to potential participants with a comprehensive description of the study with inclusion and exclusion requirements. A toll-free number was arranged and issued to participants for reaching the PI. The PI described and explained the nature of the study and the option of dropping out at any given time for

whatever reason. I then enrolled participants and obtained a site of visit for the interview. A self-introductory letter (Appendix D) that included the fact that I am a student at Walden University completing a doctoral program was sent out to informants reiterating the nature of the study and the option to drop out at any given time and for whatever reasons. The data collection took six weeks to complete.

Instruments and Instrumentation

The qualitative research instruments that were appropriate and used in this study included semi-structured interviews and observations. According to AL- Busaidi (2008), the semi-structured interview is commonly used in healthcare-related qualitative research. It is characteristically flexible, and provides a loose structure of open-ended questions to explore experiences and attitudes (AL-Busaidi, 2008). AL-Busaidi (2008) reported that semi-structured interviews have the advantage of greater flexibility and enable the researcher to probe deeply through follow-up questions and helps the researcher to enter new areas that eventually produce richer data. A key feature of semi-structured interviews is that it has the ability to focus on the individual and provides the opportunity for detailed investigation of participants' personal perspectives and for in-depth understanding of the personal context within which investigation is conducted (Richie et al., 2003). Focus groups were not employed because they do not focus on the individual, and they employ less opportunity for the generation of individual accounts (Richie et al., 2003).

An interview guide (Appendix E) was used to manage the flow of the interview. Patton (2008) has defined an interview guide as a series of topics or broad interview

questions which the researcher is free to explore and probe with the interviewee. In addition, the questions in the interview guide reflected the gap in the literature; focused on the objectives of the study, and feedback from a Certified Diabetes Educator. The advantage of the interview guide is that it helps the interviewer pursue the same basic lines of inquiry with each participant in a more systematic and comprehensive manner (Patton, 2008). The HBM constructs of perceived seriousness and self-efficacy were used to frame the questions in the interview guide. The content validity of the interview guide was reviewed by a diabetologist in a neighboring university in Huntsville as well as by a certified diabetes educator in Huntsville, Alabama.

Procedures

To address the research questions, in-depth, semi-structured interview questions were administered to informants on a face-to-face basis in participant's home or setting of choice. I completed four in-depth interviews with participants and four follow-up interviews. Four interviews with 10 participants (80 interviews) may be considered too many interviews. However, researchers are split on what should be the right number of interviews in a qualitative study (Mason, 2010; Guest, Bunce, & Johnson, 2006; Crouch, & McKenzie, 2006; Charmaz, 2006). Guest et al., (2006) conducted a qualitative study with women in two West African Countries with HIV infection and noted that saturation was achieved after 12 interviews because the sample was homogenous. Charmaz (2006) has suggested that the aims of the study should drive the study. She argues that a small study with modest claims might achieve saturation quicker than a complex study. Mason (2010) has pointed out that 50 interviews from a novice researcher will not yield rich data

as 10 interviews from an experienced researcher. While it is true that there is no rule of thumb on how many interviews are appropriate in a qualitative study, it is also true that Seventh-Day Adventists have been studied extensively especially when it comes to type 2 diabetes. That is why more rather than less interaction will facilitate and increase my association with participants and enhance the validity of the in-depth inquiry (Charmaz, 2006). Furthermore, this study was the first of its kind with this population, and I wanted to be meticulous. Although achieving saturation is important, what is even more important is not the number of interviews or sample size rather the purpose of the study and the quality of the data. This quality will be enhanced with increased interaction between the interviewer and the participants. Therefore, the question as to how many interviews are considered enough is "it depends." It depends on the nature of the study, the purpose of the study, the discovery of new information, time needed to complete the study and the available resources for the study.

Interviews were audio taped with informants' permission. Recruitment letters were sent to all those who met inclusion criteria and encouraged to call the toll-free number expressing a willingness to be a part of the study. At this point, a home visit or setting of choice to qualified participant was arranged. During this initial visit, participants were asked to sign the informed consent form (Appendix F). This initial interview and interaction was expected to last for at least 45 minutes. During this interaction, the participants were encouraged to ask many questions and were reminded of the option to opt out if he or she had any reservations about the study. A $10 honorarium was offered to subjects who participated and completed this study. The

second interview and subsequent interviews were arranged weekly after the initial visit and a follow-up visit one week after the fourth visit. Not every participant was contacted for a follow-up visit. Only those who needed to clarify some questions were scheduled for follow-up visits. Audio tapes were locked in a file cabinet in my home in my study with keys available only to me. Participants were given identification codes based on their last names. I am a Family Nurse Practitioner with 12 years' experience, as well as a Clinical Nurse Specialist and have participated in collecting data in the past for qualitative studies.

Data Analysis

The primary objective or the overall purpose of data analysis in this study was to explore in order to understand the perception of complications of type 2 diabetes among some Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet. The analysis was made from data collected from interviews and observations during interviews, using the HBM. Recorded interviews (audio tapes) were transcribed for content analysis as they related to the research questions. Member checks were used to deepen and verify understanding of interpretation of data. I used open and axial coding (Corbin & Strauss, 2008). Coding is the process of examining the raw qualitative data that comes in the form of words, phrases, sentences, and assigning labels or codes (Corbin et al., 2008). Open coding is when one tags any unit of data deemed relevant to the study. In other words, the first time one goes through the data, he focuses on identifying, labeling, and classifying words or phrases found in the transcript that are relevant to the study (Merriam, 2009). Axial coding on the other hand is one's effort to

create themes or categories by grouping codes or labels given to words and phrases (from open codes) that accurately represents interview responses (Merriam, 2009). There were no minority views to be discussed.

Issues of Trustworthiness

Internal validity is not terribly relevant in a qualitative study. However, findings from qualitative studies will lack credibility without some measure of validity. In this study, one of the salient threats to internal validity was bias from the researcher and his subjects. The fact that I am a Black Seventh-Day Adventist and was conducting a study with Black Seventh-Day Adventists increased and posed a huge threat to the internal validity of this study. One of the ways this researcher controlled researcher bias was with bracketing. Bracketing is putting aside personal opinions about this study. Member checks or checking is another method that was used to control internal validity in this study. This is when collected data is given back to the informants for perceived accuracy and validation (Creswell, 2007). In addition, this researcher employed triangulation to control internal validity. This is when three or more independent sources are used to validate or verify the conclusions of a qualitative study (Houser, et al., 2006).

External validity is when findings from research can be used in practice (Houser et al., 2006). It is the ability to make generalizations about research findings to other populations, situations, and places (Houser, et al., 2006). It was not possible to make generalizations in this study because participants were from one small city in Alabama. Attempts were made in this study to use thick description to control external validity and establish transferability. Thick description is when a large and sufficient data is used to

describe the phenomenon under investigation and is provided to readers to enable them to have a proper understanding of participants' setting under study (Creswell, 2007). Furthermore, audit trails were used in this study to increase and strengthen dependability of this research project. According to Streubert & Carpenter (1998), an audit trail is a recording of events that helps to keep a record of activities that anyone can follow to reach similar conclusions. As a Black Seventh-Day Adventist, I planned to bring objectivity and balance to this project. The fact that I am a Seventh-Day Adventist did not detract from my desire to be authentic, reflective, self-analytical, and bring a voice that reflects my perspective not as a Black Seventh-Day Adventist but as a researcher who believes in self-flagellation, and self-awareness.

Ethical Procedures

This researcher secured approval from the Walden University Institutional Review Board and obtained informed consent from participants before embarking on this project. In order to avoid any ethical challenges, objectives of the project were communicated to informants both verbally and in writing. Furthermore, participants were given their own data to review and provided them with information from the study once it was completed. The rights of the informants and their anonymity were considered of paramount importance before the findings were disseminated. Data will be destroyed after five years, and no information about participants will be given to a third party for whatever reason or reasons. All the informants were members of a faith-based community and were given the utmost respect and consideration for informants' religion and culture. Participants were asked whether it would be helpful to share the results with

the church at large. Confidentially, results may be anonymously shared with the various pastors and their congregations until participants agree to it. Confidentiality or privacy of participant's responses were an absolute priority during the course of this study. Anonymity and confidentiality were upheld and protected by not disclosing identifying information about participants in this study to anyone. I will not discuss what particular individuals said in the interview nor any issues arising from individual interviews with others in ways that might identify the individual or individuals. The reason the data and names were kept confidential is because the Adventist community is such a small community, and any information about participants may be easily identified. Finally, I made sure that storing the code linking data to individuals was kept securely.

Transition

The overarching intent of this study was to explore, in order to inform understanding about the perceptions of complications of type 2 diabetes among some Seventh-Day Adventist African Americans with type 2 diabetes, on plant-based diet, using the HBM. Information provided in this chapter was used to answer the research questions this study attempted to address. The study population, sampling and setting, recruitment strategy, eligibility criteria, instruments and instrumentation, procedures, data analysis, ethical considerations, and issues of trustworthiness were amply discussed in this chapter. Semi-structured interviews were used to explore the perception of complications from type 2 diabetes among Black Seventh-Day Adventists who follow a plant-based diet. This study could provide important insights to the understanding of broader aspects of type 2 diabetes in and among this population and may improve

awareness of complications of type 2 diabetes. In addition, this study has the potential to close the gap that exists in the literature about the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists who follow a plant-based diet. The next chapter will discuss the analysis, interpretation, and results of the data collected through words from the informants.

Chapter 4: Results

Introduction

This chapter examines the results of the data analysis and addresses the research questions. It consists of four sections: (a) sample characteristics relevant to the study, (b) data collection methods, (c) the data analysis and (d) the results in light of the research questions.

Sample Characteristics

Recruitment letters were sent to four Black Seventh-Day Adventist churches in Huntsville, AL. The letters asked for volunteers between the ages of 24 and 84 who have type 2 diabetes and follow a plant-based diet. The initial response was great (24), but only 10 signed the consent forms. All females (30%) were reluctant to release their ages, but said they were within the age limits for the study. The males (70%) were all within the age limits. All participants were high school graduates and 70% were college graduates; 70% were still in the workforce and 30% were retired and on fixed incomes. All participants were of African extraction; all had followed a plant-based diet for more than 10 years, and all were practicing Black Seventh-Day Adventists with type 2 diabetes. The original intent was to interview at least 24 participants; however, despite rigorous recruitment attempts, this was not to be. The low response rate especially from young adults clearly inhibited my ability to get a balanced, good representation of all age groups.

Data Collection

In-depth, semi-structured interviews were conducted with 10 participants in the privacy of their homes, mostly on Sundays. Both interviews; the initial and follow-ups were conducted over a period of six weeks. Twenty-four interviews were conducted in total: two for each informant as well as four follow-up interviews. No unusual circumstances were encountered during the course of data collection

The initial interviews were semi-structured and lasted from 45-60 minutes and had a conversational tone. This time frame of 45-60 minutes was allowed, so that participants do not get the impression that they were being hurried in the process. During the initial interview, questions were asked to elicit information about perceptions concerning diabetes complications as Black Seventh-Day Adventists with type 2 diabetes who, follow a plant-based diet.

The follow-up meetings were to allow informants to read the transcribed interviews and check the accuracy of what they had said in the initial interview. An opportunity was given to participants to read transcripts and confirm views expressed in their initial interviews. In four of the 10 (40%) follow-up meetings, it became obvious that saturation had been reached. The participants repeated this same information: the eight laws of health, the body is a temple of the Holy Spirit, vegetarian diet, exercising after every meal, God is a healer, a diet free of meats, my faith in God, meat consumption hastens complications of type 2 diabetes, lifestyle changes, diet of fruits, vegetables, and nuts better than a diet of meats, Adventist lifestyle, and avoiding unclean foods. This repetition was evidence that saturation had been achieved.

Data Analysis

Each transcript was read and reviewed separately several times. The goal was to identify codes and recurrent themes. Codes were developed based on the frequency of statements from interviews. The data were hand coded and then used to develop themes. Four themes emerged from the data (a) Black Seventh-Day Adventist lifestyle, (b) lifestyle modifications, (c) income, and (d) knowledge of diabetes complications. These themes were then used to answer the research questions. Finally, the transcripts were carefully examined again to see whether researcher had missed anything.

Table 1

Various codes/labels and the themes that emerged from Black Seventh-Day Adventist Lifestyle, Lifestyle modification, Income, & Knowledge of diabetes complications

Codes/Labels	Themes/Categories
● The Adventist lifestyle prevents me from getting complications of type 2 diabetes. ● Adventists believe that your body is the temple of God. ● If you practice the eight laws of health, you can conquer type 2 diabetes (NEWSTART). ● The Adventist church discourages its members from eating unclean foods. ● God is the healer. ● My religion encourages me to eat the best and rest the best.	Seventh-Day Adventist Lifestyle
● Exercise lowers my blood sugar. ● Exercise allows you to cope with the stresses that hasten the complications of type 2 diabetes. ● Vegetarian (plant-based) diet makes me more temperate in my eating.	Lifestyle Modifications

● I walk every time after I eat. ● We do not smoke or drink alcohol. ● Exercise impacts my entire health.	
● We have a good middle class income. ● 40% of my income is spent on food (vegetables, fruits, and nuts) ● Vegetarian foods do not need to be expensive and do not impact my beliefs about diabetes complications. ● The expenses on plant-based diet come when you go beyond the fresh fruits and vegetables. ● I spend 35% of my income on my food. ● We believe that scripture enjoins us to a particular diet.	Income
● Amputations ● Diabetes impacts almost every part of my body, vision, heart, kidneys. ● Exercise lowers my blood sugar and slows down complications. ● I have a part to play in maintaining my health. ● Weight gain can cause your blood sugar to go up and create conditions for complications. ● Exercise and a diet of vegetables, fruits, and nuts slows down complications. ● Education enables me to have a proper dialogue with my doctor. ● My weight is controlled by what I eat.	Knowledge of Diabetes Complications

Theme 1: The Black Adventist Lifestyle

The Black Adventist lifestyle emerged as one of the themes for this study. The focus of this study was to explore in order to understand the perceptions for the potential of diabetes complications among Seventh-Day Adventist African Americans with type 2

diabetes on plant-based diet. Almost all participants tended to believe that their Adventist lifestyle is the basis for their improved outcomes and the decreased possibility of developing complications of type 2 diabetes. Their responses indicated that their perception of type 2 diabetes complications is informed by their lifestyle as Black Seventh-Day Adventists. One informant, (P1) captured this overarching theme by stating that "The Adventist lifestyle prevents me from getting complications of type 2 diabetes."

Underlying this theme is the idea that flesh foods, or unclean foods should not be eaten. Informant (P2) put it well by stating, "The Adventist lifestyle helps tremendously because we do not put unclean foods in our bodies because these flesh foods help with the destruction of your body." Participant (P2) stated that "The Adventist church discourages its members from eating flesh foods, unclean foods, and anything with a face, and has a mother, and a liver is harmful to your health." Unclean foods are those foods that are proscribed by the Bible in Leviticus chapter 11 and verses 2-47.

The majority of informants stated that the Adventist lifestyle, which includes the eight laws of health, is undeniably associated with improved health and well-being and tends to decrease the potential for developing complications of type 2 diabetes. One participant (P4) stated that practicing the eight laws of health has enabled her to delay complications from her own experience because family members who are not Seventh-Day Adventists and who have type 2 diabetes, have had severe complications including amputations.

Furthermore, an overwhelming majority of informants averred that the Adventist lifestyle is informed by what the SDA church calls the 28 fundamental beliefs. The fundamental

beliefs are biblical principles or doctrines that the church believes should guide all members of the church in how they practice their Christianity (www.adventist.org).The sentiment expressed by one participant reflected the views of many of the participants.

> "Part of our belief system as Seventh-Day Adventists is the notion that your body, your physical body is the temple of the Holy Spirit. And because your body is the temple of the Holy Spirit, we believe that you should keep your body in the best condition possible and do what is best and to physically keep your body in the best condition. That you should keep your body healthy and therefore should lead us to those principles that really put us in the best condition to counter the debilitating conditions of diabetes complications and hypertension and so on" (P3).
>
> This is actually SDA fundamental belief No: 22
>
> We are called to be godly people who think, feel, and act in harmony with biblical principles in all aspects of personal and social life. For the Spirit to recreate in us the character of our lord we involve ourselves only in those things that will produce Christ like purity, health, and joy in our lives. This means that our amusement and entertainment should meet the highest standards of Christian taste and beauty. While recognizing cultural differences, our dress is to be simple, modest, and neat, befitting whose true beauty does not consist of outward adornment but in the imperishable ornament of a gentle and quiet spirit. It also means that because our bodies are temples of the Holy Spirit, we are to care for them intelligently. Along with adequate exercise and rest, we are to adopt the

> most healthful diet possible and abstain from the unclean foods identified in the scriptures. Since alcoholic beverages, tobacco, and the irresponsible use of drugs and narcotics are harmful to our bodies, we are to abstain from them as well. Instead, we are to engage in whatever brings our thoughts and bodies into the discipline of Christ, who desires our wholesomeness, joy, and goodness Gen. 7:2; Exod. 20:15; lev. 11: 1-47; Ps. 106:3; Rom. 12:1, 2; I cor. 6:19, 20; 10: 31; 2 Cor. 6:14-7; 10: 5; Eph. 5:1-21; Phil. 2:4; 4:8; 1 Tim. 2:9, 10; Titus 2:11, 12; 1 Peter: 3:1-4; 1 John 2: 6; 3 John 2. (KJV) These biblical texts and the views they express, support the holistic lifestyle encouraged by the SDA church. They range from not stealing to kinds of animals recommended from God to his people for food, to maintaining your body as a temple.

Participants expressed in various ways the importance of maintaining the eight laws of health as a lifestyle for improved health in general, and to counter the potential for developing complications of type 2 diabetes in particular. According to one participant, "The eight principles of health, exercise, sunlight, fresh air, right nutrition and all the eight principles will help you not only to overcome the chances of developing complications of type 2 diabetes, but will also allow you to maintain a healthy lifestyle that lowers bad cholesterol, blood sugars, increase energy" (P4). Faith in God as the one who initiated these eight laws of health to keep his people in good health as a condition for true worship was also explained by one participant who noted that, "Your mind which is inside your physical being can be kept in the best state because that is the way you worship God" (P3). This participant continues, "Adventist lifestyle is really the basic

eight laws of health. Some call it God's plan for health. I believe that God is the healer. Man treats diseases, and God heals. Medications are useful to a certain extent, but God is the healer and my belief in God as the healer, takes a lot of stress from me" (P3). The Adventist lifestyle as a theme actually emerged from the data that was collected during the course of the interviews. The perceptions of diabetes complications and the Adventist lifestyle were real to all participants.

Theme 2: Lifestyle Modification

Lifestyle modification was the second theme to emerge from the data that was explored. In response to questions about complications of type 2 diabetes in the future, informants emphasized lifestyle modification. Lifestyle modification was considered a healthy response to the perceptions of complications of type 2 diabetes in the future by this population. Lifestyle modification includes daily exercise, proper diet, especially foods that are nutrient dense (plant-based diet), abstaining from alcoholic beverages, not sleeping late, not smoking tobacco in its various forms, doing everything in moderation, and personally getting involved in one's health. Participants discussed their perceptions of what lifestyle modifications meant to them and how that influenced their chances for developing complications of type 2 diabetes.

One participant described the part that inactivity could play in hastening the potential for complications when she said, "Well I trust that the Lord will not put anything in me that I cannot handle, at the same time, I have a part to play in maintaining my health, so I exercise daily by walking for at least 30 minutes" (P4). Other participants noted that daily exercise was an important consideration in how they perceive the

complications of type 2 diabetes. “Exercise lowers my glucose which causes the reduction of sugar in your blood” (P2). “Exercise allows you to cope with the stresses that hasten the complications of type 2 diabetes” (P3). And “O yes exercise is my key factor in my diabetes; I walk every time after I eat” (P5). “Exercise helps to use up sugar in the muscles. It helps me to concentrate and also helps me to sleep better” (P1).

One participant described the impact of a plant-based diet on his eating habits and stated that “Plant-based diet, makes me more temperate in my eating, and impacts my entire health. I sleep better, relate better to my family, energy is increased, depression disappears, and my motivation to continue eating healthy is also increased” (P4). In addition to diet and exercise, another participant shared their lifestyle as a Seventh-Day Adventist “Seventh-Day Adventists do not smoke, or use tobacco in any of its forms and they do not use alcohol in any of its forms. They also avoid drinks with stimulants like caffeine, do not drink coffee, teas, or any decaffeinated drinks and also do not eat pork” (P3).

Since this was a predominantly African American population, participants were asked to comment on whether race has anything to do with complications since the evidence is overwhelming that African Americans tend to have more type 2 diabetes complications than there is in the general population. All participants were unanimous in rejecting the notion that race plays a significant role in developing complications of type 2 diabetes in the African American community. Based on their own experiences, they all agreed that lifestyle modification is the solution as far as they were concerned. One participant said, “Other races like Hispanics have increased diabetes too, so I really don’t

point it to my race" (P6). Another participant agreed that, "Race plays a small part, but stated that type 2 diabetes is a lifestyle disease" (P1).

To conclude, lifestyle modification such as daily exercise, (especially after every meal), adopting a plant-based diet, avoiding alcoholic beverages, avoiding smoking, and getting personally involved with one's health, avoiding caffeine, teas, and decaffeinated drinks emerged from the interviews in response to exploring the perceptions of complications of type 2 diabetes in the future. Participants perceived lifestyle modification as a way to prevent complications of type 2 diabetes.

Theme 3: Income

Income was the third theme that emerged from exploring the perceptions of complications of type 2 diabetes during the course of this study. Participants were concerned about the increasing cost of fruits, vegetables, and nuts that make up the bulk of their diet. The concern was not just on fruits and vegetables but on all food items. One participant stated that, "any increase in income would be helpful because it would help meet my expenses and significantly reduce the stress involved in my family's ability to buy fresh fruits and vegetables" (P4). In other words, there are financial challenges involved in maintaining a plant-based diet. However, this population is identified more or less by their diet. Most of them have been on plant-based diet for a long time. The foundation of their lifestyle hinges on following a plant-based diet as we saw in SDA fundamental belief No.22. Nonetheless, others were unflagging in their determination to continue following a plant-based diet despite the increasing cost. One participant stated, "We believe that scripture enjoins us to a particular diet" (P4). A great many participants

did not perceive the increasing cost of fruits and vegetables as a reason to abandon their plant-based diet. However, many others lamented the increasing cost of a plant-based diet, but one participant claimed that, "vegetarian foods do not need to be expensive and do not impact my beliefs about diabetes complications" (P3). In other words, the cost of his plant-based diet would not influence a change of his diet preferences. In defense of maintaining a plant-based diet, one participant stated that, "40% of our income is spent on food (vegetables, fruits, and nuts)" (P1). Another said, "We have a good middle class income, and spend 35% of our income on maintaining a plant-based diet" (P5). In the end, all participants spoke favorably about maintaining a plant-based diet despite the high cost and did not consider it influencing their perceptions of complications.

Theme 4: Knowledge of Diabetes Complications

The last theme from this study was the knowledge of diabetes complications. Almost every participant talked about the complications that could impact and impair one's health. One participant described the relationship between weight gain and complications of type 2 diabetes when he said, "Weight gain can cause your blood sugar to go up and create the conditions for complications" (P2). Another participant stated, "My weight is controlled by what I eat because vegetables, fruits and nuts that make up my diet do not cause weight gain" (P1). When asked whether he was familiar with the complications of diabetes, one participant stated, "Exercise and a diet of vegetables, fruits, and nuts slow down the potential for diabetes complications" (P3). Another participant averred that knowledge of complications was very important to him because it gave him "the opportunity to have a proper dialogue with my doctor" (P1). Several

informants stated that they got information about diabetes and its complications from seminars from their various churches, from their doctors, and from the internet. One informant said, “With Adventism comes an awful lot of education” (P4).

Results and Research Questions

The purpose of this study was to explore in order to understand the perceptions for the potential of diabetes complications among some Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet using the HBM. Semi-structured interviews were employed to explore the perceptions for the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists Data from interviews were used to answer all three research questions.

RQI: What do Seventh-Day Adventist African Americans with type 2 diabetes on plant-based diet know about the potential for complications of type 2 diabetes?

One of the themes that emerged from this study was the Adventist lifestyle. It is a holistic approach to life. The eight laws of health called NEWSTART, an acronym that stands for Nutrition (plant-based) diet, daily exercise, intake of adequate amounts of water, exposing oneself to appropriate amounts of sunshine, temperance, air, adequate rest, and trust in divine power was described by all informants as a defense against the potential for developing complications for type 2 diabetes. One participant noted, “The Adventist lifestyle prevents me from getting complications” (P4). Emphasis on healthful eating that discourages the use of unclean foods, abstaining from alcohol, and smoking which is part of their church doctrine was described by several informants as the advantages they experience as they deal with the potential for developing complications

of type 2 diabetes. According to participant P4, "The Adventist lifestyle helps tremendously because we do not put unclean foods in our bodies because these flesh foods help with the destruction of your body." Inactivity, especially among Black Americans who are less likely to engage in physical activity (Agarwal, 2012) was addressed in this population. Participant (P5), noted, "Exercise and a diet of vegetables, fruits and nuts slows down the potential for developing complications." A majority of participants emphasized regular exercise not only as their lifestyle but also in dealing with the potential for decreasing the chances of developing complications of type 2 diabetes. Informant (P5) stated, "I walk every time after I eat a meal." Educating patients with diabetes has become a priority with most providers who deal with patients with type 2 diabetes. However, a majority of participants participated in health seminars about diabetes in their various churches. One participant noted, "With Adventism comes a lot of knowledge" (P4).

RQ2: How does income levels impact perceptions of complications of type 2 diabetes among Seventh - day Adventist African Americans with type 2 diabetes on plant-based diet?

A large number of participants talked about the increasing cost of food items in general and vegetarian foods in particular. However, income did not influence their choice to continue to maintain a vegetarian lifestyle. Informant P3's sentiment captured what a majority said in their various responses when he said, "Scripture enjoins us to a particular diet." Although many informants lamented the increasing cost of plant-based foods, there was a general agreement among participants that the benefits of continuing

with a vegetarian diet outweighed the increasing cost of vegetarian foods because of the health benefits that they claim it confers on them. Income did not impact their views and perceptions of diabetes complications.

RQ3: How does education impact the perceptions of complications of type 2 diabetes among Seventh-Day Adventist African Americans with type 2 diabetes on plant-based diet?

Although 70% had college degrees and all participants had completed high school, education was not viewed in terms of academic degrees. Educating one's self on the dangers of complications was discussed widely by most participants. One participant noted, "I have to keep educating myself through seminars in the church and elsewhere because I have a responsibility to keep myself healthy" (P5). This responsibility and sensitivity to keep them abreast of what A1C means, checking their cholesterol, and regular exercise keeps them informed about the potential for complications.

Discrepant Cases

Discrepant cases are cases that do not align with the emerging themes. The intent was to examine any discrepant or minority views and discuss them briefly as long as they were not in conflict with the emerging or main themes of the study. However, during the course of analyzing the data, no evidence of discrepant cases was uncovered.

Evidence of Trustworthiness

Internal validity is not terribly relevant in a qualitative study. However, findings from this study will lack credibility without some measure of validity. One of the threats to internal validity was the fact that this researcher is a practicing Black American

Seventh-Day Adventist. This in itself increased the chances of a significant threat to the credibility of the study. One strategy that was used to control the researcher bias was bracketing. This is putting aside one's personal opinions about the study. Furthermore, informants were given transcripts of their interviews to determine whether the views expressed in interviews were in agreement with what they would consider accurate. This is called member checking. This is when collected data is given to participants so they can confirm the accuracy (Creswell, 2007). In addition, this researcher employed triangulation to control internal validity or credibility. This is when three or more independent sources are used to validate or verify the conclusions of a qualitative study (Houser et al., 2006). This was achieved by reading and rereading some of the studies in the literature review section of this paper, including the Adventist Health Study 2.

External validity is when findings from research can be used in practice (House et al., 2006). It is the ability to make generalizations about research findings to other populations, situations, and places (Houser, et al., 2006). The results of this study based on the assumptions have the potential of being transferred to other Black American Seventh-Day Adventist with type 2 diabetes in other geographical locations. Audit trails will increase and strengthen dependability of this study. It is a record of events that will help anyone to follow or review the activities of this study and reach similar conclusions. There were no changes in setting as described in Chapter 3. All the interviews were held in participants' residence (their choice), and this researcher believes that there was consistency in the process of collecting data, selecting participants, and interpreting

results. All data for this study came from semi-structured, in-depth interviews with participants

As a Black Seventh-Day Adventist, I brought objectivity and balance to this study. The fact that researcher is a Black Seventh-Day Adventist did not detract from his desire to be authentic, reflective, self-analytical, and the result was that the researcher brought a voice that reflected his perspective not only as a Black Seventh-Day Adventist but also as a researcher who believes in self-flagellation, and self-awareness.

Transition

The 10 informants who participated in this study provided very useful information that informed this study immensely. The data from the various interviews helped to answer the three research questions the study was designed to investigate. I learned that Black American Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet are very sensitive to and respond sensibly to the potential for developing complications of type 2 diabetes. They do this by maintaining a holistic approach to their lifestyle that is informed by what they call NEWSTART. This acronym has been described elsewhere in this study.

Although all the informants were concerned about the increasing cost of plant-based diet, the prevailing view was that their income levels and the percentage of income they spend on their food items did not regulate or influence their perceptions or chances of diabetes complications one way or the other.

Education was not viewed in terms of academic achievements or acquiring degrees from institutions of higher learning. Rather, education was based on how much

one knew about the dangers of diabetes complications. In addition, how much time was invested or one was willing to invest, in acquiring first-hand knowledge about the complications of type 2 diabetes through seminars in the church, in the hospital, the internet, and with their primary care physician.

Discussions, findings, and interpretation of findings for this study will be discussed in Chapter 5. The focus will be on what is important in the data, why it is important and what can we learn from this study in terms of recommendations for further study and the implications for social change.

Chapter 5: Discussion, Conclusions, and Recommendations.

Introduction

The purpose of this qualitative, exploratory, and ethnographic study was to explore in order to understand the chance of complications from type 2 diabetes as perceived by some Black Seventh-Day Adventists who follow a plant-based diet. The study provides important information that may address the existing gap about the perceptions of type 2 diabetes in this population. The objectives were to explore the perceptions and chances of diabetes complications among Black Seventh-Day Adventist with type 2 diabetes who follow a plant-based diet, and to stimulate awareness that adherence to a plant-based diet does not necessarily stop the complications in this population, due to the chronic nature of the disease. These perceptions could contribute to improving the health of our society, since type 2 diabetes is now one of the major public health challenges of the 21st century. The findings of this study intimated that a dramatic lifestyle change that begins with a plant-based diet, and a holistic approach to life can decrease the chances developing complications of type 2 diabetes in this population, and may just be an answer to the diabetes epidemic.

Key Findings

Four themes emerged from analysis of the data.

1. The Adventist lifestyle: The participants exhibited a clear preference for their lifestyle as Seventh-Day Adventists and suggested that it was partly responsible for their knowledge and perceptions of diabetes complications.

2. Lifestyle modifications: Lifestyle modification was the context in which perceptions were explored. Participants talked about daily exercise, avoidance of unclean foods and alcoholic beverages, drinking lots of water, temperance, adequate rest, and trust in divine power. These activities helped to shape or crystallize their realistic perceptions of complications.
3. Income levels: Income levels did not play a significant role in shaping their perceptions about the complications of type 2 diabetes.
4. Participants' knowledge of diabetes complications. Participants through seminars in the church and information from their physicians had a good working knowledge of the complications of type 2 diabetes.

Interpretations of the Findings

This section will discuss of the four themes that emerged from this study and how they connect to the theoretical framework and the literature. These themes include the Adventist lifestyle, life style modifications, income levels, and the knowledge of diabetes complications. The study was conducted within the framework of the HBM.

Theme 1: The Adventist Life style

The Adventist lifestyle is essentially a holistic approach to life. It includes the eight laws of health described in the acronym NEWSTART. Nutrition that is plant-based or vegetarian, daily exercise, drinking a generous amount of water daily, exposing one's self to sunlight when appropriate, temperance in all things (i.e., do nothing in excess but all things in moderation), enjoying nature by inhaling air daily from your natural habitat, getting adequate rest every day and trying to go to bed (rest) before midnight, and finally

trusting in divine power. In addition, Seventh-Day Adventists also avoid the use of tobacco in all its forms, caffeine, alcohol, and unclean foods. In addition, the body is considered the temple of the Holy Spirit and should be kept in a very good condition as part of true worship to God.

It is important to note that the goal of the Adventist lifestyle is to sustain optimal health by maintaining a balance of physical, emotional, social, and spiritual health. This balance helps its members to have control over the factors that create the conditions for complications for type 2 diabetes and other chronic diseases. This balance is maintained through daily exercise, avoiding unclean foods, avoiding alcoholic beverages, avoiding tobacco products in all its forms, trust in divine power to name but a few. This is relevant to my study because according to Whitaker (2001) the complications of type 2 diabetes can be understood only as we increase our understanding of the causes of insulin resistance. Obesity, inappropriate diet, and inactivity are all contributors to insulin resistance, and are a reflection of the imbalance that the Adventist lifestyle tends to restore through their lifestyle. Insulin resistance causes cells to be insensitive to insulin and its associated actions. It interferes with normal blood sugar regulation, upsets the normal metabolism of fat in the body, and orchestrates an increase of insulin in the blood stream (Whitaker, 2001). Elevated levels of glucose increases the production of free radicals. This increase in free radical activity and the toxic effects of chronic hyperglycemia, creates the conditions for the complications of type 2 diabetes. The Adventist lifestyle not only forestalls these conditions but also serves as an antidote for diminishing the prospects for acquiring the complications of type 2 diabetes.

These findings are consistent and in harmony with researchers such as Tonstad, Butler, Yan, & Fraser, 2009; Snowdon & Phillips, 1985; Kahleova et al., 2014, who have all commented that increased conformity to a plant-based diet prevents and protects against diabetes complications. Furthermore, Berkow & Barnard (2006) stated that researchers have taken an interest in studying this population because Seventh-Day Adventists avoid tobacco use, caffeine, alcohol, and endorse a healthy lifestyle that supports and promotes a plant-based diet. In addition, plant-based diets have been shown to increase insulin sensitivity (Kahleova et al., 2011; Barnard, Scialli, Turney-McGrievy, Gloede, et al., 2006; Kuo, Lai, Ho, & Lin, (2004); reduce weight, (Berkow & Barnard, 2006; Barnard, Scialli, Turner-McGrievy, Lanou, et Glass, 2005); improve glycemic control and cardiovascular risk factors, (Barnard et al., 2006); decrease plasma lipids, (Ferdowsian, & Barnard, 2009).

Theme 2: Lifestyle Modification

The second finding of this study was lifestyle modification. Since type 2 diabetes is a progressive chronic lifestyle disease which if left uncontrolled may lead to complications (Hsu & Yoon, (2007) participants talked about the need for a dramatic, daily lifestyle change designed to stifle and smother complications of type 2 diabetes. They discussed from their personal experiences how daily exercise and the proper diet has informed their perceptions of complications of type 2 diabetes. The informants talked about proper diet, especially a nutrient dense diet from plant-based foods, (which promotes weight loss), avoiding alcohol and smoking, and getting personally involved in their health. This is particularly significant in my study because adopting a plant-based

diet impacts one's perceptions about complications in important and interesting ways. Findings from this study show that Seventh-Day Adventist African Americans on plant-based diet, know the advantages of daily exercise, adopting a plant-based diet, avoiding alcoholic beverages, avoiding smoking, and this resonates with previous studies (Berkow & Barnard, 2006; Ferdowsian & Barnard, 2009). Furthermore, education from the church (SDA) has tended to increase their understanding of the pervasive nature of diabetes and its debilitating complications. This knowledge explains their sustained emphasis on lifestyle changes that informs their perceptions about complications. Inappropriate diet may cause type 2 diabetes, and an appropriate diet (plant-based diet) may impact diabetes in a positive way. Researchers found that a plant-based diet was associated with reductions in triglycerides, blood glucose, cholesterol, weight loss, cardiovascular risk factors, and mortality (Jenkins et al., 2003). These findings are also consistent with other researchers (Tuso et al., 2013; Turner-McGrievy, Barnard, and Scialli, 2007; Barnard et al., 2006; Jenkins et al., 2006) who reached similar findings about plant-based diet. Furthermore, using data from the AHS-2 (Adventist Health Study-2), researchers found that a plant-based diet had a more favorable profile of metabolic risk factors and a lower risk of metabolic syndrome as noted in decreases in triglycerides, blood glucose, blood pressure, and waist circumference (Rizzo et al., 2011). One of the complications of type 2 diabetes, which is very widespread in the African American community, is peripheral arterial disease (PAD). This occurs when there is poor circulation to lower extremities. Poor circulation increases the risk for below the knee amputations. According to the ADA (2003), cigarette smoking is the single most important modifiable risk factor for the

development and exacerbation of PAD. They suggest that tobacco use increases the risk of amputations in patients with type 2 diabetes. A lifestyle devoid of smoking, use of alcoholic beverages, and a lifestyle that promotes daily exercise and encourages a plant-based diet have a positive impact on the risk of diabetes. Education from the church (SDA) has educated a population that the risks of complications actually exist. That is why the church has sustained emphasis on lifestyle as part of their true worship of God.

Theme 3: Income

Income to purchase food items to meet the demands for a plant-based diet was discussed with participants and was one of the themes that emerged from this study. While it is true that low SES has been linked to higher rates of type 2 diabetes (Krishnan et al. (2010), data from the same study (Women's Health Study) showed that advanced education and increasing income did not make a difference in these women developing type 2 diabetes (Lee et al., 2011). Income was discussed and framed as having enough funds to maintain a vegetarian lifestyle. All participants commented that income was not so much a challenge nor was it considered a barrier to maintaining a vegetarian lifestyle because scripture enjoins them to maintain a diet that is free from flesh or unclean foods. In other words, maintaining a vegetarian diet was not going to be influenced by how much was spent on buying those food items. All participants decried the high cost of vegetarian foods but were not swayed to abandon the lifestyle that points to what they called "creation diet" because of cost. Most of the participants spent 35-40% of their household incomes on plant-based diet. Moreover, they were able to do this because according to Trapp and Levin (2012), people on plant-based diet have decreased medical

care usage. This allows them to free up money, which is then used to purchase vegetarian foods instead of buying medications that can be very expensive.

Theme 4: Knowledge of Diabetes Complications

Knowledge of diabetes complications was the last theme that emerged from this study. Participants expressed confidence in their knowledge of complications, and this knowledge was the main reason that shaped their perceptions of complications of type 2 diabetes. This confidence was expressed in their lifestyle that makes the eight laws of health an indispensable knowledge base for their perceptions of complications of type 2 diabetes. Participants stated that daily exercise, especially after every meal, helps to keep and maintain low blood sugars. This finding is consistent with Whitaker (2001) who has commented that elevated levels of glucose creates the condition for the production of free radical activity, which is one of the greatest causes for the development of complications of type 2 diabetes and most chronic illnesses. Furthermore, the National Diabetes Statistics Report (2014) stated that microvascular complications like nephropathy, retinopathy, and neuropathy, complications that are common and ubiquitous among African Americans are and can be reduced by good blood sugar control.

A plant-based diet which incidentally has a portfolio of natural phytochemicals, that promotes the metabolism of fats or lipids, and which impacts cardiovascular risk factors like hypertension was noted to lower cardiovascular disease, which is the leading cause of mortality and the most serious complications of type 2 diabetes (Ware, 2014).

Alburto, et al., (2013) also noted that increased potassium in fruits and vegetables helps to lower cardiovascular risks like hypertension in patients with type 2 diabetes. In

addition, Anderson et al., (2009) stated that dietary fiber, which is found in most plant foods, reduces the risk of coronary heart disease, stroke, hypertension, and obesity and improves blood glucose control in patients with type 2 diabetes. Informants' extolled the virtues of a plant-based diet and suggested that they would have experienced complications were it not for the choice of a plant-based diet. Participants also stated that the SDA church which provides regular seminars on the various chronic illnesses also plays a pivotal role in highlighting the knowledge of complications in this population. Education from the church, their primary care physicians as well as personal involvement and perception of control in their diabetes management helped to increase their knowledge of complications. Previous studies by Watkins, et al., (2000) and; Eiser et al., (2001) showed that knowledge of diabetes complications and the perception of control resonated with positive feelings and improved functioning.

Conceptual Framework

This study was conducted within the framework of the HBM as described by Rosenstock, Strecher, & Becker (1988). The HBM was one of the first models to adapt theory from behavioral sciences to health problems (Morgan, 2001). It is a framework for motivating people to take positive health actions that underscore the desire to avoid negative health consequences. Avoiding a negative health outcome is a key element in the HBM (Morgan, 2001). One of the assumptions of the HBM is that it is the individual's perception that influences behavior. The HBM posits that the likelihood of taking a health-related action is regulated by the following perceptions: perceived susceptibility of that individual to the illness, perceived severity of that individual to that

illness, perceived threat of that individual to that illness, perceived benefits associated with the health behavior, perceived barriers that prevent individual from participating in the health behavior, cues to action, self-efficacy, and modifying factors that influence perception of disease. The two core constructs that have been used in this study to explore the perceptions of diabetes complications are perceived threat and self-efficacy. These two constructs almost always lead to a change in a health behavior and remains the strongest determinants of a healthy behavior, confirming its predictive utility (Orji, Vassileva, & Mandryk, 2012). The underlying premise of the HBM is that health behavior is determined by personal beliefs or perceptions about strategies to decrease its occurrence (Glanz, Rimer, & Lewis, (2002).

The purpose of this study was to explore the chance of complications from type 2 diabetes as perceived by Black seventh-day Adventists who follow a plant-based diet. For the purpose of this study, perceived threat (a combination of perceived susceptibility and perceived severity) among this population is notably high (Skelly et al., 2006), and the death rates are higher among African Americans than in the general population (National Institutes of Health, 2005). Although a great many studies continue to show that people on plant-based diets have a significant advantage in preventing complications; (Berk & Barnard, 2006; Barnard et al., Trapp, Barnard, & Katcher, 2010 Ferdowsian & Barnard, 2009; Barnard, Cohen, Jenkins, Turner-McGrievy, et al., 2009; Trapp & Levin, 2012), African Americans still have lots of risk factors that make type 2 diabetes a serious concern in their community. For example, low- SES, poverty, obesity, to name but a few, is still not outdated in these communities. What this study found was that this

population does not take the perceived threat of type 2 diabetes and its complications lightly. Based on the findings of this study, this researcher reached the conclusion that Black Seventh-Day Adventists with type 2 diabetes who follow a plant-based diet have identified the seriousness of diabetes complications, and are fully engaged in healthy behaviors that are designed to decrease complications. As stated earlier in this study, the Seventh-Day Adventist Fundamental Belief No: 22 states in part that "we are called to be godly people who think, feel, and act in harmony with biblical principles in all aspects of personal and social life." "It also means that because our bodies are temples of the Holy Spirit, we are to care for them intelligently." "Along with adequate exercise, and rest, we are to adopt the most healthful diet possible and abstain from unclean foods identified in the scriptures. Since alcoholic beverages, tobacco, and the irresponsible use of drugs and narcotics are harmful to our bodies, we are to abstain from them as well." "Instead, we are to engage in whatever brings our thoughts and bodies into the discipline of Christ, who desires our wholesomeness, joy, and goodness." In addition, responses from the various participants like this one "I am not concerned about complications as long as I do what I know will prevent complications" (P5). Statements like this support the old adage that an ounce of prevention is worth a pound of cure. Nieman, (1992) suggested that "when the body is healthy from adequate daily exercise, adequate sleep, adopting a plant-based diet, exposure to fresh air, sunshine, a generous amount of water intake, and rest and relaxation, the body becomes able to restore itself and is able to handle stressors (Nieman, p. 101, 1992). The Adventist lifestyle more than anything else, is an ongoing effort by the church (Fundamental Belief #22) to give its members the control of factors

that help them to determine their health. Based on the participants' responses, what needs to be particularly stressed in their own experience is not so much the complications rather the behaviors or lifestyle that helps prevent complications.

Self-efficacy which is the confidence or belief in one's ability to carry out the new or useful (perceived benefit) behavior is motivated by the promotion of healthy behaviors that help to prevent the complications of type 2 diabetes among this population. This perception is promoted by the teachings of the church that makes lifestyle part of their worship of God. The perceived benefit stimulates increased participation in maintaining the Adventist lifestyle. This was also a finding in this study, which is that informants were not discouraged by how much it would cost to maintain a vegetarian diet and the Adventist lifestyle. The confidence and perception in the positive outcome of the Adventist lifestyle was more important to them.

Limitations of the Study

One of the limitations of this study was a low response rate. Before the study, I anticipated that 24 participants would participate. However, only 10 participants were willing to participate in the study despite aggressive efforts to recruit more informants. I visited the various churches more than four times trying to woo those who met the criteria for the study, but all my efforts failed for reasons that I am still trying to uncover. I was even given the opportunity to directly address congregants in the various churches about the importance of the study and why those who meet the criteria should be able to make time and participate in the study. Announcements were made every Sabbath or Saturday during Divine worship and placed on the bulletin for 5 consecutive weeks.

Notwithstanding, sample size has not been a problem in qualitative studies as long as saturation is achieved, which it was here (Patton, 2008; Ritchie et al., 2003).

The second limitation was generalization of the findings. This was not possible because the study was conducted in one city in Alabama, and did not serve the purpose of generalizability.

The third limitation was the fact that I am a practicing Black Seventh-Day Adventist, and the chances of seeing these interviews and the various responses through the prism of a Seventh-Day Adventist may introduce some bias in the study. Nevertheless, I approached the study with balance and objectivity, and not as a member of the Seventh-Day Adventist community but as a scholar practitioner. The fourth limitation was that this study was conducted within a shorter period than preferred, and a greater time frame may have afforded me the opportunity to reach more participants with more sensitive data for the study.

Recommendations

. This study has uncovered the notion that knowledge of behaviors that prevent the complications of type 2 diabetes are more important than the knowledge of complications and that should be the trajectory to future research. Recommendations flow from the responses from interviews in which participants emphasized a holistic lifestyle for preventing the chances of complications of type 2 diabetes. The NEWSTART approach practiced by Black Seventh-Day Adventists in this study has been shown to be effective in decreasing complications in this population. Therefore, my first recommendation would be to incorporate NEWSTART in future type 2 diabetes studies

because of its holistic emphasis. The second recommendation would be to encourage exercise (walking) after every meal, (for those without disabilities) because most people with type 2 diabetes without disabilities can walk for 15 to 20 minutes after every meal. The third recommendation would be incorporating into every provider visit a discussion of smoking cessation and a lifestyle that improves behaviors that impact complications of type 2 diabetes. This recommendation is in agreement with studies in the literature review regarding lifestyle and its impact on type 2 diabetes (Barnard, 2009; Koch, 2002). It is important that more studies be conducted on perceptions of complications in this population with larger samples.

The fourth recommendation is the invaluable role that diet plays in preventing or delaying the complications of type 2 diabetes. All participants spoke eloquently about the benefits of a plant-based diet that forestalls complications of type 2 diabetes. Diet has been known to be at the forefront of diabetes management. However, this study has demonstrated that a plant-based diet in particular, influences the chances of developing complications of type 2 diabetes in ways that bring substantial improvements and positive outcomes. This recommendation is supported by numerous studies in the literature review (Rizzo et al., 2011; Buettner, 2005; Fraser, 2009). The fifth recommendation would be to encourage a mixed method in the future for studies about chances of complications of type 2 diabetes in this population. A mixed method has the potential of complementing the strengths of one method while overcoming the weakness of another method. This study depended on self-reported data and needed a quantitative approach that uses numbers like A1C, Cholesterol, Blood pressure, BMI numbers, to authenticate what

participants were saying in their responses. Finally, the period for these studies should exceed six months because it gives the researchers enough time to reach as many people as possible and adds to make the study substantial.

Implications for Social Change

The implications for social change that flow and follow from this study are numerous at the individual, community, and societal levels. The first implication for social change was the idea that the Adventist lifestyle was perceived to avoid complications of type 2 diabetes among this population. This lifestyle emphasizes following a plant-based diet, and exercising, something that people can do no matter what culture they are from. Informants from this study emphasized the notion that race had nothing to do with their perceptions of complications as Black Seventh-Day Adventists. Rather, they talked about their holistic approach to life. This lifestyle initiative has the potential to influence social change in individuals, families, communities, and society. Type 2 diabetes is a lifestyle disease that requires a lifestyle change that begins with a plant-based diet and exercise. This initiative should be emphasized in the Healthy people 2020 as a way of impacting individuals, communities, and the society. My study offers evidence for a change of strategy in dealing with complications of type 2 diabetes.

The second implication is that this study has the potential of adding another layer of evidence that knowledge and practice of behaviors that prevent complications of type 2 diabetes is more important than focusing on the complications themselves. This means among other things, that there should be collaboration to share the responsibility of reiterating and reinforcing information about the benefits of a plant-based diet and daily

exercise of at least 20 minutes every day, smoking cessation reminders as well as abstaining from alcoholic beverages at every visit to a health care provider. Family members, doctors, clinicians, politicians involved in health policies, insurance companies, and patients with type 2 diabetes will make this sharing of information routine in the health care system. I would even go as far as suggesting that a plant-based diet and daily exercise of walking for those who do not have any form of disability for 20 minutes after each meal be given as a prescription from one's health care provider. This cooperation and collaboration has the potential to promote social change at all levels. The collaboration that exists so far does not emphasize plant-based diet and daily exercise. It is interesting to note that participants in this study were not worried about complications. Instead, their main goal was engaging in those activities that they knew prevented the complications of type 2 diabetes. Adopting a plant-based diet and daily exercise for those who can and the collaboration and cooperation to disseminate this information at every visit by a health care provider will require a lot of education in doctors' offices, clinics, hospitals, and health care facilities that work with patients with type 2 diabetes. This cooperation has the potential for a huge paradigm shift in developing strategies for dealing with the complications of type 2 diabetes. The problem is that there is not a unifying approach to dealing with type 2 diabetes as a nation. The National Diabetes Fact Sheet (2005) reported that whereas all cultural and ethnic groups are impacted with diabetes, minority populations are disproportionately impacted. The result was that there was a flurry of studies designed to develop strategies unique to these cultural groups. For example, Hsu & Yoon, (2007) conducted a study on Asian Americans and concluded that

health care delivery should be respectful of their beliefs and traditions. Gavin 111 & Wright, Jr. (2007) also studied a group of African Americans and concluded and conceded that diabetes expresses itself differently in different ethnic populations and that there are cultural differences in approaching the concept of treatment. Furthermore, Caballero & Tenzer (2007) studied Latino Americans and concluded that studies that address cultural issues are generally more effective. None of these studies emphasized a plant-based diet. Lifestyle was mentioned parenthetically. Again, following a plant-based diet and exercising (walking) 20 to 30 minutes every day, whether one is Asian American, African American, and Latino American is something that can benefit everyone.

The third social change implication is that many people with chronic diseases can benefit from a holistic approach that begins with a plant-based diet and exercise. A growing body of knowledge continues to support the fact that plant-based diet and daily exercise lowers the risk of chronic diseases, not just type 2 diabetes. Using the results of this study could contribute to existing literature on dealing with chronic illnesses in this population..

The findings of my study reveal that Black Seventh-Day Adventists with type 2 diabetes, who follow a plant-based diet, have increased knowledge of type 2 diabetes complications. Furthermore, this study addresses a gap in the literature about the perceptions for the complications of type 2 diabetes in this population. Because the church plays a significant role in the Black Seventh-Day Adventist community, the results of this study have the potential of reinforcing the belief, especially among other

faith-based churches, which are still not on plant-based diet, that diabetes complications can be reversed with a radical lifestyle change that begins with adopting a plant-based diet and daily exercise. In addition, this study appears to support the argument that a strong belief in God influences the outcome of diabetes complications in a positive way. Participants talked about trust in divine power in describing the NEWSTART acronym.

Conclusion

The overarching goal of this study was to explore in order to understand the chances of complications from type 2 diabetes as perceived by some Black Seventh-Day Adventists who follow a plant-based diet. The results support the need for a paradigm change in developing strategies for dealing with the complications of type 2 diabetes not only in this population but at all levels of society. The self-reported data in this study indicate that the participants have increased knowledge of type 2 diabetes complications. What is even more significant about this study is the notion that informants expressed a strong belief about behaviors (lifestyle) that prevent complications to be more important than beliefs about complications. This belief was rooted and grounded in their faith in the doctrines of the Seventh-Day Adventist church. The church teaches that there are certain laws (NEWSTART) that if violated tend to invite bad health. True worship for the Adventist believer is associated with keeping these laws that include among other things that your body is a temple of God hence the emphasis on clean foods (fruits and vegetables are nutrient dense) as prescribed by the Bible. This study is significant not for what it has revealed so far, but for what its contribution will bring to the public health arena if adopted. Type 2 diabetes is a lifestyle disease that requires a lifestyle

modification or change. This study has shown that beliefs about lifestyle or behaviors that prevent diabetes complications are the surest means of getting people to adopt those behaviors that prevent the complications of type 2 diabetes. Thus, change belief about a behavior and what one gets is a behavior change that prevents the complications of type 2 diabetes not only for Black Seventh-Day Adventists who follow a plant-based diet, but the entire society will be positively impacted. Therefore, it is not unreasonable to suggest that we take a closer look at the Seventh-Day Adventist lifestyle in the context of diabetes complications.

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Appendix A: Advertisement for Diabetes Study

This information is designed to tell you about a research study that some of you may be interested in. The research project will deal specifically with Black Seventh-Day Adventists ages 24-85, with type 2 diabetes, who are on plant-based diet.

As part of this study, I will visit with you in your home or site of choice for about 45 to 60 minutes at your convenience, to talk with you about your diabetes, your diet, exercise, and how you manage your type 2 diabetes.

There will be no cost to you or your insurance for participating in this project. Informants, who are willing and able to participate, will receive a one-time $10 gift. You do not have to participate if you do not want to. It is voluntary and you can drop from the study at any time.

If you would like more information about this study, please call the Principal Investigator at XXX-XXX XXXX. The principal Investigator for this study is Misori, C. (2016) PhD-©, RN a doctor of philosophy student at Walden University in the school of Health Services Research. The principal investigator has worked with diabetes patients since 1994 and counsel's patients about their diabetes management as a Family Nurse Practitioner for over 10 years.

Kind Regards

Charles Misori (PI) CRNP

Appendix B: Volunteers Wanted for a Research Study

Exploring the perceptions of complications of Type 2 diabetes among Seventh-Day Adventist African Americans on Plant-based (vegetarian) Diet.

Are you over the age of 24 and 85, and a Seventh-Day Adventist African American with type 2 diabetes and currently who follow a plant-based diet?

This research study is going to be carried out by a Walden University PH. D student. The purpose of this study is to explore the perceptions of complications in and among Seventh-Day Adventist African Americans with type 2 diabetes that are on plant-based diet.

To take part in this study:

You must be between 24 and 84 years old.

You must be a Seventh-Day Adventist African American with type 2 diabetes for at least 10 years

You must have been someone who follows a plant-based diet for at least 10 years.

If you want to learn more about your diabetes and want to participate in this study, please contact Charles Misori.

The study involves answering in-depth questions about your diabetes for at least 45-60 minutes on four separate occasions and will last for 6 weeks. You will receive a one-time $10 gift as a thank you for your time and participation in this study.

Appendix C: Recruitment Letter

My name is Charles Misori and I am a doctoral student at Walden University. I am conducting a research study about the chance of complications from type 2 diabetes as perceived by Black Seventh-Day Adventists who follow a plant-based diet (ages 24-84).

Participation is voluntary and answers will be kept anonymous.

If you are interested, please do not hesitate to contact me.

Thank you for your time.

Charles Misori CRNP

Appendix D: Letter of Introduction

My name is Charles Misori and I am a doctoral student at Walden University. I have been a nurse practitioner for well over 12 years. I am also a Clinical Nurse Specialist by training. I have worked with diabetes patients at all levels of the health care system. I have worked as a nursing assistant, LPN, RN and now as a CRNP. My objective is to conduct a research study about type 2 diabetes on Seventh-Day Adventist African Americans, who are on plant-based (vegetarian) diet. Diabetes is getting worse not only in this country but also worldwide. This study will increase our understanding of type 2 diabetes and contribute to improve the quality of life for those families dealing with type 2 diabetes. I have some experience working with participants in a research study in the past. Several years ago, I was involved in a study that had to do with pain management in the ICU. I will be willing to work with anyone who is willing to take part in this study. I am married and have three girls. I am a practicing Seventh-Day Adventist African American.

Sincerely yours

Charles Misori RN, PhD ©

Appendix E: Interview Questions

The following questions were asked during each interview. All interviews began with an expression of gratitude to the participants for their time and contribution to the study.

Susceptibility:

1. How does your faith inform your perceptions of your risk of developing complications from type 2 diabetes?
2. How does following a plant-based diet impact your perceptions of your susceptibility of developing complications of type 2 diabetes?
3. How does your race influence your perceptions of developing complications from type 2 diabetes?

Severity:

1 How does your income level impact your perceptions of developing complications from type 2 diabetes?

2 How does your perception of complication of type 2 diabetes impact your health in the future?

3 Do you think that increased knowledge of diabetes complications will make a difference to the severity of complications, why and why not?

Benefits

1 What benefits have you experienced with your diet and how does this impact your perception of diabetes complications?

2 How does your faith impact your perception of the severity of diabetes complications?

3 How does exercise help with your perceptions of diabetes complications?

Barriers:

1 How does your lifestyle as an African American Seventh-Day Adventist prevent you from managing your perceptions of complications of type 2 diabetes?

2 How does your level of education inform your perception of the complications of type 2 diabetes?

3 How does your knowledge of your blood pressure, blood glucose readings, and cholesterol levels inform your perceptions of type 2 diabetes complications?

Thank you for your time and for helping to know how you perceive your diabetes as a Seventh-Day Adventist African America

Thank you very much.

Charles Misori CRNP