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Medical Skepticism and Diabetes Management in African Americans

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Walden University
2020

Abstract

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by

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MS, University of Alabama at Birmingham, 2004

BS, University of Alabama at Birmingham, 2001

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Type 2 diabetes (T2DM) in African Americans is a manageable disease, and self-management interventions reduce complications and hospital stays. However, in the African American population, traditional T2DM self-management interventions do not produce long-term effects on lifestyle and behavior changes. Researchers have analyzed the barriers and interventions associated with the disease, but the problem still exists. Medical skepticism may influence T2DM management and health outcomes in African Americans. However, there is scarce literature addressing the relationship between medical skepticism and health outcomes (eye and kidney problems). The purpose of the study is to assess the relationship between medical skepticism and outcomes in middle and older-aged African Americans with T2DM. Two theories and conceptual framework guided this study, including Andersen's behavioral health model for health services (ABHM), social cognitive theory (SCT), and patient-centered culturally sensitive health care model (PC-CSHC). There were 7 research questions used to examine the association between medical skepticism and eye and kidney problems. The quantitative study utilized secondary data from the Medical Expenditure Panel Survey 2016 ($N = 415$). The data were analyzed using binary logistic regression and ordinal logistic regression. The results showed no association between medical skepticism, age, eye, and kidney problems in African Americans aged 45–80. The study may contribute to positive social change by lowering both indirect and direct health care costs associated with T2DM and reduce complications, which could ultimately reduce the burden of T2DM.

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Dedication

I am dedicating this page to God, my husband, my children, my mother, my Godparents, and my extended family.

I would like to thank God because I genuinely believe that he has guided me through this process, which was very difficult.

To my husband, Ronrico, I dedicate this study to you. You have pushed me to be the best version of me. I have had a lot of obstacles while pursuing my dissertation, and without your patience and positive outlook, I would not have made it. I am sure that I got on your nerves with the constant talk of my dissertation (I got tired of hearing myself talk about it too). Nevertheless, you were always there, and I love you.

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To my beautiful mother, Bettie, I want to thank you for the wisdom that you bestowed to me as well as your unconditional love. I hope that I have made you proud.

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Chapter 1: Introduction to the Study

Diabetes mellitus is a serious chronic condition and a significant public health issue. With diabetes mellitus, the body does not correctly process food for use as energy, which causes complications that may reduce the quality of life of the individuals (Centers for Disease Control and Prevention [CDC], 2017a; Deshpande, Harris-Hayes, & Schootman, 2008). Diabetes mellitus affects over 400 million people worldwide, and by 2035, it is expected to rise to 592 million (Forouhi & Wareham, 2014; World Health Organization, 2016). In the United States, there are an estimated 30.3 million of all ages with this condition. In reference to race, African Americans have a higher prevalence of being diagnosed with diabetes, specifically T2DM (CDC, 2018). Over the past decades, there has been research on T2DM in reference to diabetes management and health outcomes in African Americans. Yet, African Americans are still disproportionately affected by diabetes and experience more diabetes-related complications than non-Hispanic Caucasians (Orr-Chlebowy, Batscha, Kubiak, & Crawford, 2018).

Medical skepticism is defined as having doubts or not trusting the healthcare system regarding changing health status, and research is scarce about medical skepticism and its association with health outcomes in individuals with T2DM (Bell et al., 2016). The implications for positive change in this study include an opportunity to recognize how and why medical skepticism may affect health outcomes such as kidney and eye problems. Another positive implication would be to restore or rebuild trust between African Americans with T2DM and

the healthcare system, specifically healthcare providers, which would be a vital step in reducing disparities.

In this chapter, I present the background for the study and the problem statement. I then discuss the purpose of the study, the research question and hypotheses, theories, and the definitions of the study. Finally, I discuss the assumptions, scope, and delimitations, the significance of the study, limitations, and conclude with a summary.

Background

There are four clinical types of diabetes, but for this study, I will only discuss T2DM. T2DM develops when there is an abnormal increase in glucose level, and the body is not able to create enough insulin (Zheng, Ley, & Hu, 2018). T2DM is a significant health concern in the United States and is the most common form of diabetes mellitus accounts for 90–95% of all diagnosed cases. T2DM is also the seventh leading cause of death in the United States (CDC, 2017a). The financial implications are astronomical. Diagnosing diabetes in 2017 cost is estimated at $327 billion, including $237 billion in direct medical costs and $90 billion in lowered productivity (American Diabetes Association, 2015). Individuals with diabetes spend an average of $16,752 per year in medical costs, which is 2.3 times higher than those who do not have the disease (American Diabetes Association, 2018). Individuals with diabetes spend an average of $16,752 per year in medical costs, which is 2.3 times higher than those who do not have the disease (American Diabetes Association, 2018). Specifically, eye and kidney problems such as glaucoma and end-stage renal disease can cost a significant burden on the healthcare system (Zhang et al., 2017).

The risk factors associated with T2DM consist of individuals who are 45 years and older, those with a family history of diabetes, individuals who are obese, and individuals who have prediabetes which happens when glucose levels are higher than average but not high enough to be diagnosed as T2DM (CDC, 2017b). Diabetes affects individuals globally regardless of their age or ethnicity (Black, 2002). People ages 18 years and older from Eastern Mediterranean regions have a high prevalence of T2DM (13.7%) compared to those from European regions (7.3%; World Health Organization, 2016). In the United States, African Americans with T2DM are disproportionately burdened by the disease compared to the general population, and specifically non-Hispanic Caucasians (Peek, Cargill, & Huang, 2007). African Americans with T2DM are more likely to be diagnosed with other complications of T2DM like end-stage renal disease, eye problems, and lower extremities than non-Hispanic Caucasians (U.S. Department of Health and Human Services Office of Minority, 2016). Health disparities result from a gap in the quality of health care, which can cause an increase in morbidity and mortality rates for African Americans with T2DM (Riley, 2012). Socioeconomic, genetic, environmental and behavior factors contribute to disparities (Signorello et al., 2007; Spanakis & Golden, 2013). Piccolo, Subramanian, Pearce, Florez, and McKinlay (2016) found socioeconomic factors (income) influence health disparities in African Americans with T2DM. Krishnan, Cozier, Rosenberg, and Palmer (2010) examined the relationship between the socioeconomic status of a neighborhood and the incidence of T2DM in African American women. The authors found socioeconomic status of a neighborhood was associated with an increased incidence of T2DM in African American women (Krishnan et al., 2010). Psychosocial factors such as stress and depression can

exacerbate diabetes complications (Hackett & Steptoe, 2016). Behavior and lifestyle factors have been associated with an increase in incidence and prevalence of T2DM in the African American community because of poor diet choices and lack of physical activity (Pulgaron & Delamater, 2014). Response to mitigate health disparities is lacking in these studies causing health disparities to continue to exist for African Americans with T2DM. Nonetheless, health disparities exist for African Americans with T2DM (U.S. Department of Health and Human Services Office of Minority, 2016).

Diabetes self-management, also known as diabetes self-care, consists of making complex health decisions include checking blood sugar levels, medication compliance, and conforming to a healthier diet (Powers et al., 2016). Diabetes self-care is essential to reduce the risk of related health conditions such as cardiovascular disease (CVD) and diabetic retinopathy (Fowler, 2008). Diabetes management can be challenging for African Americans due to a lack of access to health care, low health literacy, cultural beliefs, and not trusting the health care system (Bell et al., 2016; Ricci-Cabella et al., 2013). Studies have shown that African Americans have less trust in the healthcare system than non-Hispanic Caucasians (Boulware, Cooper, Ratner, LaVeist, & Powe, 2003; Halbert, Armstrong, Gandy, & Shaker, 2006). Medical skepticism involves having doubts or mistrust concerning medical care and its ability to change a person's health status or well-being, which could influence health outcomes (Fiscella, Franks, & Clancy, 1998). Noonan, Velasco-Mondragon, and Wagner (2016) noted African Americans were apprehensive about receiving medical care because of the previous mistreatment in research and medical care, such as the Tuskegee experiment. The experiment ranged for 40 years in Alabama, and it followed African American men with syphilis. However, the

participants were not treated even after penicillin was introduced (Adams, Richmond, Corbie-Smith, & Powell, 2017). Hansen, Hodgson, and Gitlin (2016) examined older African Americans' interaction with healthcare providers. The results indicated that the provider's behavior leads to a feeling of mistrust due to factors that included not listening to the patient, not explaining the treatment in detail, stereotyping, and not considering what the patient prefers in reference to treatment. A gap exists in the literature regarding the association between medical skepticism and health outcomes in African Americans with T2DM, which is why further study is necessary (Bell et al., 2016). Health outcomes for African Americans with T2DM can be a problem if the disease is not appropriately managed. Complications such as glaucoma and end-stage kidney disease can decrease a person's quality of life (Smalls, Walker, Bonilha, Campbell, & Egede, 2015). Age may play a role in reference to medical skepticism and health outcomes. The risk of T2DM increases as a person gets older, and, for African Americans of middle or older age, there is an increased risk of death secondary to complications associated with the chronic condition (CDC, 2017b; Chode, Malmstrom, Miller, & Morley, 2016).

Problem Statement

Medical skepticism occurs when people are doubtful about whether medical care can change their health status (Fiscella et al., 1998). Moreover, Fiscella et al. (1998) posited individuals living with chronic diseases have doubts about medical care and do not comply with prevention strategies and health care services, resulting in poor health outcomes. T2DM is a chronic disease that affects 30.3 million Americans, approximately 9.4% of the population (American Diabetes Association, 2017). African Americans make up 13.2% of the population diagnosed with T2DM compared to 7.6% of the non-Hispanic

Caucasians population. African Americans are twice as likely to die from complications derived from T2DM compared to non-Hispanic Caucasians; complications include lower extremities amputation, heart attacks, and eye problems such as glaucoma and kidney disease (American Diabetes Association, 2017). Researchers have examined the barriers, intervention strategies, and disparities in the African American population. The results of the different studies consisted of having family, friends, and healthcare providers as a support system to help with managing the conditions and implementing diabetes self-management education (Byers, Garth, Manley, & Chlebowy, 2016; Lepard, Joseph, Agne, & Cherrington, 2015; Peek et al., 2007). However, diabetes still disproportionately impacts African Americans compared to non-Hispanic Caucasians (Chatterjee, Maruthur, & Edelman, 2015). The gap in the literature suggests that the relationship between medical skepticism and health outcomes in African Americans with T2DM has not been thoroughly evaluated (Bell et al., 2016).

In this study, I addressed the problem of how medical skepticism may affect health outcomes, specifically diabetes-associated eye and kidney problems in middle and older-aged African Americans. The results of this study may improve an overall understanding of medical skepticism and how it may affect kidney and eye problems in older and middle-aged African Americans with T2DM. The results could eliminate disparities among the study population and also increase both the quality of life and also care.

Purpose

The purpose of this quantitative study is to describe the relationship between medical skepticism and diabetes-associated kidney and eye problems in the middle-aged

and older African American population. The burden of T2DM is evident because of the indirect and direct costs estimated at \$327 billion (American Diabetes Association, 2018). Middle and older African Americans with T2DM are twice as likely to die from complications associated with the disease despite numerous studies describing barriers and intervention practices (Bell et al., 2016; Peek et al., 2007). This study will attempt to discover the importance of addressing and understanding medical skepticism and how it may affect health outcomes.

Research Questions and Hypothesis

In this study, I answered the following research questions:

Research Question 1 (RQ1): Is Medical Skepticism associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$1): Medical Skepticism is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a1): Medical Skepticism is associated with kidney problems in African Americans with T2DM.

Research Question 2 (RQ2): Is Medical Skepticism associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$2): Medical Skepticism is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a2): Medical Skepticism is associated with eye problems in African Americans with T2DM.

Research Question 3 (RQ3): Is Medical skepticism associated with age in African Americans with T2DM?

Null Hypothesis ($H_0$3): Medical Skepticism is not associated with age in African Americans with T2DM

Alternative Hypothesis (H_a3)*:* Medical Skepticism is associated with age in African Americans with T2DM.

Research Question 4 (RQ4*):* Is Age associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$4*):* Age is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a4): Age is associated with kidney problems in African Americans with T2DM**?**

Research Question 5 (RQ5)*:* Is Age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$5): Age is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H$_a$5): Age is associated with eye problems in African Americans with T2DM**?**

Research Question 6 (RQ6)*:* Is medical skepticism and age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$6): Medical skepticism and age are not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a6): Medical skepticism and age are associated with eye problems in African Americans with T2DM?

Research Question 7 (RQ7)*:* Is medical skepticism and age associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$7): Medical skepticism and age are not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a7)*:* Medical skepticism and age are associated with kidney problems in African Americans with T2DM?

Theoretical and Conceptual Frameworks

To guide this study, I used Andersen's behavioral health model of health services. This model has been used to explain how people are influenced to either use or not use the healthcare system. The ABHM has three contextual characteristics, and they include predisposing, enabling, and need factors (Andersen & Newman, 2005; Azfredrick, 2016). Predisposing factors refer to demographics and social constructs, such as geographical location and beliefs concerning healthcare (Andersen & Newman, 2005; Azfredrick, 2016). Enabling factors facilitate an individual's use of the healthcare system, and an example would include income (Azfredrick, 2016). The need factor is what motivates a person to seek healthcare services, and an example would be how a person views their health status (Shi & Singh, 2017). The three contextual characteristics are used to explain the barriers to utilizing healthcare (Andersen, 1995) which is why I chose the model for this study. Medical skepticism may derive from predisposing characteristics such as individual beliefs or experiences. If the experience was not good, then the person may have doubts about utilizing the healthcare system (Borders, Rohrer, Xu, & Smith, 2004). Solving different public health issues and reducing disparities consists of the need to use different model characteristics (Andersen & Newman, 2005).

I also used (SCT) as a theoretical framework for this study. The SCT was developed in the 1960s, and it states, "people learn through their own individual's experiences and other's behaviors, attitudes, and outcomes of those behaviors" (Bandura, 1977, p. 24). The SCT includes several constructs: outcome expectancy, reciprocal determinism, self-efficacy, self-control, observational learning, incentive motivation, facilitation, and moral disengagement. This theory is instrumental in developing health promotion programs to predict health behaviors and elicit behavior change among those with diabetes, cancer, and HIV/AIDS (Doerksen & McAuley, 2014; Glanz, Rimer, & Viswanath, 2008).

The term medical skepticism meaning varies across social science (Ditto, Munro, Apanovitch, Scepansky, & Lockhart, 2003). Tsfati (2003) stated medical skepticism refers to the feeling of alienation and mistrust. Fiscella et al. (1998) explained medical skepticism is having doubts on whether or not medical care can help change a person's health status. Moreover, the SCT has many constructs, but for this study, observational learning is vital because medical skepticism can derive from this construct (Weech-Maldonado, Hall, Bryant, Jenkins, & Elliott, 2012). Glanz et al. (2008) explained learning could come from direct observation from personal experiences or through mass media and interpersonal channels, such as television and through other people experiences, which can influence behavior. For example, a person's prior experience can shape a person's perception concerning the healthcare system, particularly for African Americans (Halbert et al., 2009). In one study, the researchers examined how prior experiences of discrimination and residential segregation affect distrust of the healthcare system between African Americans and non-Hispanic Caucasians (Armstrong et al.,

2013). The results indicated African Americans had experienced a higher level of distrust due in part of experience discrimination than non-Hispanics Caucasians. In another study, the researchers concluded perceived racism was associated with poorer outcomes such as missing appointments (physician) and medication non-compliance in African Americans (Ben, Cormack, Harris, & Paradies, 2017). Even more importantly, African Americans' experience with the healthcare system can be viewed as suboptimal, which directly affects health outcomes. As shown above, it is essential to evaluate how African Americans view the healthcare system to increase the health outcomes of African Americans with T2DM.

The PC-CSHC model is another important theoretical model used to guide the study. The PC-CSHC focuses on empowering and enhancing perceptions regarding the health care characteristics of minority patients by implementing a positive patient-provider relationship by increasing patient satisfaction and its ability to address health outcomes such as diabetes-related eye and kidney problems (Tucker et al., 2007). This model is also instrumental in decreasing health care disparities in minorities (Tucker et al., 2007). In one study, the researchers examined Latino's perception toward patient-provider interactions such as trusting the provider, having a sense of control when deciding treatment options, and overall patient satisfaction with the healthcare system) with treatment adherence (Nielsen, Wall, & Tucker, 2016). The results of Nielsen et al.'s (2016) research indicated there is no relationship between patient-perceived provider cultural sensitivity and general treatment adherence. However, in the same research, the authors found many Latinos preferred Spanish speaking providers. This finding suggests

that by implementing more Spanish speaking providers, treatment adherence will increase, which, therefore, would decrease disparities (Nielsen et al., 2016).

The PC-CSHC model constructs are as follows: (a) culturally sensitive healthcare is complex, and training should be provided for everyone involved (patient, provider, health care facility/ organization, (b) patient's perceptions regarding cultural sensitivity care can increase patient satisfaction by having interpersonal control, which increases trust among the patient (c) "level of health care satisfaction influences patients' level of treatment adherence and (d) treatment adherence and level of engagement in a health-promoting activities is influenced by patient's health outcome" (Tucker et al., 2011, p. 345).

Nature of the Study

A quantitative approach is most appropriate for this research project because of its capability to allow the researcher to examine a relationship through numerical analysis will be conducted between independent and dependent variables within the target population (Creswell, 2014). Descriptive in nature, this study utilizes secondary data to assess the relationship between medical skepticism and health outcomes in African Americans with T2DM. The variables, age, diabetes related kidney, and diabetes-related eye problems for the study will come from secondary data from a population-based survey called the Medical Expenditure Panel Survey (MEPS) 2016. The benefits of using secondary data over primary data are it requires less time and money to conduct combined with the ability to generalize the results (Dunn, Arslanian-Engoren, Dekoekkoek, Jadack, & Scott, 2015). The variables will be analyzed using binary logistic regression or logistic regression to examine odds ratios between one dependent binary

variable and one or more independent variables from different levels of measurement (Field, 2013). The study would also utilize ordinal logistic regression, which is used to model the relationship between an ordinal response dependent variable and one or more independent variable (Field, 2013).

Definitions

Age: The age of the participants for the proposed study will include both middle-aged and older adults. Middle-aged adults are defined as any person between the ages of 45–64 years old. Older adults are defined as any person who is 65 years old and older (Pew Research Center, 2009).

Diabetes management activities is defined as self-management activities are used to help manage T2DM (CDC, 2017b). The activities consist of monitoring blood glucose, checking AIC levels, and taking diabetes management classes. Blood sugar is also called blood glucose, and it is responsible for regulating hormones such as insulin, is carried through the bloodstream and provide energy to different organ systems (National Institute of Diabetes, Digestive, and Kidney Diseases [NIDDK], 2017). According to the American Diabetes Association (2017), monitoring blood glucose level is very crucial in controlling the disease, and it is done through a finger stick. The results should be recorded to help the healthcare provider in implementing treatment protocols. This blood sample is taken after an individual is fasting for 12 hours will be taken after an overnight fast. A fasting blood sugar level less than 100 mg/dL (5.6 mmol/L) is average, and levels are over 126 mg/dL (7 mmol/L), or higher will have a diagnosis of diabetes (Bajaj, 2018).

Eye problems: Glaucoma, cataracts, and diabetic retinopathy are considered complications associated with T2DM, and they can cause blindness. There are more than

2.7 million Americans have glaucoma, and African Americans are at an increased risk of developing glaucoma, which is irreversible (Bright Focus Foundation, 2019). Cataract is one of the leading causes of blindness worldwide, and it involves the loss of the normal transparency of the lens due to opacity and African 1.5 times more likely to develop the disease (Li, Wan, & Zhoa, 2014). Diabetic retinopathy affects 7.7 million Americans, and that number is projected to increase to more than 14.6 million people by 2030, and many African Americans are included in these statistics (National Eye Institute, 2018). More than 800,000 African Americans have diabetic retinopathy, and this number is projected to increase to approximately 1.2 million people by 2030. The longer a person has diabetes, the greater the risk for diabetic eye disease.

Health outcomes are defined as health behaviors that are associated with adequate control of diabetes (Oude Wesselink, Lingsma, Robben, & Mackenbach. (2015). Individuals with T2DM would need to be able to understand what the complications and symptoms associated with the disease (Oude Wesselink et al., 2015). Health outcomes would be kidney and eye problems, which is explained in this section.

Kidney problems: such as chronic kidney disease or kidney failure (end-stage renal disease (ESRD) is a complication may arise in individuals with T2DM and this disease causes the kidneys not to filter blood properly and causes waste to build in the body (NIDDK, 2018). African Americans with T2DM is more likely to have chronic kidney disease at 17.01 % than non-Hispanic Caucasians, 13.99 % (American Kidney Fund, 2018).

Medical skepticism: involves a person not having trust in the healthcare system which include physicians and other healthcare professionals (Astin, 1998). Individuals

with high levels of not trusting healthcare, they tend to not utilize healthcare services which can worsen health outcomes (LaVeist, Isaac, & Williams, 2009). In particular, fear and negative experiences with healthcare have many African American reluctant to trust healthcare providers (Armstrong et. al. 2006).

T2DM: T2DM is a subclass of diabetes mellitus, in which the body does not make enough insulin, which is responsible for producing energy (NIDDK, 2018). T2DM affects 90% to 95% of all diagnosed cases (CDC, 2016). The classification of T2DM is a noninsulin dependent (NIDDK, 2018). The risk factors associated with T2DM include being overweight, 45 years or older, individuals do not exercise regularly, and family history. African American, Indian, Hispanic/Latino American, or Alaska Native have the higher risk of T2DM (CDC, 2017a). T2DM can cause a series of complications that involve microvascular and macro vascular that can affect the quality of someone's life. Some of the complications consist of diabetes retinopathy, chronic kidney diseases, stroke, heart attack, and lower extremities amputations (NIDDK, 2018)

Assumptions

I assumed the secondary data I plan to use would reflect honest responses of the participants. Moreover, I assumed the quantitative method would adequately address the problem and the research questions under inquiry. I also assumed that the sample population used in the population-based surveys would reflect responses from middle-aged and older African Americans with T2DM. I also assumed the participants of the different surveys were truthful with their responses. Last, I assumed secondary data used was free of error and cleaned. The original variables recoded to handle missing values to

ensure the variables met the assumptions of the logistic and ordinal regressions statistical tests.

Scope and Delimitations

The scope of the research project includes secondary data from a population-based survey. The gap will be addressed medical skepticism, and it affects on health outcomes in African Americans with T2DM. Because the purpose of this study was to examine the relationship between medical skepticism, health outcomes of African Americans with T2DM, ages 45–85 years old, this study did not include other races. The reason why I chose to collect data on both African Americans in the determined age groups is the middle-aged, and older African Americans are disproportionally affected by T2DM (Spanakis & Golden, 2013). The ABHM will frame this study secondary to its three constructs, predisposing factors, enabling factors, and needs factors, which can be applied to the cause and effects of medical skepticism. For example, one of the variables, age, represents predisposing factors, which could be a cause of medical skepticism because individual perceptions exist in the healthcare system, which is a need factor. SCT is another theory that framed the study. The fundamental concept of this theory includes the notion that environmental, behavior, and personal factors influence human behavior. In the current study, I used one of the constructs of SCT, observational learning, which supported the notion that individuals learn from both direct and indirect experiences (Glanz et al., 2008). The generalizability of the current study depends upon data from a population-based survey include both women and men. The larger the sample population, the more one can generalize the results, and the statistical size would increase (Davis-Kean, Jager, & Maslowsky, 2015).

Limitations

One limitation when using secondary data is that the collection of data may not be for all populations and public data sets delete identifying variables, which can cause residual confounding (Cheng & Phillips, 2014). Residual confounding happens when a confounding variable is not adequately adjusted, which are significant covariates to control for in the secondary analysis (Cheng & Phillips, 2014; Szklo & Nieto, 2014). Biases are a systematic error that can distort the association between both the disease and exposure and can ultimately affect the study's findings, which is another limitation when using secondary data (Aschengrau & Seage, 2008). One such bias would be non-response. Non-response bias refers to the "mistakes one expects to make in estimating a population characteristic based on a sample of survey data" (Berg, 2005). Also, some of the respondents may be underrepresented, as well. In the MEPS 2016, nonresponse bias can be reduced by implementing a weighting class for nonresponse, which inflates the dwelling unit sample (Cohen, 2004). Another limitation would be sampling error, which results when "the use of population sample to estimate the study parameters about the population" (Szklo & Nieto, 2014, p. 109). In the MEPS 2016, sampling error addressed through using the whole population, specifically, by using smaller groups, which allows measurement and control of this error component (Cohen, 2004).

Significance of the Study

The significance of this study is to identify if medical skepticism affects diabetes-associated kidney and eye problems within the middle and older aged African American population. Another implication of this study is the quality of life and care of African Americans with T2DM could enhance because of increased awareness of medical

skepticism that further supported the need to conduct this research. The findings of the study may be instrumental in healthcare providers in reducing disparities among African Americans concerning diabetes outcomes by implementing policies and strategies at both the local and national level. This study may contribute to positive social change by providing evidence regarding the association between medical skepticism and the health outcomes for African Americans with T2DM. Expanding the study to include other ethnicities and age groups can aid in reducing the numbers of diabetes cases and complications globally.

Summary

Chapter 1 contained the identification of the problem, background, theoretical frameworks, purpose, and the research questions about the current research project. This chapter also includes the idea T2DM is a significant public health issue is concerning, especially particularly in the African American community (Bell et al., 2016). Numerous researchers have examined barriers and intervention methods for African Americans with T2DM. They have found that compared to non-Hispanic Caucasians, there is a disproportionate number of African Americans affected when referencing complications and mortality (Spanakis & Golden, 2013). Furthermore, the literature surrounding medical skepticism and its effects on health outcomes in African Americans with T2DM is non-existent (Bell et al., 2016). The social implications of this study can increase the quality of life of African Americans with T2DM, increasing trust between patients and providers, increase trust between patients and the healthcare system, which can decrease overall cost and complications associated with the disease. Chapter 2 is an in-depth

exploration and comprehensive analysis of the theoretical foundation and conceptual

frameworks combined with the key variables related to the literature.

Chapter 2: Literature review

Introduction

T2DM is a chronic condition that affects African Americans disproportionately, causing this minority group to have poorer outcomes compared to non-Hispanic Caucasians (American Diabetes Association, 2017). The poorer outcomes include increased risk of stroke and CVD, lower extremities amputation, end-stage renal disease, and glaucoma (American Diabetes Association, 2017). Previous researchers have examined both the success and barriers of diabetes management for Africans Americans (Peek, Cargill, & Huang, 2007). In their study, Peek, Cargill, and Huang (2007) conducted a systematic review in which they examined the interventions to reduce disparities in minorities and barriers associated with the disparities. The barriers include a lack of access to care, a patient's behavior, socioeconomic status, and lack of communication from the patient-provider about diabetes management. Lepard et al. (2015) examined the impact diabetes management education has on African Americans living in rural areas. Other factors such as age, access to health insurance, and educational levels correlated with poor diabetes outcomes in African Americans (Spanakis & Golden, 2013). Assari, Lankarani, Piette, and Aikens (2017) investigated the differences between both socioeconomic status and glycemic control among non-Hispanic Caucasians and African American men and women. The results indicated African American women have less glycemic control than men. The results also suggest African American men of lower socioeconomic status and with public health insurance had poorer glycemic control than their non-Hispanic Caucasians counterparts (Assari et al., 2017). Community interventions such as utilizing cell phone software, curriculum-

based approach, and community health workers have been instrumental in reducing complications associated with T2DM in African Americans (Smalls et al., 2015). However, African Americans with T2DM still have worse outcomes than non-Hispanic Caucasians (American Diabetes Association, 2017).

One of the issues that contribute to these poor outcomes is medical skepticism. Fiscella, Franks, and Clancy (1998) defined medical skepticism as individuals with chronic illness or diseases being skeptical about whether or not the healthcare system can help manage the illness. Literature containing medical skepticism and diabetes management in African Americans is scarce (Bell et al., 2016). The researcher of this current study aims to assess whether a relationship exists between medical skepticism and health outcomes, which would be eye and kidney problems in African Americans with T2DM. My review of the literature focused on an investigation of medical skepticism and the outcome's effect in African Americans with T2DM. Medical uncertainty in the African American community is multifactorial (Kennedy, Mathis, & Woods, 2007). For example, the patient-provider relationship involves interpersonal communication between the patient and providers. So a common factor within a patient-provider relationship is trust. If trust is broken in reference to poor communication, then the patient will have doubts receiving treatment. The patient-provider relationship is an essential focus of the study. Beach, Keruly, and Moore (2006) found that African Americans have received more inadequate interpersonal communication such as overall tone and greater physical, verbal dominance than non-Hispanic Caucasians from healthcare providers. Poor interpersonal communication can also cause African Americans to not trust the provider,

which is medical skepticism (Beach et al., 2006). Other factors that can affect the patient-provider relationship and medical skepticism are age and health outcomes.

Literature Search Strategy

I used an iterative process to search existing literature from Walden library databases and Google Scholar. The search parameters for peer-reviewed articles ranged from 2014 to 2018, except seminal articles related to theoretical models—ABHM, SCT, PC-CSHC Model. For this study, I obtained the literature information from CINAHL & MEDLINE Simultaneous Search, SAGE Journal, ProQuest, PubMed, and Academic Search Premier Search engines. The keywords I used in my general literature review included: *diabetes* and *medical skepticism; diabetes* and *African Americans; age* and *African Americans with T2DM; health outcomes* and *diabetes;* and *medical mistrust* and *African American; access to healthcare* and *medical skepticism; ABHM; PC-CSHC model, SCT,diabetes-associated eye problems,* and *medical skepticism; medical skepticism* and *medication adherence*; *diabetes-associated kidney problems,* and *medical skepticism*. In reference to the key search words for the different theories, I did not generate any results when I grouped the following: ABHM and medical skepticism and SCT and medical skepticism. Therefore, I had to include diabetes, the ABHM and SCT. Several other seminal studies were significant because they related to the three theories. There were no limitations to the publishing date parameters.

Theoretical Foundations

Ronald Andersen, a medical sociologist, created the ABHM in the 1960s to assess the family's usage of health care services (Andersen, 1995). The model further evolved to include the individual rather than the family (Andersen, 1995). The use of ABHM is

essential in explaining human behavior; specifically, health services usage and patient-provider relationships (Andersen & Newman, 2005; Petrovic & Blank, 2015). The ABHM has three important constructs, which influence access to health care services (Babitsch, Gohl, & von Lengerke, 2012). The constructs are predisposing factors, enabling factors, and needs factors (Andersen, 1995; Andersen & Newman, 2005; Shi & Singh, 2017). Predisposing factors are attributes that predispose a person to a vulnerability such as demographic characteristics (i.e., age and gender), belief systems (i.e., attitudes and values) and social structure variables (i.e., ethnicity and culture) (Andersen, 1995; Gelberg, Andersen, & Leake 2000; Shi & Singh, 2017). Enabling factors are the ability to have the financial means to obtain or acquire health insurance (Shi & Singh, 2017). The enabling concepts are having the financial means of obtaining or receiving health care (Andersen, 1995). The needs factors are individual perceptions or views about health care services, their health, and how health care services are evaluated objectively by healthcare professionals concerning health status (Andersen, 1995; Shi & Singh, 2017).

Many researchers have used the psychological model in the past and present public health topics (Gelberg, Andersen, & Leake, 2000). Using ABHM, Gelberg et al. (2000) examined the homeless population and its relationship to physical health. The researchers found that the model was influential in aiding clinicians in providing access to healthcare services and increasing the quality of care and life to the homeless population (Gelberg et al., 2000). Researchers used the ABHM as a guide to study about understanding prostate cancer screening behavior in African American men (Ogunsanya, Jiang, Thach, Bamgbade, & Brown, 2016). In their study, Ogunsanya et al. (2016)

showed predisposing factors such as education, age, and employment status were associated with getting the screening done. The enabling factors, such as having health insurance, medical skepticism toward the healthcare system and provider, and attending regular checkups correlated with increasing screenings for prostate cancer. The needs factor in the study was healthcare recommendations, which increased the screenings more than the enabling factors (Ogunsanya et al., 2016). Padgett, Patrick, Burns, and Schlesinger (1994) examined whether there was a difference in the use of inpatient mental health services among different ethnicities by using the ABHM. The authors in this study revealed there were no significant differences among the study population about the number of inpatient and outpatient stays for psychiatric treatment (Padgett et al., 1994). In reference to T2DM, some literature suggests the ABHM was instrumental in helping to explain behaviors and outcomes associated with T2DM and CVD in minority populations (Balkrishnan et al., 2003). In another study, Chandler and Monnat (2015) determined enabling characteristics such as socioeconomic status, educational status, and employment correlated with lower diabetes management in African Americans (Chandler & Monnat, 2015). Most importantly, Chandler and Monnat's (2015) study utilized the ABHM because it explains how the three factors affect health outcomes of diabetes as well as how medical skepticism can shape behavior.

SCT, previously known as the social learning theory, established that individuals learn from others, was developed in the 1960s by psychologist Albert Bandura (Bandura, 1977; Glanz et al., 2008). Bandura (1977) combined both cognitive (learning derives from psychological factors) and behavior theories (learning derives from the environment) into one theory, SCT. Implications of this theoretical framework consist of

the notion that human behavior is bidirectional and influenced by environmental, behavioral, and personal factors (Bandura, 1977).

The theory indicates individuals learn from individuals' past experiences, interactions with the environment, and from observing other's actions (Bandura, 1977, 1989; Glanz et al., 2008). This model explains how "people are both product and producers of their environment" with several constructs (Bandura, 1989, p. 4). They are the following:

1. Outcome expectancy refers to anticipated consequences associated with behavior choices.

2. Reciprocal determinism refers to behavior that can be shaped in two different ways- an individual or a group behavior can be controlled and influenced by the environment.

3. Self-efficacy refers to having the ability to make decisions to take action toward the disease to have a favorable outcome, and this plays an essential role in changing behavior.

4. Self-control can manage behavior by implementing goal setting and self-monitoring.

5. Observational learning refers to learning from others.

6. Incentive motivation relates to both positive and negative outcomes to modify behaviors.

7. Facilitation refers to having tools or resources to help shape behavior

8. Moral disengagement refers to when a person thinks ethical standards do not apply to their behavior.

SCT is extensively in literature when researchers study health promotion and disease prevention to understand how behavior influences learning from determinants, such as interaction with the environment and personal experiences (Bandura, 2004). The SCT is also a conventional theory used when researchers study the implementation of an intervention in chronic conditions such as cancer and diabetes (Tougas, Hayden, McGrath, Huguet, & Rozario, 2015). Researchers used the constructs of SCT as interventions concerning cancer survivors to change behavior toward diet and exercise, resulting in a more proven successful intervention in health improvements of the survivors (Rawl et al., 2012; Stacey et al., 2015).

Application of SCT has been instrumental in promoting healthy eating in the obese population and treating alcohol and substance abuse (Flegal, Carroll, Ogden, & Curtin, 2010; Heydari, Dashtgard, & Moghadam, 2014). In reference to diabetes and SCT, self-efficacy is considered an essential component of diabetes management. If an individual with T2DM has higher self-efficacy or self-confidence, and they will be able to manage their diabetes efficiently because they believe with personal effort, they can overcome the barriers to specific behaviors (Beckerle & Lavin, 2013). Sarkar, Fisher, and Schillinger (2006) used SCT to assess the relationship between self-management of diabetes and self-efficacy in a diverse population where health literacy was low. The results indicated a relationship between self-efficacy and behaviors associated with managing diabetes (Sarkar et al., 2006). Pollard, Zachary, Wingert, Booker, and Surkan (2014) utilized the SCT to examine and explain behavior regarding social factors and observational learning, such as support from both family and the community may prompt a diabetes-related dietary change in African Americans. The results indicated

observational learning and social support had a strong influence on changing diet for individuals with T2DM (Pollard et al., 2014).

A vital construct from the SCT critical to my study is observational learning as it relates to medical skepticism. Observational learning or role modeling as it relates to medical skepticism involves learning directly and indirectly from others, which can produce new behaviors that tend to increase or decrease behaviors previously learned through different forms of media (Bandura, 2004). The four behaviors are attention, retention, reproduction, and motivation (Bandura, 2004). Attention is behavior noticed by a person and influences others. Retention is how well a person can memorize an event, and reproduction refers to the ability to mimic the behavior (Bandura, 2004). Motivation refers to having the drive to perform the behavior (Bandura, 2004). In their study, Armstrong et al. (2013b) investigated a diverse population regarding factors that may contribute to differences in health care system distrust (HCSD). By using a random digit dialing survey, the researchers' results indicated African Americans had a higher level of HCSD due in part to having personal experiences with discrimination in the healthcare system (Armstrong et al., 2013 b). Armstrong et al. (2008) examined whether racial differences in a hospital was associated with values of distrust or with the competence of distrust between African Americans and non-Hispanic Caucasians. The results indicated African Americans had a higher level of distrust because of their personal experiences with healthcare sectors.

In 2007, the PC-CSHC model came into existence by Tucker, Herman, and Ferdinand et al. (2007). The new model explained the relationship between patient-centered, culturally sensitive healthcare and a patient's adherence to treatment, health

outcomes, and health-promoting behaviors. Researchers use this model to guide research to reduce healthcare disparities among minorities (Tucker et al., 2007). Moreover, researchers utilized extensive literature and focused groups on identifying what constitutes patient-centered culturally sensitive health care from a minority patient perspective (Tucker et al., 2007; Tucker et al., 2003). This model has several important constructs, as depicted in Figure 1. One important premise for the model is to provide training in cultural sensitivity, which could positively influence minorities' perception of healthcare providers. Once reconditioned, minorities may have an increase in satisfaction and enhance (Sorensen et al., 2005). Influences of the constructs include health behaviors, health outcomes, and if a patient's experience is pleasant, they will adhere to treatment regiments (Engels, Gretebeck, Gretebeck, & Jimenez, 2005).

Researchers have used the PC-CSHC model in a few studies concerning disparities in chronic diseases among minorities (Tucker et al., 2007). Metghalchi et al. (2008) evaluated a culturally sensitive education program for Hispanics with T2DM, which was guided by the PC-CSHC model. The results indicated weight loss, glucose level, AIC, and HDL levels significantly improved due to increased trust within the patient-provider relationship (Metghalchi et al., 2008). As a part of the study, Mosca et al. (2011) examined women with CVD. The researchers' findings suggest that the providers were culturally sensitive; the women in the study showed satisfaction with their care and complied with treatment (Mosca et al., (2011). Reaves et al. (2009) found that patient satisfaction had a positive correlation to a provider who is culturally sensitive to African Americans with different chronic conditions. In this study, the participants adhered with medication compliance and felt comfortable with their provider. The current

study included this model as a way to add to the literature by expanding culturally

sensitive interventions to improve health outcomes and provide recommendations on how

to reduce medical skepticism.
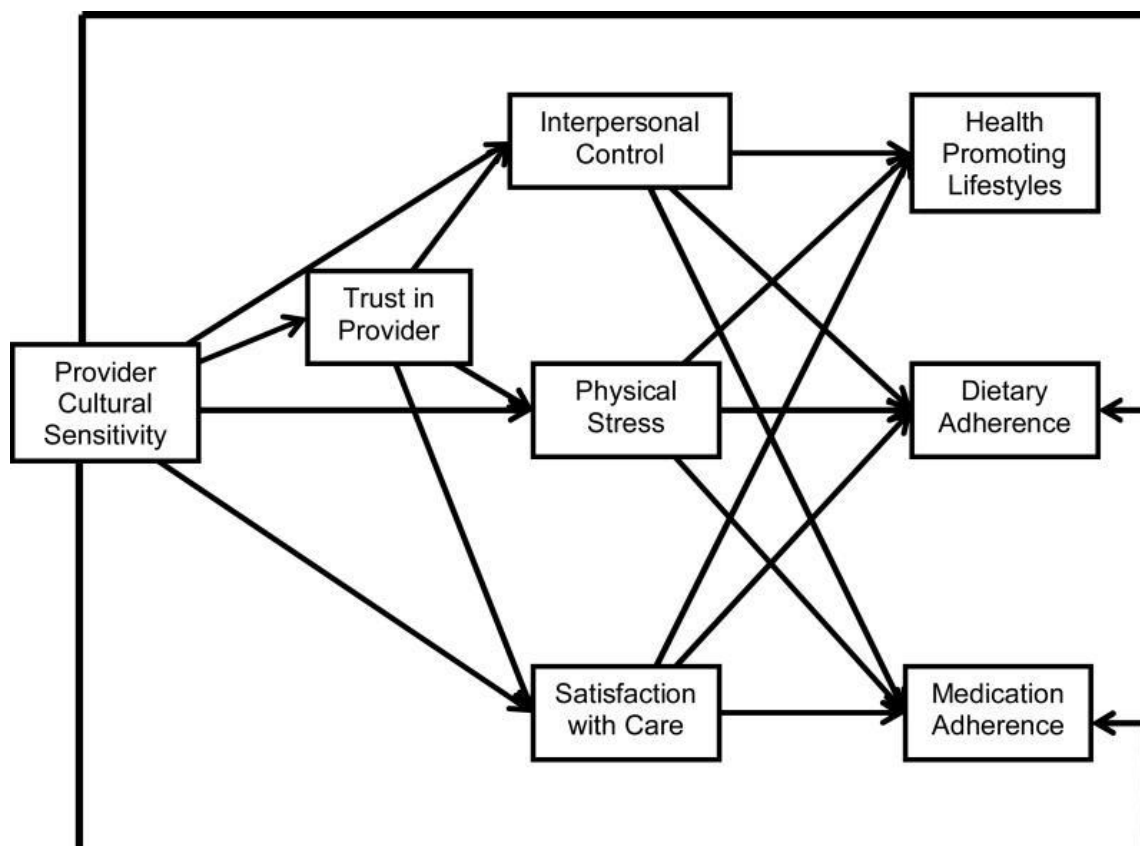
Figure 1. Schematic of the fully recursive model tested in this study. Reprinted from "Patient-centered culturally sensitive health care: Model testing and refinement," by C. M. Tucker, M. Marsiske, K. G. Rice, J. D. Jones, and K. C. Herman, 2011, *Health Psychology: Official Journal of the Health Psychology, American Psychological Association, 30*(3), 342–350. Copyright 2011 by Health Psychology, Reprinted with permission (see Appendix A).

Literature Review Related to Key Variables and Constructs

Age

The risk of T2DM increases as a person gets older (American Diabetes

Association, 2017). For African Americans, who are middle and older aged, have an

increased risk of death secondary to complications associated with the chronic condition

(CDC, 2017a; Chode et al., 2016). The existing literature suggests age may play a factor in medical skepticism and health outcomes in those with T2DM. The existing research also indicates older individuals tend to have negative perceptions about whether medical care can change their health status due in part to factors such as access to healthcare and low socioeconomic status (Probst, Moore, Glover, & Samuels, 2004). Bell et al. (2013) examined the relationship between medical skepticism and complementary therapy use in both elderly African Americans and non-Hispanic Caucasians. Complementary therapy refers to using natural remedies such as herbs, vitamins, and home remedies (National Institute of Health, 2018). Bell et al.'s (2013) participants were all diagnosed with chronic conditions such as diabetes, arthritis, and heart disease. Using the Medical Expenditure Survey, which is a tool to measure medical skepticism, Bell et al. (2013) found that older adults living in rural areas had a high degree of medical uncertainty and increased use of home remedies to treat different chronic diseases. Futhermore, Bell et al. (2016) performed another study focused on whether medical skepticism correlates with health status, demographics, and diabetes management in a diverse elderly population with T2DM. Bell et al. (2013) results indicated those with higher levels of medical skepticism did not participate in diabetes management classes and reported more illness associated with T2DM, such as increased A1C levels than those who had higher levels of medical skepticism. However, in another study by Borders et al. (2004), one of the purposes was to assess the relationship between medical skepticism and better self-health to see if there is a relationship between medical skepticism and disparities. The results indicated medical skepticism was not associated with better self-health, but medical skepticism was related to disparities in healthcare (Borders et al., 2004). Boulware et al.

(2013) investigated whether middle-aged African Americans were skeptical of the healthcare system. The results showed the participants were more skeptical of the healthcare system than non-Hispanic Caucasians secondary documented history of racial discrimination (Boulware et al., 2003). Authors Hewins-Maroney, Schumaker,& Williams (2005) explored how both psychosocial (i.e., self-efficacy) and sociocultural (i.e., trusted health care providers, perceived and actual racism) factors may shape a person's belief system concerning the healthcare they receive. In their study, Hewins-Maroney et al. (2005) concluded middle-aged African Americans were skeptical of the healthcare system they used. However, in the Fiscella et al. (1998) study, medical skepticism was associated more with younger aged non-Hispanics Caucasians.

Medical Skepticism

Medical skepticism occurs when people are doubtful about whether medical care can change their health status or when individuals do not trust the healthcare system (Fiscella et al., 1998). Kennedy et al. (2007) documented African Americans experienced racism and discrimination within the healthcare industry throughout history. During the antebellum period and in slave states, considerations of most African Americans entailed them being considered as property. Many Caucasian physicians relied on the financial backing of slaveholding plantations for a living, due to some of them being slaveholders themselves (Lightner & Ragan, 2005). Some Caucasian physicians used African Americans for medical research, dead and alive. For example, bodies of African Americans slaves' were stolen from graves and used for anatomical experiments and surgery procedures without proper consent (Kenny, 2015). Kenny (2015) reported there were a series of medical experiments documented during the 1800s where physicians

used slaves as test subjects. For example, a physician performed brain surgery on a slave without using any pain relief methods, and the individual died. In another experiment, a physician disfigured another slave by trying to remove a tumor from her eye without anesthesia (Kenny, 2015). Moreover, gynecological experiments occurred on African American slave women. Dr. Sims, a noted Alabama surgeon and the "father of gynecology," carried out repeated experimental operations on African American slave women without anesthesia (Sartin, 2004). Many of these women died from an infection caused by the experiments (Wall, 2006).

The United States Public Health Service initiated the Tuskegee Study in the year 1932, which followed 600 African American men for 40 years to determine the natural course of untreated, latent syphilis. The health care professionals involved in the study did not tell the participants their diagnosis, refused to treat them, and actively denied some of the participant's treatment. Informed consent was not given to the participants. The ramifications of the experiment caused many of the participants to die from complications of syphilis as well as spread the disease to their spouses/partners and children (Scharff et al., 2010).

As aforementioned, these incidents have shaped African American's perceptions toward the healthcare system, making them apprehensive about trusting it (Kenny, 2015). Kennedy et al. (2007) implied the cause of mistrust is multifactorial. Spector (2004) postulated many African Americans might feel ostracized, discriminated against, and degraded with receiving healthcare due in part to unintentional insults such as "demeaning tones and body language from providers" from providers (p.245). Cuffee et al. (2013) investigated whether racial discrimination was associated with distrusting the

physicians and no adherence of taking hypertension medication in African Americans. The results indicated distrust of physicians, and discrimination was associated with decreased usage of taking the medication. African Americans' belief system about the healthcare system is due to past unethical practices concerning medical experiments and experiences concerning racism from healthcare providers (Baker et al., 2008).

T2DM Pathology and Health Outcomes

T2DM involves microvascular and macrovascular complications. The complications can have a profound effect on a person's health and well-being, which can result in long-term damage (Chawla, Chawla, & Jaggi, 2016). Microvascular complications affect small blood vessels found in the kidneys, eyes, and extremities. Macrovascular complications affect substantial blood vessels located in the heart and brain (Rask-Madsen & King, 2013). The endothelium is the inner layer of the blood vessels responsible for regulating vascular tone and structure. Endothelial dysfunction is an imbalance in the endothelium caused by hyperglycemia, increased free fatty acids, and insulin resistance; these all contribute to vascular dysfunction (Rask-Madsen & King, 2013). In microvascular structures, an abnormal change can cause an increase in thickness in the capillary basement membrane. The change can cause arterioles in the kidneys, retina, and myocardium of the heart, skin, and muscle leading to restricted blood flow, causing diabetic microangiopathy. This thickness eventually leads to abnormality in vessel function, inducing multiple clinical problems such as hypertension, delayed wound healing, and tissue necrosis (Chawla et al., 2016). Atherosclerosis is the central mechanism for macrovascular complications, which causes the arterial walls to narrow.

The disorder can cause a host of problems such as coronary, cerebrovascular, and peripheral arterial disease (Kolluru, Bir, & Kevil, 2012).

African Americans may have complications such as eye and kidney problems resulting from T2DM. Diabetic eye diseases are a group of eye problems affecting individuals with diabetes. The eye problems consist of diabetic retinopathy, cataract, and glaucoma. If these diseases remain untreated, or if the individual has poor glucose control, then the conditions can lead to vision loss and blindness (National Eye Institute, 2019).

The context of medical skepticism, in combination with T2DM, plays a role in the overall health outcomes of some African Americans. My study will focus on diabetes retinopathy (DR), and it occurs when high blood sugars cause damage to the peripheral retina, the macula, or both in which the blood vessels swell and leak, causing blindness (American Academy of Ophthalmology, 2019). African Americans were found to have a 4-fold risk of visual impairment due to diabetic retinopathy as compared to non-Hispanic Caucasians (Muñoz et al., 2008). This group may undergo screening less often than non-Hispanic Caucasians patients for a variety of reasons such as patient's beliefs, trusting the physician, and not having insurance (Nsiah-Kumi, Ortmeier, Stacie, & Brown, 2009). In another study, African Americans with T2DM had a higher incidence for blindness caused by diabetic retinopathy compared to non-Hispanic Caucasians because of the risk factors, such as noncompliance with taking medication, and not going for regular eye exams secondary to patient's beliefs (Penman et al., 2016).

Pecotis-Filho et al. (2016) stated the kidneys also play an essential role in glycemic control. For my study, kidney problems refer to Chronic Kidney Disease

(CKD). CKD is a condition in which the kidneys are damaged or cannot correctly filter blood, which causes waste and fluid to remain in the body, causing problems such as End-Stage Renal Disease (ESRD). Some individuals with ESRD have to undergo dialysis, and sometimes, a kidney transplant is necessary (Zoccali, Kramer, & Jager, 2009). CKD also results in a lack of glycemic control, and it affects about one-third of the patients with T2DM as well (Pecotis-Filho et al., 2016). Mentioned previously, vascular changes take place within the peritubular (blood vessels in the kidneys) and underlies glomerular circulation causing inflammation. The inflammation leads to a decrease in blood flow to the kidneys (Matovinović, 2009). Medical skepticism can lead to kidney problems. Norris et al. (2017) found African Americans have the highest rate of ESRD due in part to many factors such as medical mistrust, biases among healthcare providers, and patient's belief and behaviors. Boulware et al. (2003) examined a telephone survey of African American's and their perception of trusting physicians, hospitals, and their health insurance plans. In the study, African Americans were less likely to trust physicians and the healthcare systems than non-Hispanic Caucasians due in part of personal experiences. However, African Americans were more trusting of the health insurance plan (Boulware et al., 2003).

Medical Skepticism and Patient-Provider Relationship

Patient-provider relationships is an integral part of patient care involves trust between patient and physician. Trusting the physician also increases patient satisfaction. The relationship between patient and provider affects the quality of care a person receives, as well as (Chipidza, Wallwork, & Stern, 2015). Medical skepticism can cause a patient-provider relationship not to be reliable, which can result in not having healthier

outcomes. The literature suggests African Americans do not fully trust the healthcare system nor healthcare providers as compared to non-Hispanic Caucasians, which may pose a problem with wanting to access healthcare (Armstrong et al., 2013). For example, Michalopoulou et al. (2009) concluded physicians and healthcare providers lack culturally sensitive and competency when treating African American's for various illnesses. Cuevas and O'Brien (2017) examined two hypotheses. The first hypothesis was African Americans with high racial centrality (the extent to which an individual identifies with their racial group very strongly) will have less trust in the healthcare system and with healthcare providers. The second hypothesis was whether African Americans who feel others might view their ethnic group as "negative" may perceive more racial discrimination in healthcare, which may increase higher levels of mistrust among both the healthcare system and the providers. The results indicated African Americans racial centrality had a strong association with medical mistrust and African Americans believe they are perceived negative by society had a strong association with medical mistrust with both the healthcare system and healthcare providers (Cuevas & O'Brien, 2017; Scottham et al., 2008). Armstrong et al. (2013) focused on the factors surrounding African Americans experience racial discrimination to mistrust in the healthcare system. The results indicated African Americans had higher levels of mistrust or medical skepticism toward the healthcare system and increased the level of discrimination in receiving health care (Armstrong et al., 2013).

Furthermore, Peek et al. (2013) examined trust in healthcare providers and its correlation to patient-provider communication and shared decision-making in African Americans with T2DM. The authors concluded there is a two-way relationship between

patient trust and shared decision making (about treating T2DM). Increased patient trust can either lead to an increase or decrease in the shared decision-making process. Trust can have both positive and negative implications concerning diabetes outcomes (Peek et al., 2013). However, in another study where the researcher examined the difference between both African American's and non-Hispanics Caucasians' perceptions of trusting physicians, the healthcare system, and insurance plans. The results indicate African Americans trusted the physicians and the healthcare system but did not trust their insurance plan (Boulware et al., 2003). African Americans had a higher level of distrust in physicians due to lack of communication, physician's desire for financial gain, and discrimination, which negatively affects seeking care (Jacobs, Rolle, Ferrans, Whitaker, & Warnecke, 2006). In Hawkins and Mitchell's (2018) research study, an evaluation of African American males' experiences with their providers occurred and an analysis of whether their physicians listened to them. The results indicated the participants were not listen to when they met with their providers to discuss their health. When individuals do not feel like their voices do not matter when it comes to their health, then they are reluctant to engage with the healthcare system for medical needs, which can delay treatment and diagnosis (Hawkins & Mitchell, 2018).

Medication Adherence and Health Outcomes

Medical skepticism can lead to adverse health outcomes, and for someone with T2DM, this could result in death due to poor medication adherence. Poor medication adherence happens when individuals incorrectly take medications, or they do not take medications at all (Bell et al., 2016; Fiscella et al., 1998). The behavior, medication adherence was not a part of the research questions, but this topic is significant to discuss

because it affects health outcomes such as eye and kidney problems. Medication adherence is defined as being compliant in taking prescribed medications routinely (Garcia-Perez et al., 2013; World Health Organization, 2003). Several factors are responsible for medication non-adherence. They include social/economic, patient-related, therapy-related, condition-related, and healthcare system/ healthcare providers (Aikens & Piette, 2009; Hu, Juarez, Yeboah, & Castillo, 2014). For individuals with chronic diseases such as T2DM, the rate of poor medication adherence averages 50% in they do not have optimal glycemic control, which is higher than 7% (Ford, 2011). There is some literature to suggest medication adherence can affect health outcomes in individuals with T2DM. In one study, individuals adhered to their diabetes medications had a reduction in hospital visits, complications, and total costs as compared to those who had poor diabetes medication adherence who had increased risk of receiving care via the hospital, lower health cost, and increased complications, such as cataracts and kidney problems (Curtis, Boye, Lage, & Garcia-Perez, 2017). In another study, poor medication adherence increased glycosylated hemoglobin, blood pressure; cholesterol levels lead to increased mortality rates for individuals with T2DM (Ho et al., 2006). Kuo et al. (2003) study examined the use of diabetes medication in Mexican Americans and the risk of kidney, eye, and lower extremities and used data from death certificates to see determine the incidence of mortality rates. The results indicated poor medication adherence was a connection with an increased risk of complications and death.

Summary and Conclusion

The review of the literature identified several essential concepts of medical skepticism and health outcomes for African Americans with T2DM. The ABHM, SCT,

and the PC-CSHC model are all critical to the study because they explain behaviors concerning doubts associated with using healthcare services. There are hosts of themes that may contribute to medical skepticism and health outcomes, according to the literature. The topics consist of understanding the pathology of T2DM as it relates to health outcomes, history of medical skepticism, age, and patient-provider relationships. Another theme is medication adherence, but it is not part of the research questions. It is vital to address medication adherence because it has a connection to health outcomes. For example, when a person has T2DM, and they are not compliant with taking the required medication, it increases health outcomes (American Diabetes Association, 2017). Compared to non-Hispanic Caucasians, there is a disproportionate number of African Americans affected by T2DM, even though many studies discussed the barriers and treatment of the disease (Peek et al., 2013). What is unknown is the ramifications of medical skepticism as it relates to health outcomes in African Americans with T2DM, which literature is limited. The current study filled the gap in the literature by examining how medical skepticism affects health outcomes or diabetes-associated eye and kidney problems. By addressing medical skepticism, a reduction in poor health outcomes may happen. Also, by addressing medical skepticism, it addresses the implementation of a collaborative relationship between the patient, the physicians, and the healthcare system, where communication is open and transparent (Goold & Klipp, 2002).

Utilizing a quantitative approach, the purpose of this study is to generate numerical data to assess the relationship between medical skepticism and outcomes in African Americans with T2DM, which is covered in more detail in Chapter 3. The

chapter will also include the hypotheses, sample population, threats to validity, data

collection methods, and data analysis.

Chapter 3: Research Method

Introduction

Researchers who use quantitative methods examine the relationship between variables and influence the outcome of a social phenomenon numerically (Williams, 2007). This method was ideal because the purpose of this study was to examine the relationship between medical skepticism and health outcomes in African Americans with T2DM. In this chapter, I described the research methods and designs, population, data collection, and analysis plan. Furthermore, I described threats to validity, ethical procedures involved in the study, and the summary of this chapter.

Research Design and Rationale

In this quantitative study, I chose a cross-sectional, descriptive research design using secondary data to answer seven research questions. For research questions RQ1 and RQ2, the independent variable is medical skepticism, and the dependent variable is the health diabetes-associated health problems. For research question RQ3, medical skepticism is the independent variable, and the dependent variable is age. For research question RQ4 and RQ5, the independent variable is age, and the dependent variable is diabetes-associated health problems. For research questions RQ6 and RQ7, the independent variables are medical skepticism and age, and the dependent variable is health diabetes-associated health problems.

The research questions and design are essential parts of the research process. The study begins with the research question, and the plan to answer the questions was the design (Farrugia, Petrisor, Farrokhyar, & Bhandari, 2010). The research question and the design must align with one another, and if they do not, then the research is considered to

be undermined, which can jeopardize the study (Draper, 2004). The quantitative research design involves examining the relationship between variables (dependent and independent) through statistical analysis (Creswell, 2014, p. 4). Quantitative studies consist of nonexperimental or experimental design (Sousa, Driessnack, & Mendes, 2007).

For the current study, I chose the non-experimental design because the design is descriptive, and there is no randomization, control groups, or manipulation of the independent variable. The use of the design differentiated and examined the relationships among the target population (Salkind, 2010; Sousa et al., 2007). Several different types of nonexperimental designs exist, such as descriptive, case-control, correlational design, and cross-sectional designs (Sousa et al., 2007). The correlational design used was a cross-sectional design. This design determines if there a relationship exists between two or more variables (Sousa et al., 2007). I used the research questions to represent correlational design because they are descriptive, and they can establish relationships and associations between the variables. (Laerd Statistics, 2017). Correlational studies conducted with secondary data tend to be more (Omair, 2015). I did not consider the experimental design because randomization must occur, there is a manipulation of the independent variable, and the use of strict controls exists to find out if a particular action influences a specific result (see Sousa et al., 2007). This design process involves giving a defined treatment to one group and withholding it from another, then determining the outcomes in each of the groups (Creswell, 2014). Some of the different types of experimental designs include true experimental and quasi-experimental (Sousa et al., 2007).

Population

The target population were African American men and women aged 45 and older with T2DM. The middle age group of African Americans represents more than half of newly diagnosed cases of T2DM as compared to non-Hispanic Caucasians. African Americans over the age of 65 have almost twice the rate of T2DM compared to non-Hispanic Caucasians in the same age group (American Diabetes Association, 2017).

Sampling strategies or designs are essential to have in place because the sample is representative of the population from which the sample came (Frankfort-Nachmias & Nachmias, 2008). For the current study, I utilized secondary data analysis from the Medical Expenditure Panel Survey (MEPS) 2016 dataset. In the following paragraphs, I explained the processes of sampling strategies, procedures, and frames for each of the datasets, and then I explained what I did.

The MEPS 2016 is an extensive nationally representative survey of the U.S. civilian noninstitutionalized population except the federal government and the military. Through this survey, created in 1996, the Agency for Healthcare Research and Quality and the U.S. Census Bureau collects medical expenditure data from the person and household levels via telephone and mail surveys (Davis, 2014). The data consist of health outcomes, demographics, use of medical care services, access to health care, satisfaction with care, income, employment status, and health insurance status (Davis, 2014). The sampling design implemented for the MEPS is a multi-stage sample design, which takes significant populations and divides then into stages (Lavrakas, 2008). The MEPS involves three sampling frames (Davis, 2014). One of the sampling frames is the Census Bureau list frames private-sector business establishments and a list of employers or

insurance providers identified by MEPS respondents as having health insurance coverage (Davis, 2014).

I employed a stratified sampling strategy in this study based on medical skepticism, age, and health outcomes. Stratified sampling is a probability design in which the population is divided into subgroups. Then simple random methods are used in the frame that generates names from a list randomly, and then a sample is drawn (Suresh, Thomas, & Suresh, 2011). In stratified sampling, a researcher has more control over representativeness, and this sampling design allows oversampling, which increases reliability and statistical precisions (Suresh et al., 2011). The data set utilizes stratified sampling, and it did not provide any sensitive information about the target population (Smith, Marsden, Hount, & Jibum, 2015).

Power Analysis

Research Question 1 (RQ1): Is Medical Skepticism associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$1): Medical Skepticism is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a1): Medical Skepticism is associated with kidney problems in African Americans with T2DM.

Below are the dependent and independent variables with their measurement. Also, the power analysis information is listed to get the minimum sample size.

DV**:** Kidney problems (yes/no)

IVs: Medical Skepticism (Ordinal)

Test statistic: Binominal Logistic Regression

Test family: z tests

Statistical test: Logistic regression

Tails: Two

Odds ratio**:** 0.48*

Prob(Y=1 | X=1) Ho = 0.5

Alpha: 0.05

Power: 0.80

R-squared other X = 0

X-Distribution = Normal

X param mu = 0

X param sigma = 1

Calculated Minimum Sample Size: 75

Software: Using G*Power 3.1.9.2

Research Question 2 (RQ2): Is Medical Skepticism associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$2): Medical Skepticism is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a2): Medical Skepticism is associated with eye problems in African Americans with T2DM.

Below are the dependent and independent variables with their measurement. Also, the power analysis information is listed to get the minimum sample size.

DV: Eye problems (yes/no)

Test statistic: Binominal Logistic Regression

Test family: z tests

Statistical test: Logistic regression

Tails: Two

Odds ratio: 0.48

Prob(Y=1 | X=1) Ho = 0.155

Alpha: 0.05

Power: 0.80

R-squared other X = 0

X-Distribution = Normal

X param mu = 0

X param sigma = 1

Calculated Minimum Sample Size: 118

Software: Using G*Power 3.1.9.2

Research Question 3 (RQ3): Is Medical skepticism associated with age in African Americans with T2DM?

Null Hypothesis ($H_0 3$): Medical Skepticism is not associated with age in African Americans with T2DM

Alternative Hypothesis ($H_a 3$: Medical Skepticism is associated with age in African Americans with T2DM.

Below are the dependent and independent variables with their measurement. Also, the Power of Proportions model information is listed to get the minimum sample size.

DV: Medical Skepticism (Ordinal)

IVs: Age (scale)

Test statistic: Ordinal Logistic Regression

Alpha: 0.05

Power: 0.80

Tails: Two

Categories: Five

Control (Caucasians): Categories 0–4 = 25%

Treatment (African Americans): Categories 0–4 = 14%

Calculated Minimum Sample Size: 108

Software: Using Power of Proportions model

Research Question 4 (RQ4*):* Is Age associated with kidney problems in African Americans with T2DM?

Null Hypothesis (*H*$_0$4*)*: Age is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (*H*$_a$4): Age is associated with kidney problems in African Americans with T2DM**?**

Below are the dependent and independent variables with their measurement. Also, the power analysis information is listed to get the minimum sample size.

DV: Kidney problems (yes/no)

IV: Age (Scale)

Test statistic: Binominal Logistic Regression

Test family: z tests

Statistical test: Logistic regression

Tails: Two

Odds ratio: 0.48

Prob(Y=1 | X=1) Ho = 0.5

Alpha: 0.05

Power: 0.80

R-squared other X = 0

X-Distribution = Normal

X param mu = 0

X param sigma = 1

Calculated Minimum Sample Size: 75

Software: Using G*Power 3.1.9.2

Research Question 5 (RQ5)*:* Is Age associated to eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$5): Age is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a5): Age is associated with eye problems in African Americans with T2DM**?**

Below are the dependent and independent variables with their measurement. Also, the power analysis information is listed to get the minimum sample size.

DV: Eye problems (yes/no)

IV: Age (Scale)

Test statistic: Binominal Logistic Regression

Test family: z tests

Statistical test: Logistic regression

Tails: Two

Odds ratio: 0.48*

Prob(Y=1 | X=1) Ho = 0.155

Alpha: 0.05

Power: 0.80

R-squared other X = 0

X-Distribution = Normal

X param mu = 0

X param sigma = 1

Calculated Minimum Sample Size: 118

Software: Using G*Power 3.1.9.2

Research Question 6 (RQ6)*:* Is medical skepticism and age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$6): Medical skepticism and age are not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a6): Medical skepticism and age are associated with eye problems in African Americans with T2DM?

Below are the dependent and independent variables with their measurement. Also, the power analysis information is listed to get the minimum sample size.

DV: Eye problems (yes/no)

IV: Medical Skepticism (ordinal)

Control: Age

Test statistic: Binominal Logistic Regression

Test family: z tests

Statistical test: Logistic regression

Tails: Two

Odds ratio: 0.48

Prob(Y=1 | X=1) Ho = 0.155

Alpha: 0.05

Power: 0.80

R-squared other X = 0.50 (assumed moderate association of Medical Skepticism and Age)

X-Distribution = Normal

X param mu = 0

X param sigma = 1

Calculated Minimum Sample Size: 236

Software: Using G*Power 3.1.9.2

Research Question 7 (RQ7)*:* Is medical skepticism and age associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$7): Medical skepticism and age are not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a7): Medical skepticism and age are associated with kidney problems in African Americans with T2DM?

Below are the dependent and independent variables with their measurement. Also, the power analysis information is listed to get the minimum sample size.

DV: Kidney problems (yes/no)

IV: Medical Skepticism (ordinal)

Control: Age

Test statistic: Binominal Logistic Regression

Test family: z tests

Statistical test: Logistic regression

Tails: Two

Odds ratio: 0.48

Prob(Y=1 | X=1) Ho = 0.5

Alpha: 0.05

Power: 0.80

R-squared other X = 0.50 (assumed moderate association of Medical Skepticism and Age)

X-Distribution = Normal

X param mu = 0

X param sigma = 1

Calculated Minimum Sample Size: 149

Software: Using G*Power 3.1.9.2

For RQ1, G*Power for logistic regression (statistical test) was used to calculate for binominal logistic regression, in consideration of the independent variable of medical skepticism and the dependent variable for kidney problems. A priori analysis was conducted, and the z test was selected. The power was set to 0.80, and the alpha level is 0.05. The odds ratio of 0.48 (NIDDK, 2016) was used as well as two tailed tests. The probability of 0.5 was inputted, and the distribution is normal. The z score population mean of the independent variable is 0, and the z score for the standard deviation of the independent variable is 1. The R-squared value is 0. The minimum sample size calculated [$N = 75$].

For RQ2, G*Power for logistic regression (statistical test) was used to calculate for binominal logistic regression, in consideration of the independent variable of medical skepticism and the dependent variable for eye problems. The odds ratio of 0.48 (National Eye Institute, NEI, 2019) was used as well as two tailed tests. The probability of 0.155 (NEI, 2019) and the distribution is normal. The z score population mean of the independent variable is 0, and the z score for the standard deviation of the independent variable is 1. The R-squared value is 0. The minimum sample size calculated [N = 118].

For RQ3, Power of Proportions model was used to calculate ordinal logistic regression (StATS, 2004). The two groups being compared would be control group (Caucasians) and treatment group (African Americans). The control probability is 25% and treatment probability is 14% (Bell et al, 2013).It is two tailed and the alpha level of 0.05 and power of .80, the minimum sample size calculated [N = 108].

For RQ4, G*Power for logistic regression (statistical test) was used to calculate for binominal logistic regression, in consideration of the independent variable of age and

the dependent variable for kidney problems. A priori analysis was conducted, and the z

test was selected. The power was set to 0.80, and the alpha level is 0.05. The odds ratio is

0.48 (NIDDK, 2016). The probability of 0.5 was inputted, and the distribution is normal.

The z score population mean of the independent variable is 0, and the z score for the

standard deviation of the independent variable is 1. The R-squared value is 0. The

minimum sample size calculated [N = 75].

For RQ5, G*Power for logistic regression (statistical test) was used to calculate

for logistic regression, in consideration of the independent variable of age and the

dependent variable for eye problems. A priori analysis was conducted, and the z test was

selected. The power was set to 0.80, and the alpha level is 0.05. The odds ratio is 0.48

(NEI, 2019). The probability of 0.155 was inputted, and the distribution is normal (NEI,

2019). The z score population mean of the independent variable is 0, and the z score for

the standard deviation of the independent variable is 1. The R-squared value is 0. The

minimum sample size calculated [N = 118].

For RQ6, G*Power for logistic regression (statistical test) was used to calculate

for binominal logistic regression, in consideration of the independent variable of medical

skepticism and the dependent variable for eye problems. A priori analysis was conducted,

and the z test was selected. The power was set to 0.80 and the alpha level is 0.05. The

odds ratio is 0.48 (NEI, 2019). The probability of 0.155 was inputted, and the distribution

is normal (NEI, 2019). The z score population mean of the independent variable is 0, and

the z score for the standard deviation of the independent variable is 1. The R-squared

value is 0.50, assuming a moderate association of medical skepticism and age. The

minimum sample size calculated [$N = 118$].

For RQ7, G*Power for logistic regression (statistical test) was used to calculate for binominal logistic regression, in consideration of the independent variable of medical skepticism and the dependent variable for eye problems. A priori analysis was conducted, and the z test was selected. The power was set to 0.80, and the alpha level is 0.05. The odds ratio of 0.48 (NIDDK, 2016). The probability of 0.5 was inputted, and the distribution is normal (NIDDK, 2016). The z score population mean of the independent variable is 0, and the z score for the standard deviation of the independent variable is 1. The R-squared value is 0.50, assuming a moderate association of medical skepticism and age. The minimum sample size calculated [N = 118].

Procedures for Recruitment, Participation, and Data Collection

The Agency for Healthcare Research and Quality created the MEPS 2016, which is a set of large-scale surveys conducted on a continual basis, and it provides the researcher with current information (Cohen & Cohen, 2013; MEPS, 2016). The selection of participants for the MEPS occurred based upon the requirement that they participated in the National Health Interview Survey (NHIS) a year before. Participants are civilians from a noninstitutionalized population living in the United States during the time of the interview, which includes participants from a wide variety of incomes, geographical locations, ages, incomes, and racial/ethnics backgrounds (MEPS, n.d.).The MEPS is composed of three component surveys: the Household Component (HC), the Medical Provider Component (MPC), and the Insurance Component (IC). The HC components ask questions about demographic information, health conditions and status, use of medical care services, charges and payments, access to care, satisfaction with care, health insurance coverage, income, and employment (MEPS, 2019). The MPC components

collect information from a sample of physicians, hospitals, home health agencies, and

pharmacies who provided medical care to the participants. The IC components consist of

questions directed to the public, and private employer's collects data on the types of

private health insurances offered as well as the premiums, "benefits associated with these

plans, annual contributions by employers and employees, eligibility requirements, and

employer characteristics" (MEPS, 2018).

Five interviews were conducted over a two and one-half years, and an interviewer

contacted the participants for an interview. The interviews lasted an average of 1 ½ hour,

and for the different surveys, participants filled out the survey via paper or computer-

assisted personal interview (MEPS, n.d.). The participants were awarded 50 dollars at the

end of the completed surveys (MEPS, n.d.).

The HC is the core survey, and it formed the basis for the MPC sample and part of

the IC sample (MEPS, n.d.). Randomization is done with the different surveys because

the process chooses the participants and from there, analysis of the data was conducted

using descriptive statistics or more sophisticated analyses based on multivariate models

through different software packages such as SAS® (version 8.2 or higher), SUDAAN®,

SPSS® (MEPS, 2016).

The MEPS data sets are publicly available without permission to use it. For this

study, I downloaded the datasets from their respective websites, and analyzed the data

using SPSS 25.0. The variables in the dataset addresses the research questions and the

hypotheses.

Operationalization of Constructs

In this study, I utilized specific variables from the MEPS 2016. The three research

questions addressed in the study. For variable diabetes-associated kidney problems, the

question asks the following: "Has diabetes causes kidney problems?" The coding scale

for each of the questions will be: *Yes* (0), *No* (1), *Inapplicable* (-1), and *Not Ascertained*

(9). For the variable, diabetes associated eye problems the question asks the following:

"Has diabetes causes eye problems?" The coding scale for the question will be *Yes* (1),

No (0), *Inapplicable* (-1), and *Not Ascertained* (9). For the age variable, the question

asks, "Age of Diagnosis-Diabetes." The coding scale for the question is 0–85 age at

diagnosis, *Inapplicable* (-1), *Refused* (-7), *DK* (-8) and *Not ascertained* (9). For the

medical skepticism variable, the questions consist of the following: "Can overcome

illness with medical help? The coding scale consists of *Disagreeing strongly* (1),

Disagree somewhat (2), *Uncertain* (3) *Agree somewhat* (4), and *Agree strongly* (5).

Table 1

Variable Description

Variable Type	Level of Measurement	Coding Types
Diabetes-associated kidney problems	Dichotomous	Yes (1), No (0)
Diabetes –associated eye problems	Dichotomous	Yes (1), No (0)

Age	Continuous	0–85 Age in years [85 = 85 and older] Notes: _ _ Code age in years, 85 = 85 or older Inapplicable (-1), Refused (-7), DK (-8) and Not Ascertained
Medical skepticism	Ordinal	Disagreeing strongly (1), disagree somewhat (2), uncertain (3) agree somewhat (4), and agree strongly (5).

Data Analysis Plan

Data analysis was conducted using SPSS 25.0, and the MEPS 2016 dataset is downloaded into the software. SPSS 25 is suitable because it analyzes, recodes, weights, and stores large data where the analysis can be presented in a graphical nature, which makes it easy for individuals to interpret (Suresh, 2015). The first and second research questions [RQ1 and RQ2] utilize binominal logistic regression, which refers to as logistic regression statistical test. The use of binominal regression describes the relationship between two variables (Menard, 2010). For the variables: kidney and eye problems are the dependent variables, and medical skepticism is the independent variable for RQ1 and RQ2. The variables satisfy assumptions one and two in that the dependent variable is on a dichotomous scale, and the independent variable is on a continuous scale. The third

assumption is there needs to be independence of observations , and the dependent variable should be "mutually exclusive and exhaustive categories". For the assumption four, there "needs to be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable," which SPSS checks (Field, 2013, p. 768).

For the third research [RQ3] question, the statistical test is ordinal logistic regression. Ordinal logistic is used to model the relationship between an ordinal response, dependent variable, and one or more independent variables. The dependent variable is on the ordinal level, which is medical skepticism, and the independent variable is age, which is continuous. For the ordinal logistic regression, the first assumption states that the dependent variable should be on the ordinal level, and the independent should be continuous, which satisfy assumption one and two. For assumption three, multicollinearity must not occur, and this happens when inaccurate estimates of the regression coefficients take place. To test this assumption, two activities should occur. The creation of dummy variables combined with a review of the VIF and tolerance values will ensure the values are not violated when using SPSS (Field, 2013). For assumption four, there should be proportional odds that means each independent variable has an identical effect at each cumulative split of the ordinal dependent variable, which SPSS completes (Field, 2013).

The fourth and fifth research questions [RQ4 and RQ5] utilize binominal logistic regression for the statistical tests. As mentioned previously, the statistical test is used to describe the relationship between two variables (Menard, 2010). The variable, age for both questions in the independent variables. The variables kidney and eye problems are

dependent variables for both questions. For the RQ4, the assumptions for binominal logistic regression are met in that the dependent variable, kidney problems, is on a dichotomous scale, and the independent variable, age, is on a continuous scale. The third assumption mentioned that you should have independence of observations dependent variable should be "mutually exclusive and exhaustive categories" (Field, 2013, p. 768). For the fourth assumption, there needs to be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable, which is checked in SPSS (Field, 2013). For RQ5, the assumptions one and two for binominal logistic regression are met in that the dependent variable, eye problems, is on a dichotomous scale, and the independent variable, age, is on a continuous scale. The third assumption mentioned that you should have independence of observations dependent variable should be "mutually exclusive and exhaustive categories"(Field, 2013, p. 768). For the fourth assumption , there needs to be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable, which can be checked in SPSS (Field, 2013, p. 768).

The sixth and seventh [RQ6 and RQ7] utilize binominal logistic regression for the statistical test. Binominal regression is used to describe the relationship between two variables (Menard, 2010). Medical skepticism and age for RQ6 and RQ7 serve as the independent variables and kidney problems, and eye problems are the dependent variables. The assumptions (one and two) were met because the dependent variables are dichotomous, and medical skepticism and age are continuous. For assumption four, there is "independence of observations, and the dependent variables have mutually exclusive and exhaustive categories", which SPS can test (Field, 2013, p. 768).

Both descriptive and inferential statistics will occur to examine the association between the variables presented in the study. There were several variables deleted because they were not significant in the study. When analyzing secondary data, it is crucial to run frequency tables, and cross-tabulations on all the variables involved because it provides it help to explain the coding pattern of the different variables (Cheng & Phillips, 2014). The first step in the analysis is to run frequency tables and cross-tabulations of all variables included in the primary analysis because this provides information about the coding pattern for each of the variables (Cheng & Phillips, 2014). Then recoding the original variables is essential to do because it addresses the missing values so the variables will meet the assumptions for the statistical test (Cheng & Phillips, 2014).

Research Question 1

Research Question 1 (RQ1): Is Medical Skepticism associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$1): Medical Skepticism is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a1): Medical Skepticism is associated with kidney problems in African Americans with T2DM.

DV1: Kidney problems is a dichotomous variable, which is only two responses.

IV1: Medical Skepticism is an ordinal variable. An ordinal variable is a categorical variable for which the possible values are ordered.

Research Question 2

Research Question 2 (RQ2): Is Medical Skepticism associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$2): Medical Skepticism is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a2): Medical Skepticism is associated with eye problems in African Americans with T2DM.

DV2: Eye problems is a dichotomous variable, which is only two responses.

IV2: Medical Skepticism is an ordinal variable. An ordinal variable is a categorical variable for which the possible values are ordered.

Research Question 3

Research Question 3 (RQ3): Is Medical skepticism associated with age in African Americans with T2DM?

Null Hypothesis ($H_0$3): Medical Skepticism is not associated with age in African Americans with T2DM

Alternative Hypothesis (H_a3: Medical Skepticism is associated with age in African Americans with T2DM.

DV3: Medical Skepticism is an ordinal variable. An ordinal variable is a categorical variable for which the possible values are ordered.

IV3: Age is on a continuous level which data can take any value or any value within a range.

Research Question 4

Research Question 4 (RQ4): Is Age associated to kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$4$)$: Age is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a4): Age is associated with kidney problems in African Americans with T2DM

DV4: Kidney problem is a dichotomous variable, which is only two responses.

IV4: Age is a continuous level which can take any value or any value within a range.

Research Question 5

Research Question 5 (RQ5)*:* Is Age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$5): Age is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a5): Age is associated with eye problems in African Americans with T2DM**?**

DV5: Eye problems is a dichotomous variable, which is only two responses.

IV5: Age is a continuous level which can take any value or any value within a range.

Research Question 6

Research Question 6 (RQ6)*:* Is medical skepticism and age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$6): Medical skepticism and age are not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a6): Medical skepticism and age are associated with eye problems in African Americans with T2DM?

DV6: Eye problems is a dichotomous variable, which is only two responses.

IV6: Medical skepticism is an ordinal variable. An ordinal variable is a categorical variable for which the possible values are ordered. Age is a continuous level which can take any value or any value within a range.

Research Question 7

Research Question 7 (RQ7)*:* Is medical skepticism and age associated with kidney problems in African Americans with T2DM?

Null Hypothesis (H_07): Medical skepticism and age are not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a7)*:* Medical skepticism and age are associated with kidney problems in African Americans with T2DM?

DV7: Kidney problems is a dichotomous variable, which is only two responses.

IV7: Medical skepticism is an ordinal variable. An ordinal variable is a categorical variable for which the possible values are ordered. Age is a continuous level which can take any value or any value within a range.

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Threats to Validity

</div>

The threats of validity are critical to understand and to recognize because they help with producing meaningful and useful results for a research study (Creswell, 2014). There are three types of external validity refers to being able to generalize from the results of the study (Salkind, 2011). External validity threats happen when a researcher draws incorrect inferences from the sample data (Creswell, 2014). One threat to external

validity is the interaction of selection biases and experimental treatment. One threat to external validity would be the interaction of history and treatment. The researcher would not be able to generalize the result to the past or future due to time. To correct this, the researcher would need to replicate the study to see if the same results happen (Creswell, 2014).

Internal validity is the relative truth about inferences regarding cause-effect or causal relationships. Thus, internal validity makes sure the research is solid (Salkind, 2011). A threat to internal validity would include participants dropping out of a study due to many reasons (Creswell, 2014). A way to minimize this threat is to recruit from a large sample to account for participants who may drop out of the study (Creswell, 2014). Construct validity refers to "how accurate the measurements are supposed to measure" (McKenzie, Smeltzer, & Neiger, 2004, p. 128) A threat to construct validity would be when a construct has an inadequate definition, which can affect the quality of research. To minimize this threat, a researcher can get an expert opinion on the definitions (Trochim, 2006).

Ethical Procedures

I obtained archival data from the MEPS 2016, so there was not a direct interaction with the participants and myself when collecting data. The population-based-survey used is committed to protecting the rights and welfare of those taking part in the surveys by utilizing informed consent procedures, HIPAA guidelines, and following the ethical principles of the Belmont (Chapman et al., 2015). The MEPS 2016 organization also has its own IRB committee via the Westat IRB granted by the Office for Protection from Research Risks (OPRR) ensures the institution to protect the institution and the

researchers against potential legal implications of any behavior may be deemed unethical (MEPS, n.d.). The authorization of the surveys is under 42 U.S.C. 299a, in which the responses are protected by "Sections 944(c) and 308(d) of the Public Health Service Act [42 U.S.C. 299c-3(c) and 42 U.S.C. 242m (d)," and information could identify the participants will not be disclosed unless consent has been signed (MEPS, n.d.).

Data cleaning is a necessary process when analyzing data. This process involves detecting and correcting data to prevent coding errors that may hinder the research (Salkind, 2010). Before the study was initiated, the Walden University Institutional Review Board (IRB) number study # 12-06-19-0153599, had approved the study. From there, the data cleaning process and the data analysis was completed.

Summary

The information presented in this chapter discusses in detail the study design and the methods used. The study used three research questions and the design implemented is quantitative using secondary data from the MEPS 2016. The hypothesis, study population and sampling procedure were outlined.A detailed explanation of the operationalization of variables was assessed. Ethical considerations and threats to internal, external, and construct were all examined in detail. The core for chapter 4 includes a detailed analysis of the findings and careful application of the research methods.

Chapter 4: Results

Introduction

The purpose of this quantitative research study was to describe the relationship between medical skepticism and diabetes-associated kidney and eye problems within the middle and older aged African American population. In this chapter, I provided the results of the data analysis results of the secondary analysis of the MEPS 2016 using SPSS 25 to answer the seven research questions and address the research hypotheses. Details of the descriptive analysis of the data, inferential statistics, and summary of the findings appear in this section.

Research Questions and Hypothesis

I will be addressing the following research questions and hypothesis:

Research Question 1 (RQ1): Is Medical Skepticism associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0 1$): Medical Skepticism is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis ($H_a 1$): Medical Skepticism is associated with kidney problems in African Americans with T2DM.

Research Question 2 (RQ2): Is Medical Skepticism associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0 2$): Medical Skepticism is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis ($H_a 2$): Medical Skepticism is associated with eye problems in African Americans with T2DM.

Research Question 3 (RQ3): Is Medical skepticism associated with age in African Americans with T2DM?

Null Hypothesis ($H_0$3): Medical Skepticism is not associated with age in African Americans with T2DM

Alternative Hypothesis (H_a3: Medical Skepticism is associated with age in African Americans with T2DM.

Research Question 4 (RQ4): Is Age associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$4): Age is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a4): Age is associated with kidney problems in African Americans with T2DM**?**

Research Question 5 (RQ5): Is Age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$5): Age is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a5): Age is associated with eye problems in African Americans with T2DM**?**

Research Question 6 (RQ6): Is medical skepticism and age associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$6): Medical skepticism and age are not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a6): Medical skepticism and age are associated with eye problems in African Americans with T2DM?

Research Question 7 (RQ7)*: Is medical skepticism and age associated with kidney problems in African Americans with T2DM?

Null Hypothesis (H_07): Medical skepticism and age are not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a7)*: Medical skepticism and age are associated with kidney problems in African Americans with T2DM?

Data Collection

MEPS (2016) collected the data (household component) from the U.S. civilian noninstitutionalized population except the military, those living in mental, criminal, and long term facilities. In 2016, 33,162 participants of all ages and genders participated in the study (MEPS, 2016). The sampling design implemented for the MEPS is a multi-stage sample design, which takes significant populations and divides then into stages (Lavrakas, 2008). The recruitment of participants occurred through telephone and mail surveys, with a response rate of 48.5% for the full year (MEPS, 2019).

Recoding of the variables of eye and kidney problems occurred before performing the data analysis, and the other variables, which were age, medical skepticism, and race, remained in the original format obtained from MEPS 2016. There was not a discrepancy reported from the data plan presented in Chapter 3. The cleaning process of the data consisted of making sure that there were no missing data and then formatted to align with the research questions. The total number of participants extracted was $N = 415$.

Descriptive Analysis

I generated descriptive statistics based on race, medical skepticism, eye, and kidney problems in Table 2. The participants were either Black or African Americans ($n=$ 408, 98.3%) or Black with other races ($n = 7$, 1.7%). Figure 2 shows a histogram of age of diagnosis with an average of age of 57.13. For medical skepticism, which asks the question "can overcome illness without medical help," the descriptive analysis for those who answered disagree strongly which was the highest at 63.4% ($n = 263$), disagree somewhat at 11.3% ($n = 47$), agree somewhat at 4.3 % ($n = 18$) agree strongly, agree strongly at 1.4% ($n = 6$), and 4.3% for uncertain ($n = 17$). For the participants who answered the questions, "has diabetes caused eye problems," the majority answered no at 59.8% ($n = 248$) and 19.8% ($n=82$) that answered yes. For the participants who answered the questions, "has diabetes caused kidney problems," the majority answered no at 73% ($n = 303$) and 6.7% ($n = 28$) that answered yes.

Table 2

Descriptive Statistics for Race, Eye Problem, Kidney Problems, and Medical skepticism

Variables	Category	Frequency	%
Race	African Americans(Black)	408	98.3
	African Americans(Black) with other race	7	1.7
	Total	415	100
Eye problems	No	248	59.8
	Yes	82	19.8
	Total	330	79.5
	Missing	85	20.5
	Total	415	100
Kidney problems	No	303	73
	Yes	28	6.7
	Total	331	79.8
	Missing	84	20.2
	Total	415	100
Medical skepticism	Disagree strongly	263	63.4
	Disagree somewhat	47	11.3
	Uncertain	17	4.1
	Agree somewhat	18	4.3
	Agree strongly	6	1.4
	Total	351	84.6
	Missing Not ascertained	23	5.5
	Inapplicable	41	9.9
	Total	64	15.4
	Total	415	100

Description of the Study Sample

In 2016, there were 33,162 participants of all ages and genders in the study (MEPS, 2016). The study population was representative of 415 African Americans and African Americans with other races. The average age of the participants was 57.13 years, shown in Figure 4.
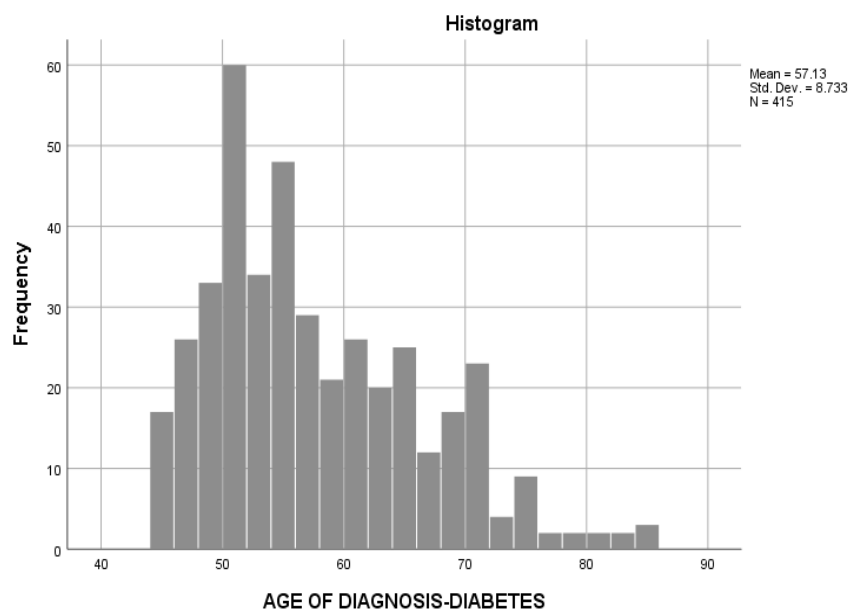

Figure 2. Histogram. Average age of participants in this current study.

Inferential analysis

The statistical assumptions involve making sure both binary and ordinal logistic regressions are appropriate and provide valid results. The data in the study met the assumptions. The statistical analysis is below and organized by the research questions and hypothesis.

Research Question 1

Research Question 1 (RQ1): Is Medical Skepticism associated with kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0$1): Medical Skepticism is not associated with kidney problems in African Americans with T2DM.

Alternative Hypothesis (H_a1): Medical Skepticism is associated with kidney problems in African Americans with T2DM.

The use of a logistic regression analysis helped to investigate if a relationship between medical skepticism and kidney problems existed. The predictor variable, medical skepticism, tested *a priori* to verify there was no violation of the assumption of the linearity of the logit. The predictor variable, medical skepticism, in the logistic regression analysis, was found not to contribute to the model. The unstandardized Beta weight for the Constant; B = [-.110], SE = [0.239], Wald = [0.214], p > .05. Thus, the null hypothesis is rejected, which is shown in Table 3.

Table 3

Statistical Analysis of Research Question 1

	B	S.E.	Wald	p-value	xp(B)
Medical Skepticism	-0.110	0.239	0.214	0.644	0.896
Constant	-2.285	0.395	33.464	0.000	0.102

Note: Variables in the equation

Research Question 2

Research Question 2 (RQ2): Is Medical Skepticism associated with eye problems in African Americans with T2DM?

Null Hypothesis ($H_0$2): Medical Skepticism is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a2): Medical Skepticism is associated with eye

problems in African Americans with T2DM.

The use of a logistic regression analysis helped to investigate if a relationship

between medical skepticism and eye problems existed. The predictor variable, medical

skepticism, tested *a priori* to verify there was no violation of the assumption of the

linearity of the logit. The predictor variable, medical skepticism, in the logistic regression

analysis, was found not to contribute to the model. The unstandardized Beta weight for

the Constant; B = [0.023], SE = [0.136], Wald = [0.029], p > .05. Thus, the null

hypothesis is rejected, which is shown in Table 4.

Table 4

Statistical Analysis of Research Question 2

	B	S.E.	Wald	p-value	Exp(B)
Medical Skepticism	0.023	0.136	0.029	0.866	1.023
Constant	-1.15	0.241	22.693	0.000	0.317

Note. Variables are in the equation

Research Question 3

Research Question 3 (RQ3): Is Medical skepticism associated with age in African

Americans with T2DM?

Null Hypothesis ($H_0 3$): Medical Skepticism is not associated with age in African

Americans with T2DM

Alternative Hypothesis ($H_a 3$: Medical Skepticism is associated with age in

African Americans with T2DM.

The completion of an ordinal logistic to assess the association between medical

skepticism and age in Blacks or African Americans was done. The predictor variable

tested *a priori* to verify there was no violation of the assumption of no multicollinearity.

The predictor variable, age, in the ordinal logistic regression analysis was not a

significant predictor in the model. The ordered log-odds is -0.021, SE= 0.015, Wald=

2.006, p > .05. An increase in age was not associated with increased odds of medical

skepticism, shown in Table 5.

Table 5

Parameter Estimates

		Estimate	Std. error	Wald	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold	[V_Illness_No_Meds=1]	-0.093	0.84	0.012	0.912	-1.738	1.553
	[V_Illness_No_Meds=2]	0.838	0.844	0.985	0.321	-0.816	2.491
	[V_Illness_No_Meds=3]	1.428	0.853	2.804	0.094	-0.244	3.100
	[V_Illness_No_Meds=4]	2.872	0.922	9.702	0.002	1.065	4.679
Location	V_Diabetes_Dx	-0.021	0.015	2.006	0.157	-0.05	0.008

Research Question 4

Research Question 4 (RQ4*):* Is Age associated with kidney problems in African

Americans with T2DM?

Null Hypothesis (*H*$_0$4*)*: Age is not associated with kidney problems in African

Americans with T2DM.

Alternative Hypothesis (H_a4): Age is associated with kidney problems in African Americans with T2DM**?**

The use of a logistic regression analysis helped to investigate if a relationship between age and kidney problems existed. The predictor variable, age (group 1), tested *a priori* to verify there was no violation of the assumption of the linearity of the logit. The predictor variable, age, in the logistic regression analysis, was found not to contribute to the model. The unstandardized Beta weight for the Constant; B = [0.023], SE = [0.022], Wald = [1.080], p > .05. Thus, the null hypothesis cannot be rejected, which is shown in Table 6.

Table 6

Statistical Analysis of Research Question 4

	B	S.E.	Wald	p-value	Exp(B)
Age	0.023	0.022	1.08	0.299	1.023
Constant	-3.705	1.305	8.065	0.005	0.025

Note. Variables are in the equation

Research Question 5

Research Question 5 (RQ5)*:* Is Age associated with eye problems in African Americans with T2DM?

Null Hypothesis (H_05): Age is not associated with eye problems in African Americans with T2DM.

Alternative Hypothesis (H_a5): Age is associated with eye problems in African Americans with T2DM**?**

The use of a logistic regression analysis helped to investigate if a relationship between age and eye problems existed. The predictor variable, age, tested *a priori* to

verify there was no violation of the assumption of the linearity of the logit. The predictor

variable, age (group 1), in the logistic regression analysis, was found not to contribute to

the model. The unstandardized Beta weight for the Constant; B = [-0.019], SE = [0.015],

Wald = [1.582], p > .05. Thus, the null hypothesis cannot be rejected, shown in Table 7.

Table 7

Statistical Analysis of Research Question 5

	B	S.E.	Wald	p-value	Exp(B)
Age	-0.019	0.015	1.582	0.208	0.981
Constant	-0.002	0.882	0	0.998	0.998

Note. Variables are in the equation

Research Question 6

Research Question 6 (RQ6)*:* Is medical skepticism and age associated with eye

problems in African Americans with T2DM?

Null Hypothesis ($H_0$6): Medical skepticism and age are not associated with eye

problems in African Americans with T2DM.

Alternative Hypothesis (H_a6): Medical skepticism and age are associated with eye

problems in African Americans with T2DM?

The use of a logistic regression analysis helped to investigate if a relationship

between eye problems and medical skepticism existed. The predictor variable, medical

skepticism, tested *a priori* to verify there was no violation of the assumption of the

linearity of the logit. The predictor variable, medical skepticism, in the logistic regression

analysis, was found not to contribute to the model. The unstandardized Beta weight for

the Constant; B = [0.004], SE = [0.137], Wald = [0.001], p > .05. Thus, the null

hypothesis cannot be rejected, which is shown in Table 8.

Table 8

Statistical Analysis for Research Question 6

	B	S.E.	Wald	p-value	Exp(B)
Age	-0.02	0.016	1.487	0.223	0.981
Medical Skepticism	0.004	0.137	0.001	0.975	1.004
Constant	-0.01	0.959	0.000	0.992	0.992

Note. Variables are in the equation.

Research Question 7

Research Question 7 (RQ7)*:* Is medical skepticism and age associated with

kidney problems in African Americans with T2DM?

Null Hypothesis ($H_0 7$): Medical skepticism and age are not associated with

kidney problems in African Americans with T2DM.

Alternative Hypothesis ($H_a 7$)*:* Medical skepticism and age are associated with

kidney problems in African Americans with T2DM?

The use of a logistic regression analysis helped to investigate if a relationship

between kidney problems and medical skepticism existed. The predictor variable,

medical skepticism, tested *a priori* to verify there was no violation of the assumption of

the linearity of the logit. The predictor variable, medical skepticism, in the logistic

regression analysis, was found not to contribute to the model. The unstandardized Beta

weight for the Constant; B = [-0.097], SE = [0.24], Wald = [0.162], p > .05. Thus, the

null hypothesis cannot be rejected, which is demonstrated in Table 9.

Table 9

Statistical Analysis of Research Question 7

	B	S.E.	Wald	p-value	Exp(B)
Age	0.014	0.024	0.35	0.554	1.014

Medical Skepticism	-0.097	0.24	0.162	0.688	0.908
Constant	-3.112	1.465	4.515	0.034	0.045

Note: Variables are in the equation.

Summary and Conclusion

I conducted this study with data from the MEPS 2016. The results of the data analysis concluded for RQ1, RQ2, RQ4, RQ5, RQ6, and the null hypotheses cannot be rejected. There was no statistically significant association in the variables used in the study. For RQ3, where I used ordinal logistic, the variable age was not associated with medical skepticism in African Americans or Blacks and African Americans or Blacks with other races. Chapter 5 will be a discussion of the interpretation of the finding, limitations, recommendations, social change, and implications of the study.

Chapter 5: Discussion, Conclusions and Recommendations

Introduction

The burden of T2DM is evident because of the indirect and direct costs estimated at $327 billion in the United States (American Diabetes Association, 2018). The likelihood of African Americans receiving a diagnosis of diabetes is twice as high compared to non-Hispanic Caucasians and death can occur from complications associated with diabetes specifically in middle and older aged individuals (Bell et al., 2016; U.S. Department of Health and Human Services Office of Minority, 2016). The topic of different intervention methods, such as diabetes self-management education (DSME) has been widely studied among researchers (Peek et al., 2007; Ziemer et al., 2008). However, participation from minorities, such as African Americans, in these studies is low (Melkus et al., 2010). The low participation rate could be due to a myriad of factors, such as not having access to healthcare, low health literacy, and not trusting the healthcare system. Medical skepticism is having doubts or not trusting the healthcare system (Fiscella et al., 1998). It has been noted that African Americans are apprehensive about receiving medical care secondary to historical mistreat (Noonan et al., 2016). A gap exists in the literature regarding the association between medical skepticism and health outcomes in African Americans with T2DM. The purpose of this quantitative study was to describe the relationship between medical skepticism and diabetes-associated kidney and eye problems utilizing secondary data from the MEPS 2016. In this chapter, I discussed the results, study limitations, and implications for social change. Last, I added recommendations for future research and concluding ideas about the findings of the study.

I conducted this study utilizing logistic for RQ1, RQ2, RQ4, RQ5, RQ6, and RQ7. Using logistic regression analysis, I found that the null hypothesis of this study could not be rejected, meaning that there was no statistical significance ($p > .05$) between the variables age, medical skepticism, eye, and kidney problems utilizing secondary data from the MEPS 2016. The results indicated that age was not a significant predictor for medical skepticism using ordinal logistic regression.

Interpretation of the Findings

African Americans make up 13.2% of the population diagnosed with T2DM compared to 7.6% of the non-Hispanic Caucasian population in the United States. African Americans are twice as likely to die from complications derived from T2DM compared to non-Hispanic Caucasians; complications include lower extremities amputation, heart attacks, and eye problems such as glaucoma and kidney disease (American Diabetes Association, 2017). Researchers have examined the barriers, intervention strategies, and disparities in the African American population. The results of the different studies about intervention methods consisted of having family, friends, and healthcare providers as a support system to help with managing the conditions and implementing diabetes self-management education (Byers, Garth, Manley, & Chlebowy, 2016; Lepard et al., 2015; Peek et al., 2007). Some of the barriers that may affect diabetes management consist of factors such as lack of access to care, patient's behavior, socioeconomic status, and lack of communication from the patient-provider about diabetes management (Peek et al., 2007). However, diabetes still disproportionately impacts African Americans compared to non-Hispanic Caucasians, although there is a plethora of research (Chatterjee et al., 2015).

One factor that has not been evaluated is medical skepticism, which occurs when people are doubtful about whether medical care can change their health status (Fiscella et al., 1998). Fiscella et al. (1998) posited that individuals living with chronic diseases have doubts about medical care and do not comply with prevention strategies and health care services, resulting in poor health outcomes. Medical skepticism reflects a belief system that can stem from past experience. For example, the Tuskegee Experiment (or the Study of Untreated Syphilis in Africa American) was an observational study on African American men in Tuskegee, AL, from 1932 to 1972 (Adams et al., 2017). The U.S. Public Health Services ran the study on more than 300 individuals without notifying the participants about their disease nor treating their disease even after the introduction of penicillin (Adams et al., 2017). This event has shaped African American's perception of the healthcare system negatively (Scharff et al., 2010). Medical skepticism may hinder diabetes management, which, therefore, can affect health outcomes associated with T2DM, such as eye and kidney problems, specifically in middle and older age African Americans.

After reviewing the literature, I conducted this study to describe the relationship between medical skepticism and diabetes-associated kidney and eye problems within the middle and older aged African American population. However, after collecting data for the seven research questions utilizing logistic and ordinal logistics regressions, my findings were not statistically significant, so, therefore, the study findings were disconfirmed.

Three theoretical and conceptual frameworks guided the study. The ABHM explained human behavior; specifically, health services usage, and patient-provider relationships (Andersen & Newman, 2005; Petrovic & Blank, 2015). The ABHM has three constructs that influence access to health care services. Predisposing factors are attributes predispose a person to vulnerability such as demographic characteristics (i.e., age and gender), belief systems (i.e., attitudes and values) and social structure variables (i.e., ethnicity and culture)(Andersen, 1995; Gelberg et al., 2000; Shi & Singh, 2017). Ogunsanya et al. (2016) indicated that the ABHM was associated with increased prostate cancer screening in African Americans. Pertaining to the research questions that grounded this study, I found that the results were not statistically significant, meaning there is no association between the medical skepticism, age, eye, and kidney problems. One of the key components in the SCT is the notion that people learn from their own experiences and others' behaviors, attitudes, and outcomes of those behaviors (Bandura, 1977). Ben et al. (2017) concluded that perceived racism was associated with poorer outcomes, such as missing appointments and medication non-compliance in African Americans. In regard to the research questions, they were all not statistically significant, which do not substantiate the previous research results. I used the PC-CSHC model in the study. The basis for this model consists of the idea of empowering and enhancing perceptions regarding the health care characteristics of minority patients by implementing a positive patient-provider relationship, which increases patient satisfaction and its ability to address health outcomes (Tucker et al., 2007). Nielsen, Wall, and Tucker (2016) examined Latino's perception toward patient-provider interactions (i.e., trusting the provider, having a sense of control when deciding treatment options, overall patient

satisfaction with the healthcare system) and treatment adherence. The results indicated there is no relationship between patient-perceived provider cultural sensitivity and general treatment adherence, which substantiate the findings of this study.

For the RQ1, RQ2, RQ4, RQ5, RQ6, and RQ7, logistics regression was used, and it was not statistically significant ($p > .05$). For RQ3, I used ordinal logistic regression, and it was not statistically significant ($p > .05$). The results were statistically non-significant. A reason for the non-significant results would be due to a small sample size of African Americans and African Americans with other races. Filho et al. (2013) explained that when the sample size increases, then the power also increases, which a significant relationship can be detected.

Limitations of the Study

Secondary data can produce bias, which can distort the association between both the disease and exposure and can ultimately affect the study's findings (Aschengrau & Seage, 2008). Many types of biases can occur, such as non-response, selection, and interviewer biases, which could have occurred at the time when data was collected from the first survey. Another limitation when utilizing secondary data could be missing data in the data set, which happened in the MEPS 2016. Missing data in the data set could cause inaccurate inference about the data (Cheng & Phillips, 2014). Another limitation would be another researcher other than the researcher for this current study collected the data, which may give rise to issues with reliability about how data were collected. The data set was cleaned, and the number of participants was reduced, which could have affected my study outcomes as well. Those mentioned above were out of my control, so there was no way for me to address them.

Recommendations

T2DM is a significant health concern in the United States and is the most common form of diabetes mellitus. It accounts for 90%–95% of all diagnosed cases. In the United States, African Americans with T2DM are disproportionately burdened by the disease compared to the general population including non-Hispanic Caucasians (Peek, Cargill, & Huang, 2007). African Americans with T2DM are more likely to be diagnosed with other complications of T2DM like end-stage renal disease, eye problems, and lower extremities than non-Hispanic Caucasians (U.S. Department of Health and Human Services Office of Minority, 2016). I conducted this study using MEPS 2016 data to describe the relationship between medical skepticism and diabetes-associated kidney and eye problems within the middle and older aged African American population. My findings showed that there was no statistically significant association in the variables used in the study.

Therefore, I make the following recommendations, considering the strengths and the limitations of this study and as well as the literature I reviewed.

The results of this study may open new research questions since the alternative hypothesis is rejected. Moreover, the study repeating this study should occur by using a larger sample size and by combining the MEPS 2016 dataset to an NHANES dataset, which may offer a better representation of the targeted population. Use NHANES to estimate trends in diabetes (Menke, Casagrande, Geiss, & Cowie, 2015).

Future researchers should look at a different set of variables such as a patient-provider's relationships, cultural sensitivity, and access to healthcare. For example, the literature suggested African Americans do not fully trust the healthcare system nor

healthcare providers as compared to non-Hispanic Caucasians, which may pose a problem with wanting to access healthcare (Armstrong et al., 2013). Michalopoulou et al.'s (2009) supports this recommendation by concluding that physicians and healthcare providers lack culturally sensitive and competency when treating African Americans for various illnesses, which prolonged getting access to healthcare. Hawkins and Mitchell's (2018) evaluated African American males' experiences with their providers by analyzing whether their physicians listened to them. The results indicated the participants were not listened to when they met with their providers to discuss their health (Hawkins & Mitchell, 2018). When individuals do not feel like their voices matter when it comes to their health, they are reluctant to engage with the healthcare system for medical needs. It can delay treatment and diagnosis (Hawkins & Mitchell, 2018).

Future researchers could investigate this topic by utilizing a qualitative study. The qualitative methodology allows researchers to capture a deeper understanding of multiple individuals' perspectives for a phenomenon (Trainor & Graue, 2014). Future researchers can utilize a qualitative methodology to examine the perceptions, opinions, and or behaviors of African Americans regarding medical skepticism, diabetes management, and the health outcomes as opposed to utilizing numbers. This method also gives the researcher flexibility by allowing the respondents to respond to data as it emerges during interviews, observations, or focus groups in an in-depth manner.

Future research should continue to explore medical skepticism at the organizational level of the healthcare system. The organizational level encompasses clinics and hospitals, which serves as an infrastructure and resource to help implement overall quality of care (Reid et al., 2005). The organizational structure is also essential in

implementing changes within the healthcare system. Such changes would come from educating both clinical and non-clinical professionals about what medical skepticism is and how it may impact health outcomes in general.

Medical skepticism can affect anyone and shape a person's belief systems (Fiscella et al., 1998). Future research should include other races, ethnic groups, and an examination of gender concerning medical skepticism and other chronic diseases such as stroke, heart disease, and cancer.

Implications

T2DM affects all races and ethnicities. However, African Americans are at higher risk of complications that may reduce their quality of life. The study may contribute to positive social change by providing evidence regarding the association between medical skepticism and the health outcomes for African Americans with T2DM. As noted in the study, there are numerous intervention methods such as diabetes management, but that is not enough for the African American population (Lepard et al., 2015; Peek et al., 2007). Expanding on the study to other ethnicities and age groups could result in lowering the numbers of diabetes cases and complications globally. The research could bring about positive change by lowering both indirect and direct health care costs, which could ultimately reduce the burden of T2DM. The study could also lead to new policies on the community, state, and federal levels concerning managing T2DM by taking an in-depth look at medical skepticism and how it can shape a client or patient's attitude. Educating healthcare providers is an important step in addressing medical skepticism, which could improve the overall health of individuals with T2DM.

With regard to methodological and theoretical implications, I conducted the current study using quantitative methods. I used three theoretical concepts and models which have implications of understanding why African Americans may not implement diabetes management. From the literature review, I focused on factors that may cause medical skepticism, which could hinder diabetes management and cause problematic health outcomes such as eye and kidney problems. However, there were no statistically significant findings in my research, so this topic must be further researched. Besides, this research may help clinicians understand medical skepticism and help to create a dialogue between the patient, the physicians, and the healthcare system, where communication is open and transparent (Goold & Klipp, 2002).

Conclusion

The purpose of this study was to generate numerical data to assess the relationship between medical skepticism and outcomes in middle and older age African Americans with T2DM. Instead, the data showed that there was no statistical association between medical skepticism, age, eye, and kidney problems. Although there is extensive research about diabetes management, including potential barriers, the problem still exists (Byers et al., 2016; Lepard et al., 2015; Peek et al., 2007). The problem is that that African Americans are two times more likely to be diagnosed with diabetes than non-Hispanic Caucasians and also die from complications associated with the condition, specifically middle and older aged individuals (U.S. Department of Health and Human Services Office of Minority, 2016; Bell et al., 2016). Medical skepticism exists as noted in previous literature (Bell et al., 2016; Cuffee et al., 2013; Spector, 2004). Future research studies must include several important components such as patient-provider relationships,

cultural sensitivity, access to healthcare, medical skepticism at the organizational level, and larger sample size to enhance the evaluation of health outcomes.

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Appendix A: Permission to Reprint Figure 3

2 messages

Tue 9/4, 12:29 PM

Good evening Dr. Tucker, my name is Pamela Bouyer and I wanted to know if I could use your image of the (PC-CSHC) Model as part of my dissertation. I am a student at Walden University.

The image came from Tucker, C. M., Marsiske, M., Rice, K. G., Jones, J. D., & Herman, K. C. (2011). Patient-Centered Culturally Sensitive Health Care: Model Testing and Refinement. *Health Psychology : Official Journal of the Division of Health Psychology, American Psychological Association*, *30*(3), 342–350. http://doi.org/10.1037/a0022967

Thank you so much.

Tue 9/4, 5:55 PM

Pamela Bouyer

Hi Pamela,

Yes, you may use the mentioned image. Just make sure that the source of this image is stated.

Thanks!

Dr. Tucker

Carolyn M. Tucker, Ph.D.