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Faith, Medication Adherence, and Cardiovascular Disease Among African American Churchgoers

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2020

Abstract

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MPH, University of Louisville, 2008

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

Getting African Americans to adhere to medical management strategies to reduce negative health outcomes of cardiovascular disease (CVD) and CVD risk factors may be challenging. The purpose of this cross-sectional quantitative study was to examine whether levels of faith in God's healing, when it comes to taking medications, was associated with medication adherence to hypertension and/or diabetes mellitus type 2 (DMII) medications, and whether those factors were associated with prevalence of CVD and uncontrolled symptoms of CVD risk factors, namely hypertension and DMII. Social cognitive theory provided the framework for the study. Data were collected from surveys completed by 102 African American church members with hypertension and/or DMII who were 18 years and older and were taking at least one medication. Chi-square results indicated a significant relationship between levels of faith in healing and hypertension medication adherence; the relationship was not significant for DMII adherence. Results of multivariable binary logistic regression indicated no significant relationships between levels of faith in healing/medication adherence and CVD prevalence and uncontrolled symptoms of hypertension and/or DMII. Findings may be used to help African American Christian church community members, who are not being reached by the effective educational programs, identify faith-based adherence issues.

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Dedication

This dissertation is dedicated to The Most High God whom I rely on for strength, peace, and a sound mind every day. I give glory to you for the mental and physical health that I sustained through this process. I appreciate the continued support from my family, closest friends (Toya and Kim), and coworkers. A special thanks to Girls Inc. who provided me with the tools, at a very young age, to believe in myself and to understand that I can do anything through hard work and dedication. Thank you for teaching me that "I am special because I am me"; these words carried me a very long way. To my mother, Linda, thank you for your constant prayers and believing in me: as your prayers were my guiding light. To my daughter, Khalia, who has encouraged me through this entire journey and the reason I did not give up even when times were hard, thank you my number one fan, my "Nut Nut." Thank you also to my partner, Jeff, who has been a great support system and my biggest cheerleader. To everyone who prayed for me, believed in me, and was patient with me, thank you. We did it!

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I would like to express a special thanks to my family and friends who provided me constant support throughout this educational journey. Most of all, I would like to give honor and praises to The Most High God. Thank you for your comfort that eased my fears and the strength that allowed me to complete this journey. Without my faith and trust in you, this journey would not have been possible. Again, I sincerely thank you all.

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Chapter 1: Introduction to the Study

African Americans have greater chronic disease health disparities when it comes to cardiovascular disease (CVD) and risk factors, hypertension, and diabetes (American Heart Association [AHA], 2016). Understanding cultural barriers could provide insight into best practices and the initiatives needed to decrease these health disparities and could lead to improvements in CVD health outcomes among African American communities. Chapter 1 provides a review of the devastation of CVD, hypertension, and diabetes among the African American community by identifying the background to the problem and presenting the purpose of this study, the research questions, the theory needed to address these questions, and the nature and significance of the investigation.

Background of the Problem

Annually, there are over 1.5 million incidents of heart attacks or strokes in the United States (Centers for Disease Control and Prevention [CDC], 2014a). African Americans have a greater chance of acquiring CVD and dying compared to any other ethnic group (AHA, 2016). Health conditions such as hypertension, obesity, and diabetes, which are also prevalent among African Americans, are notable risk factors enhancing the chance of developing CVD and stroke (AHA, 2016).

Almost one third of all persons living in the United States have been afflicted with multiple chronic illnesses, such as CVD and comorbidities such as diabetes and hypertension, which leads to increasing prescription drug use and increased chances for nonadherence (Čulig & Leppée, 2014; Fredericksen et al., 2018). According to Lam and Fresco (2015), the World Health Organization (WHO) has identified that only 50% of

patients with chronic conditions in industrialized nations adhere to their treatment regimens. Nonadherence is a devastating public health concern because of the negative health outcomes and increased health costs that are associated with these diseases (Lam & Fresco, 2015).

Studies suggested that when there are barriers, such as medical distrust or low health literacy, people will likely not adhere to their medication schedule (Fan, Lyons, Goodman, Blanchard, & Kaphingst, 2016; Newlin Lew, Arbauh, Banach, & Melkus, 2015). Many researchers have also explored church-based and community-based CVD interventions that referenced medication use. Powell-Wiley et al. (2013) and Schoenthaler et al. (2015) focused on African American church-based interventions that assessed baseline CVD risk factors and medication treatment among church members, whereas Resnick et al. (2014) used community-based intervention to examine the efficacy of an educational program aimed at improving risk factors such as diet, physical activity, and medication adherence/compliance. However, there is a gap in the literature pertaining to African American church-based medication adherence interventions; there has been minimal focus on understanding medication adherence based on levels of faith in healing among Black church members.

Although CVD disparities are more prevalent among African Americans, improvements can begin with being cognizant of contributing factors and becoming more adherent to reduction strategies such as medication adherence (AHA, 2016). Investigations that quantitatively address levels of faith, relative to healing, and medication adherence may improve understanding of underexposed barriers to

medication adherence. These types of investigations are needed to begin addressing the CVD health disparities among African Americans.

Statement of the Problem

Getting African Americans to adhere to medical management strategies to reduce negative health outcomes of CVD and CVD risk factors may be challenging. Because African American churches and religious practices are instrumental to the Black community, churches could serve as potential outlets for improving CVD health through the promotion of reduction strategies such as medication adherence. Powell-Wiley et al. (2013) examined how African American participants in a church-based intervention had increased rates of treatment and management when it came to many of the CVD risk factors compared to African Americans within the community, which would indicate some sort of increased compliance among Black church members.

Greer and Abel (2017) further explored medication adherence through a mixed-methods approach by assessing the relationship between religiosity/spirituality and medication adherence among African American churchgoers, which provided support for religious practices, such as prayer, and its positive association to well-being and disease management; however, Greer and Abel also found that there were discrepancies in adherence rates among other published studies. According to the Newlin Lew et al. (2015), qualitative studies showed contradictory views regarding self-management and faith: Findings emphasized how African American participants' adherence and nonadherence to medical management was based on their level of faith in God and religious teachings. Although there was an understanding among researchers that some

form of faith in God, as it pertains to religious/spiritual practices, played a significant role in treatment and management of CVD risk factors, it was not known how the level of faith in God's healing was associated with medication adherence, CVD prevalence, and uncontrolled symptoms of CVD risk factors among African American Christian churchgoers.

Purpose of the Study

The purpose of this study was to examine whether the independent variable, level of faith in God's healing when it comes to taking medications, was associated with the dependent/independent variable, medication adherence to hypertension and/or diabetes mellitus type 2 (DMII) medications, and whether those factors were associated with the two dependent variables: prevalence of CVD and uncontrolled symptoms of CVD risk factors, namely hypertension and DMII, as measured by hospitalizations for severe high blood pressure and/or hyperglycemia among Black Christian churchgoers who were 18 years old and over with hypertension and/or DMII who attended African American Christian churches in the Cincinnati metropolitan area of Ohio, and had been prescribed at least one medication to treat the specific disease. The attempt to determine the relationships between faith in healing, medication adherence, and CVD prevalence and uncontrolled symptoms of CVD risk factors were done through the use of a quantitative approach and a cross-sectional design. Data were collected through surveys to examine the relationship between members' level of faith in healing and medication adherence to hypertension and/or DMII medications, CVD status, and uncontrolled symptoms of hypertension and/or DMII, specifically severe high blood pressure and/or hyperglycemia.

Other significant background and demographic data, including covariates (age, gender, insurance status, number of medications prescribed [oral and/or injections] for hypertension and/or DMII, and education level) were also collected.

Research Questions and Hypotheses

Six quantitative questions were used to guide this investigation:

RQ1: What is the association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII?

$H_0$1: There is no association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

H_A1: There is an association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

RQ2: What is the association between levels of faith in healing and prevalence of cardiovascular disease (CVD) among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

$H_0$2: There is no association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A2: There is an association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

RQ3: What is the association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

H_03: There is no association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A3: There is an association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

RQ4: What is the association between medication adherence to hypertension and/or DMII medications and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

H_04: There is no association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A4: There is an association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

RQ5: What is the association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0 5$: There is no association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

$H_A 5$: There is an association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

RQ6: What is the association between medication adherence to hypertension and/or DMII medications and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII?

$H_0$6: There is no association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

H_A6: There is an association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

Theoretical Foundation

The theoretical framework that guided this investigation was Bandura's social cognitive theory. Bandura (2000) explained how social cognitive theory assumes an agentic viewpoint that presumes people are manufacturers of what they are exposed to and formulators of their circumstances. The capacity in which individuals think and act so that they are able to oversee circumstances that influence their lives is categorized as either personal, proxy, or collective (Bandura, 2000). The social cognitive theory constructs, personal or self-efficacy and collective efficacy, were addressed in the current study through the use of African American churches that represented existing social networks.

Having a strong belief in personal efficacy influences whether a person will engage in actions that allow them to deal effectively with difficult situations, how much the individual will apply themselves, and whether those efforts can persist in the presence of deterrent and adverse situations (Bandura, 1977). Continual engagement in activities

that may be perceived through a personal lens as being portentous allows for a degree of competency, which further increases self-efficacy while diminishing behaviors that are unwarranted (Bandura, 1977). The construct collective efficacy includes people's collaborative trust in their joint ability to precipitate acceptable consequences (Bandura, 2000). Bandura (2000) defined this construct as working harmoniously together on a shared vision to execute specific actions.

Theoretical constructs, personal and collective efficacy, were appropriate in grounding the current study. The concept of social networks facilitates supportive systems that enhance self-efficacy, which plays a huge role in sustaining healthy behaviors and complying with therapeutic regimens (Shaya et al., 2013). The role of a person's level of faith in God's healing and their affinity to the church was used as the operational construct in this framework. The constructs addressed in this investigation and applications in previous studies are further discussed in Chapter 2.

Nature of the Study

The investigation was quantitative in nature and included a cross-sectional survey design. The quantitative approach aligned with the notion that associations are measured through statistical methods. Any positive associations found between levels of faith in healing (independent variable) and medication adherence to hypertension and/or DMII medication(s) (dependent variable) or any positive associations between levels of faith in healing and medication adherence (both independent variables) and CVD prevalence and uncontrolled symptoms of hypertension and/or DMII (dependent variables) among African American Christian congregants with hypertension and/or DMII were based on

statistical measurements. The level of faith in healing, when it comes to taking medications, that was associated with positive medication adherence efforts and maintenance of CVD risk factors was most supportive of the concepts of the social cognitive theory. To determine whether there were associations, I gathered data from congregants at a moment in time through a cross-sectional study, which served as a snapshot for understanding each congregant's level of faith in healing, medication adherence status, CVD status, uncontrolled symptoms of hypertension and/or DMII, medical background, and other demographic information.

Definition of Terms

African American: A term that the U.S. Office of Management and Budget defined in the 2010 Census as a Black American who has roots from any of the Black ethnic categories of Africa (Rastogi, Johnson, Hoeffel, & Drewery, 2011).

Cardiovascular disease (CVD): A condition of the heart and blood vessels that is generally associated with atherosclerosis (AHA, 2017).

CVD health disparity: Dissimilarities among individuals that influence how often cardiovascular disease has an impact on the lives of a specific class of people (CDC, 2014b).

CVD risk factors: Diseases or practices that increase a person's chance of being stricken with CVD or that enhance the likelihood of the progression of the disease, such high blood pressure, high blood cholesterol, diabetes and prediabetes, smoking, overweight or obese, lack of physical activity, family history of having heart disease

prematurely, history of preeclampsia during pregnancy, unhealthy eating habits, and age (National Heart, Lung, and Blood Institute, n.d.).

Diabetes Mellitus 2 (DMII): The most common type of diabetes (American Diabetes Association, n.d.). The body is unable to utilize insulin appropriately (American Diabetes Association, n.d.).

Hyperglycemia: An unusually elevated blood glucose (sugar) level that is an indicator of diabetes and prediabetes (Stoppler, n.d.).

Hypertension: High blood pressure that consists of having a persistent increased blood pressure in which the top number (systolic pressure) is above 140 mmHg and the bottom number (diastolic pressure) exceeds 90 mmHg (Shiel, n.d.).

Intervention: A mixture of program components or action plans that are constructed to induce modifications in a person's actions or enhance the level of individual or societal health (Missouri Department of Health and Senior Services, n.d.).

Social networks: A system of connections based on the idea of trust and exchange that promote the trading of resources that improve a person's life (Shaya et al., 2013).

Spirituality and religiosity: Religiosity is denoted as being an actionable reference as exemplified by engaging in particular religious acts and practices according to a person's beliefs, such as meditation, praying, abstaining from food as a reverence to God, Bible study, and gathering for worship service (Kretchy, Owusu-Daaku, & Danquah, 2013). Spirituality is denoted as pertaining to an emotional state or feelings of admiration, serenity, and a closeness with a Higher Power (Kretchy et al., 2013).

Validity and reliability: Validity is the extent to which a tool will assess what it was intended to assess (CDC, 2016a). Reliability is the extent to which a tool will manufacture outcomes that are unchanging even during separate instances when change is not apparent (CDC, 2016a).

Definition of Study Variables

Independent Variables

Collective efficacy: People's collaborative trust in their joint ability to complete and achieve a task (Bandura, 2000).

Level of faith in God's healing: The degree in which a person believes God is the sole healer, when it comes to taking medications.

Medication adherence: Taking medications routinely according to the provider's prescription, which is referred to as having low, medium, and high adherence according to the Medication Adherence Questionnaire (Morisky, Green, & Levine, 1986).

Self-efficacy: A person's perceived notion of their ability to perform actions that are mandatory to accomplishing particular activities (Carey & Forsyth, n.d.).

Dependent Variables

CVD prevalence: The number of church members determined to have CVD.

Uncontrolled symptoms of diabetes: Having an elevated blood sugar level (hyperglycemia) that led to a hospital admission for inpatient treatment to correct a blood sugar level that was not controlled at home, measured as uncontrolled symptoms of diabetes if two or more hospital admissions occur within a given year.

Uncontrolled symptoms of hypertension: Having an elevated blood pressure that led to a hospital admission for inpatient treatment to correct a blood pressure level that was not controlled at home, measured as uncontrolled symptoms of hypertension if two or more hospital admissions occur within a given year.

Covariates

Age: A characteristic pertaining to the number of years old; eligible participants were defined as ages 18 years and over.

Educational level: The highest grade completed, which was defined as elementary school completion, some high school, high school graduate, some college/trade/vocational school, or college/trade/vocational school graduate.

Gender: A characteristic defined as being either a man or a woman.

Insurance status: Having or not having private or government health benefits that cover medical expenses.

Number of medications prescribed: The number of medications (oral and/or injections) that had been ordered by the doctor to treat the participant's disease, which was measured for hypertension and/or DMII.

Assumptions

General assumptions of the study included that all participants attended church because they had some religious/spiritual connection and that participants were Christians who believe in God as described in the Holy Bible. These assumptions were essential to the notion that churchgoers have a connection to God and through that faith have an understanding of his healing power as proclaimed in the Bible. I assumed that

participants perceived church officials and members of the church as a supportive network, which reinforces the strong level of trust that a person has in their church community. I also assumed that participants had an understanding of their hypertension and/or DMII diagnosis and an understanding that their medications had been prescribed to assist in managing their disease, so that adherence was not based on unintentionality from not knowing the reason medications were prescribed but rather an intentional behavior. Participants were assumed to have had the medications that were prescribed in their possession. I assumed that participants were accurately agreeing that they had been diagnosed with hypertension and/or DMII, and that they had been prescribed at least one or more medications (orally or through injection) to treat their hypertension and/or DMII. I also assumed that participants would truthfully answer questionnaire questions to the best of their ability to prevent skewing of the data.

Scope and Delimitations

Because certain aspects of the investigation, such as faith in healing and its connection to medication adherence, were underexplored from a quantitative perspective, these elements were chosen as the primary focus of the investigation so that quantitative measures could be used to determine associations between the different levels of faith in healing, when it comes to taking medications, and adherence. Both of those factors were scaled to better understand degrees of faith in healing, when it comes to taking medications, and medication adherence. Scales that were designed to represent low to high levels of faith in healing and medication adherence were used, as they allowed for associations to be determined based on the different levels that were identified.

Although boundaries are important to assess the needs of specific populations, including only particular traits could have limited the generalizability of the findings, because any assumptions would have pertained to populations with similar boundaries. The boundaries that were set for the study pertained to race, age, faith, type of church, location, disease status, and treatment. Data that were gathered were limited to subjects who were African American, 18 years and over, of the Christian faith, attendees of churches that are defined as African American Christian churches in the Cincinnati metropolitan area of Ohio, diagnosed with hypertension and/or DMII, and prescribed one or more medication(s) to treat their hypertension and/or DMII. These boundaries were chosen because of the CVD health disparities that African Americans face in Hamilton County and the surrounding areas.

The Cincinnati metropolitan area comprises counties from Kentucky, Indiana, and Ohio that are located around Cincinnati. Hamilton County, which is the county of Cincinnati, is the essence of the Cincinnati metropolitan area ("Cincinnati, Ohio Population," 2020). The distribution of Blacks (Non-Hispanic) in Hamilton County, Ohio is only 25.5% of the total population; however, this population had the highest age-adjusted death rate from CVD (554.7 per 100,000) compared to any other race (CDC, n.d.-a). White (Non-Hispanic), who make up 65.5% of the Hamilton County population, had a CVD death rate of 440.5 per 100,000 (CDC, n.d.-a). Because of these overwhelming CVD mortality statistics, it was reasonable to use African American churches to conduct CVD church-based research, especially because of the long history of a trusting relationship between African Americans and the church (see Harmon, Kim,

Blake, & Hebert, 2014). Cincinnati Metropolitan African American churches were targeted and included in a research strategy that aimed to identify CVD prevalence among African American Christian churchgoers with high blood pressure and diabetes disparities and to understand the medication adherence barriers that these individuals face, which could lead to improvements in CVD health.

Another boundary in this investigation pertained to the theoretical framework. Although there are many facets of the social cognitive theory, the study was limited to two of the constructs: self- and collective efficacy. These two factors had been recognized throughout the literature as being key concepts in health promotion and disease prevention. Their impact on behavioral change made assessing these variables relevant to the study.

Limitations

According to Fan et al. (2016) and Newlin Lew et al. (2015), medical distrust and low health literacy are linked to nonadherence; however, these two factors were not variables in the survey. The factors could have posed limitations to the study only if they met the conditions of being confounding and were associated with the independent and dependent variables (see Laerd dissertation, n.d.-c). Because this investigation was not intended to have experimental elements, the expectation was not to determine a cause and effect but to assess associations. Although education level is not a measure of literacy, data were obtained to determine the educational level of the participants, which has been found to be associated with adherence (see Abel & Greer, 2017). Education level was a

factor that could have been controlled through the use of statistical analysis had it been considered appropriate for the investigation.

The investigational plan was to survey African American church members from at least two different African American Christian churches in the Cincinnati metropolitan area of Ohio. Because the plan was to survey subjects from only African American Christian churches, generalizations about the results were limited to African American Christian church members of similar denominations in the Cincinnati metropolitan region. Generalizations cannot be made to the entire African American church population. Randomization is a sampling technique to reduce selection bias by making sure that the investigational sample is a portrayal of the population (Šimundić, 2013). Selection bias in the investigation may have been an issue because randomization was not used and aspects such as income of the participants were not the focus of the investigation (see Šimundić, 2013). The sample population may not have been representative of the African American population as a whole because there could have been an under- or overrepresentation of a specific income level than there would have been if participants had been randomly selected (see Šimundić, 2013).

The study may have been limited by the size of the study population because there were not as many participants who responded to the survey as expected. Having a smaller survey population could have affected the statistical analysis, and untrue assumptions could have been viewed as true (see Faber & Fonseca, 2014). By surveying members from more than one church, the research pool was increased in hopes of obtaining the

required number of participants; however, the inability to obtain churchgoer participation was still an issue.

Biases, such as the selection of churches and interpretation of data obtained from those churches, could have also limited generalizability of the findings. If churches were chosen only because of their known prominence or because of the health educational services they are known to provide to the community, a favorable outcome for the institution because of its status in the community and the belief that the church should possess a positive outcome due to that influence could have been encouraged. There could also have been encouragement of a reversed outcome for churches that lack resources. To mitigate these biases, I chose churches from an electronic site that denoted them for being predominately Black or historically Black churches in the area. This process allowed for a variety of churches to be chosen (large, medium, and small) based solely on their African American ties to the community. Of those churches, only two churches could be retained.

Significance of the Study

This investigation addressed a gap in the literature by focusing on the intersecting point between a person's level of faith in healing and medication adherence and the individual or collective role they play in CVD prevalence and uncontrolled symptoms of hypertension and/or DMII. Educational programs have made successful strides relative to CVD risk-reduction behaviors, such as compliance to risk factor medications; however, these programs are still not reaching the African American community (Resnick et al., 2014). Few studies focused on the Cincinnati metropolitan African American church

community as a social network to increase positive faith-based behaviors to reduce CVD and CVD risk factors. The current study was conducted to determine whether levels of faith in healing and medication adherence were associated with CVD prevalence and uncontrolled symptoms of hypertension and/or DMII, and whether hypertension and/or DMII medication adherence was modified by levels of faith in God's healing if associated with uncontrolled symptoms.

The findings of this study were relevant because many African American congregants espouse the idea that faith is an integral part of healing. Having a better understanding of the interplay of these constructs could help African American church community members who are not being reached by the effective educational programs identify faith-based adherence issues. Practitioners could capitalize on the church as a social network and the connectivity between the church and its members by providing accessible faith-based initiatives so that devout African American patients would be given the opportunity to participate in programs that combine health and faith, positioning them to want to engage in healthier behaviors such as adhering to medication regimens. Because ministers hold a prominent position and are instrumental as trusting figures within the church community, they play a vital role in sparking actions that could lead to better health outcomes because they are responsible for advocating for the spiritual, physical, and inner health of members in the church (Collins, 2015). Ministers have a contributory role in deciding the initiation process or the favorability of strategies being implemented within the church; therefore, practitioners and other health promotion

agencies should seek to strengthen their relationship with churches to gain the trust of devout African American patients as well as the community (Collins, 2015).

Summary and Transition

Research has shown that approximately 44% of African American men and 48% of African American women have developed a type of CVD, which encompasses heart disease and stroke (CDC, 2014a). African Americans are also affected by principle CVD risk factors (hypertension and diabetes), affirming the CVD health disparity that is plaguing the African American community (AHA, 2016; CDC, 2016b, 2016c). Although the research has revealed successful CVD management initiatives that addressed barriers to medication adherence, there were gaps in understanding faith-based barriers among African American churchgoers; therefore, a heart disease study that addressed faith-based barriers, such as medication adherence relative to faith, was necessary to further understand CVD disparities.

The use of established social networks, such as churches, assisted in better understanding the church populations' CVD prevalence and the faith-based barriers these populations face. There have been notable advantages to social network inspired interventions to control CVD (Shaya et al., 2013). According to Shaya et al. (2013), a lack of social support in patients who have and have not been afflicted with CVD corresponded to a 50-100% higher chance of having coronary heart disease. The current study addressed CVD disparity and faith-based barriers by assessing the association between faith in healing, when it comes to taking medications, and/or medication

adherence and CVD prevalence and uncontrolled symptoms of hypertension and/or DMII through the guidance of the social cognitive theory.

Efficacy is an essential concept of the social cognitive theory. The theory was used to provide insight into the importance of efficacy, whether self- or collective, in CVD health behavioral outcomes. Because self- and collective efficacy pertains to the capacity in which individuals think and act so that they are able to determine their behavior, strong self- or collective efficacy should play a vital role in positive medication adherence (see Bandura, 2000).

Chapter 2 provides a literature review that details different aspects of CVD disparity. The literature review addresses the utilization of social networks as reduction mechanisms to CVD health inequalities. This comprehensive exploration of CVD disparity also includes assessing the dynamics of spiritual beliefs relative to medication adherence, barriers to medication adherence, and the role of efficacy (self- and collective) in positive adherence behaviors.

Chapter 2: Literature Review

The purpose of this study was to examine whether level of faith in God's healing, when it comes to taking medications, was associated with medication adherence to hypertension and/or DMII medications, and whether those factors were associated with prevalence of CVD and uncontrolled symptoms of CVD risk factors, namely hypertension and/or DMII, as measured by hospitalizations for severe high blood pressure and/or hyperglycemia among Black Christian churchgoers in the Cincinnati metropolitan region who met selection criteria. African Americans have a higher prevalence of hypertension and diabetes, which increases their chance of developing CVD (AHA, 2016). Being exposed to different chronic illnesses such as CVD, hypertension, and diabetes also increases the likelihood of medication nonadherence (Čulig & Leppée, 2014; Fredericksen et al., 2018). Although studies have addressed medication adherence barriers, such as medical distrust or low health literacy, and successful educational CVD medication adherence interventions, these educational interventions are not reaching African American communities with CVD disparities, and the role of faith in healing, which is another barrier to medication adherence among African Americans, is still unclear (Resnick et al., 2014). The literature review was used to highlight CVD health disparity among African American churchgoers and to understand any known associations that may exist between faith in healing and/or medication adherence and CVD prevalence and uncontrolled symptoms of hypertension and/or DMII. I examined the role of relevant factors, such as social networks as CVD reduction strategies, African American churchgoers as a targeted population, barriers to

medication adherence, spiritual/religious beliefs and medication adherence, validated tools for assessing medication adherence, and self-efficacy and medication adherence along with medication adherence self-efficacy scales.

Literature Search Strategy

The literature search strategy was composed primarily of accessing articles from Walden University databases. Databases searched included Thoreau Multi-Database Search, Medline with Full Text, and ProQuest Central. The key search terms included *social networks*, *churches*, *African Americans*, *medication compliance* and *adherence*, *diabetes*, *hypertension*, *cardiovascular disease* and *heart disease*, *medication adherence scales*, *religion*, *faith*, *self-efficacy*, and *cumulative efficacy*. Combination search terms were used to narrow searches. Most of the combined term searches were done using the *and* feature with three or more terms, for example social networks and church and African American, medication adherence and diabetes and African American, and self-efficacy and medication adherence and cardiovascular disease and African American and church. Only publication dates after December 31, 2012 were considered for review, and searches were limited to peer-reviewed and full-text articles. While searching these databases, I noticed that results narrowed significantly after utilizing a 5 year or shorter limit for the publication dates. For instance, while searching the Thoreau database using search terms *social networks* and *church* and *African Americans*, I found 135 articles without a date range being specified; however, only 48 articles were recovered when the date range was limited to January 2013 to December 2017. Only two articles were usable based on pertinence to the investigation.

Roughly 160 articles were retrieved and reviewed to determine whether they were associated with the general topics of the investigation. Approximately 25 articles that met the criterion of being 5 years old or less were deemed to be relative to the general topics, such as churches as social networks and CVD health among African Americans, spiritual beliefs and medication adherence among African Americans, CVD risk factors and behaviors among African American church members, self-efficacy and hypertension/diabetes medication adherence among African Americans, and self-efficacy and medication adherence scales. Additional search engines such as Google, Google Scholar, and PubMed were also used to locate additional articles pertinent to the investigation. More than 10 peer-reviewed full-text articles were found using these search engines.

Chronic Disease Disparities Among African Americans

Health disparity is associated with the inequality that exists in the level of health among classifications of people; certain populations have greater disease frequencies, mortalities, and declines in health compared to other populations (National Institutes of Health, 2017). According to the National Institutes of Health (2017), the different classifications of people who suffer from disparities are represented by race, ethnicity, immigrant status, disability, sex or gender, sexual orientation, geography, and income. The role of social determinants is consequential to the health outcomes among certain groups of people (Office of Disease Prevention and Health Promotion, 2020). To further support the disparities that exist in health among races, the CDC (2017) indicated that new studies have revealed that young adult African Americans have been afflicted with

or are dying from an array of diseases that White Americans generally develop later in life. Developing an illness as a young adult may also induce the mortality of that young adult (CDC, 2017). Chronic illnesses and comorbidities that are affecting young adult African Americans may be dormant or may not be identified until later in life (CDC, 2017). Typically, health disparities are relative to circumstances surrounding economic and social factors that are more widespread among African Americans, such as the inability to pay for health services (CDC, 2017). African Americans have succumbed to many different health disparities; however, CVD remains a major threat because of the population's accelerated chances of developing two of the comorbidities (hypertension and diabetes) that significantly increase a person's risk of developing the disease (AHA, 2016; CDC, 2016b, 2016c; U.S. Department of Health and Human Services, 2016).

Cardiovascular Disease

Heart disease/CVD is a condition of the heart and blood vessels that is generally associated with atherosclerosis (AHA, 2017). Atherosclerosis is plaque accumulation that leads to the hardening and narrowing of arteries causing the most prevalent form of CVD, coronary artery disease, which is a prominent contributor to heart attacks and strokes (AHA, 2017; CDC, 2015). CVD can also persist as heart failure, or the heart's inability to pump blood effectively; arrhythmias, or the abnormal beating of the heart; and valve disorders, or improper functioning of the heart valve, which give rise to conditions known as valve stenosis, valve regurgitation, and valve prolapse (AHA, 2017).

CVD is the leading cause of death among all people living in the United States, with strokes also being a major contributor to deaths (AHA, 2016). Based on national

estimates, there are over 1.5 million incidents of heart attacks or strokes in the United States annually (CDC, 2014a). According to the CDC (2016b, 2016c), CVD contributes to 1 in every 4 male and 1 in every 4 female deaths. Studies have revealed that symptoms are silent in half of the men who die unexpectedly from coronary artery disease, with estimates of males suffering unforeseen cardiac incidents ranging from 70% to 89% (CDC, 2016b). The CDC (2016c) has also recognized that nearly two thirds (64%) of women who die unexpectedly from coronary artery disease had no warning signs. These estimates support the idea that symptoms are not automatic indicators of risk for CVD (CDC, 2016c).

There is a notable CVD disparity among African Americans. Research has shown that approximately 44% of African American men and 48% of African American women have developed a type of CVD, which encompasses heart disease and stroke (CDC, 2014a). Contributing factors of CVD consist of high LDL cholesterol, family history, smoking, unhealthy eating habits, lack of physical activity, and overindulging in alcoholic beverages; however, conditions such as hypertension, obesity, and diabetes, which are most prevalent among African Americans, are notable risk factors increasing African Americans' chances of developing CVD and stroke (AHA, 2016; CDC, 2016b, 2016c).

Hypertension

High blood pressure/hypertension is a disease defined by the ongoing pressure of blood against the arterial walls, in which the pressure becomes so elevated that it can lead to further health issues (Mayo Clinic, 2018). Elevated blood pressure is precipitated by

forcing blood through narrowed arteries (Mayo Clinic, 2018). There are two types of hypertension: primary/essential hypertension in which the cause is generally unknown and advances over time, and secondary hypertension that is induced by a primary condition and usually emerges abruptly (Mayo Clinic, 2018). Hypertension is one of the primary contributing factors for developing CVD and is particularly associated with Americans who have heart attacks and strokes (CDC, 2014a; Pérez-Escamilla, Franco-Trigo, Moullin, Martínez-Martínez, & García-Corpas, 2015). To be classified as having hypertension, a person must have persistent accelerated blood pressures in which the top number (systolic pressure) exceeds 140 mmHg and the bottom number (diastolic pressure) exceeds 90 mmHg (Pérez-Escamilla et al., 2015; Shiel, n.d.). Acceptable blood pressure levels can be maintained through strategies such as consuming a healthy diet with sodium reduction, physical activity that consists of moderate-intense activity (30 minutes a day for 5 days a week), and adhering to prescribed medication regimens (CDC, 2014a).

Hypertension is accountable for approximately 14% of all deaths globally (Pérez-Escamilla et al., 2015). The African American population has a significant presence of hypertension (AHA, 2016). Hypertension takes a more devastating course among African Americans than Whites because it occurs at earlier stages in life, and African Americans have a greater chance of dying from associated illnesses such as stroke, renal complications, and CVD (Abel & Greer, 2017; AHA, 2016). Studies have indicated that African Americans possess a gene that makes them hypersensitive to salt, which increases their chance of developing hypertension (AHA, 2016). According to Pérez-

Escamilla et al. (2015), hypertension is responsible for diminishing an individual's quality of life and increasing the prospect of encountering obstacles to maintaining well-being. Because hypertension can cause irreparable damage to the heart without notable manifestations, it is known as the silent killer (AHA, 2016).

The AHA (as cited in Abel & Greer, 2017) has indicated that African American women (46.1%) have the highest widespread presence of hypertension in the United States, and are one of the highest groups globally. The AHA (as cited in Abel & Greer, 2017) also recognized African American men (44.9%) as being the second highest group to have hypertension. According to the CDC (2014a), 2 out of 5 African American adults live with hypertension, while under half are able to maintain blood pressure levels at acceptable levels. The inability to maintain healthy blood pressure levels has been linked to a lack of adherence to antihypertensive regimens, with one study revealing that the commonality of not adhering to antihypertensive regimens was at an average of 30% (Pérez-Escamilla et al., 2015). There are many reasons why African American women may not adhere to hypertension medication regimens, including dealing with different stressors, not having any symptoms, lower educational level, cost and lack of financial resources, level of trust in health care providers, and lack of social support (Abel & Greer, 2017).

Diabetes

Diabetes is a chronic illness in which there is an impairment in the way the body breaks down food to provide energy (CDC, 2020). Most of the food that is consumed is processed into sugar, better known as glucose, and is excreted into the bloodstream

(CDC, 2020). The hormone insulin is produced by the pancreas and regulates the amount of glucose in the blood. Diabetics either do not produce the amount of insulin needed or do not use the insulin that is produced properly (CDC, 2020). There are three different types of diabetes (type 1, type 2, and gestational); however, the current study focused only on type 2 (DMII), which occurs when the body does not utilize the insulin that is produced properly, allowing for abnormal blood sugar levels (CDC, 2020). According to the CDC (2020), 9 out of 10 people affected by diabetes have developed DMII.

African Americans have nearly twice the chance of developing diabetes as non-Hispanic Whites and have a greater chance of developing secondary conditions from diabetes, including end-stage kidney disease and amputations of the lower limbs (AHA, 2016; Office of Minority Health [OMH], 2016; Sleath et al., 2016). In 2014, the National Health Interview Survey (as cited in OMH, 2016) found that 13.4% of non-Hispanic Blacks 18 years and older were identified as having had diabetes, whereas 7.3% of non-Hispanic Whites were identified as having had the condition. Another study that was conducted in 2013 (as cited in OMH, 2016) indicated that African Americans had twice the chance of dying from diabetes as Whites.

There are disparities in the number of African Americans with DMII and the number of untimely deaths associated with the disease, which is approximately 2 to 3 times greater compared to Whites (Newlin Lew et al., 2015). These disparities have been attributed to the imbalance between successful DMII prevention and management strategies and the actual treatment that was delivered (Newlin Lew et al., 2015). According to Newlin Lew et al. (2015), research has shown that strategies that have been

instituted to prevent and manage DMII slowed the development of the disease for 10 years and stopped the occurrence among adults with prediabetes. African Americans with DMII or with a greater risk of developing the disease have recognized the positive impact that behaviors pertinent to prevention and treatment strategies have on the effects of diabetes (Newlin Lew et al., 2015). Because of the health disparities among African Americans with diabetes and hypertension, the burden associated with chronic diseases was an indicator that there was a need to assess the population at risk, the barriers hindering positive outcomes, and behaviors, such as medication adherence, that could lead to better management.

Medication Nonadherence and Hospitalizations

Medication nonadherence is devastating the healthcare community because of the frequency of occurrence, the negative health outcomes, and the increased healthcare cost associated with the behavior (Čulig & Leppée, 2014). Patients who have chronic conditions have a higher chance of not adhering to medication regimens because they are generally prescribed many different medications (Čulig & Leppée, 2014; Lam & Fresco, 2015). Over 30% of hospitalizations pertaining to medications are related to medication nonadherence (Lam & Fresco, 2015).

Diabetes Hospitalizations

People with diabetes have a three times greater likelihood of being admitted to the hospital compared to nondiabetics (Corsino, Dhatariya, Umpierrez, 2017). Corsino et al. (2017) revealed that in 2012 there were over 7.7 million hospital admissions in the United States that consisted of people who had diabetes. The estimated expenditure for

diabetes in the United States in 2012 was $245 billion (Corsino et al., 2017). The overall cost consisted of expenses for medical services ($176 billion) and decreased productivity ($69 billion) (Corsino et al., 2017). Hospital inpatient services constituted most of the cost for medical services (43%) (Corsino et al., 2017). Hyperglycemia, which is the increase in blood glucose that is manifested through a blood sugar level greater than 140 mg/dl, can be identified in 22-46% of patients admitted to the hospital without life-threatening illnesses (Corsino et al., 2017). Generally, people with uncontrolled hyperglycemia are hospitalized and require intravenous insulin to gain glycemic control, which is presumably a costly medical service (Corsino et al., 2017). Patients' views, thought processes, understanding of their condition, economic resources, and family and social connections that provide assistance have been viewed as factors that influence adherence to therapeutic regimens (Steyl & Phillips, 2014). Understanding the costly nature of treating uncontrolled symptoms of diabetes through inpatient services could promote the idea that adhering to a medication regimen as prescribed would be a more beneficial and cost effective way to manage diabetes.

Hypertension Hospitalizations

In hypertension, nonadherence to blood pressure medications could lead to a hypertensive crisis or an extreme acceleration in blood pressure in which the top number (systolic pressure) increases to 180 mm Hg or greater or the bottom number (diastolic pressure) increases to 120 mm Hg or greater (Sheps, 2017). Having an extremely elevated blood pressure could lead to an impairment of the blood vessels or cause a

stroke (Sheps, 2017). A hypertensive crisis could require a hospital admission to receive oral or intravenous therapeutics (Sheps, 2017).

Wang, Fang, and Ayala (2014) assessed hospital admissions for primary or secondary hypertension and the expenses from 1979 to 2006 in the United States. The variations in spending were analyzed and adjusted into year 2008 dollars (Wang et al., 2014). Over a 28 year span, it was determined that approximately 127,558,000 hospital admissions were associated with hypertension (Wang et al., 2014). Wang et al. (2014) revealed that hospitalizations pertaining to hypertension, as a primary or secondary diagnosis, and the related adjusted annual costs were three times as high over 28 years. The yearly costs for hypertension hospital admissions, in 2008 dollars, increased from $40, 000,000,000 from 1979 to 1982 to $113,000,000,000 from 2003 to 2006 (Wang et al., 2014). The study supported the devastation of hypertension as a chronic illness and managing the uncontrolled symptoms of the disease. The Agency of Healthcare Research and Quality (as cited in Wang et al., 2014) have identified hypertension, diabetes, and heart failure as ambulatory care-sensitive conditions. These are types of conditions in which hospital admissions could be avoided through outpatient management and strategies that take swift actions to lessen the severity of the disease (Wang et al., 2014).

Church and Religion Among African American Communities

In the United States, African Americans (87%) have been recognized as having a greater connectivity to spiritual ideations compared to the rest of the population as a whole (83%) (Abel & Greer, 2017; Harmon, Blake, Thrasher, & Hébert, 2014). Harmon, Blake, et al. (2014) also reported that 79% of African Americans had indicated that

religion played a crucial role in their lives. According to Abel and Greer (2017), more African American women (87%) had a tendency to trust their faith in God when facing hardships compared to White women (66%) (Abel & Greer, 2017). African American women have been recognized as being the most religiously committed group, which made it feasible that their commitment to spiritual/ religious traditions could have prompted efforts that made them want to comply with hypertension medication therapies (Abel & Greer, 2017). A survey conducted by Vu (2009) (as cited in Abel & Greer, 2017) indicated that African Americans were the most devoted population in the United States to their religious beliefs: accepting the reality of God, having a presence in the church, and praying (Abel & Greer, 2017). Among researchers, the church has been identified as a key factor to tackling health inequalities (Abel & Greer, 2017). Over the years, several studies have found that church-based cardiovascular reduction strategies have been proven as effective initiatives that lead to better health behavior outcomes and stimulate a person's spiritual, physical, and emotional well-being (Abel & Greer, 2017).

African American churches have traditionally been recognized as the foundation of the African American community: advocating for and sustaining the healthcare demands of the congregation and the overall community (Harmon, Blake, et al., 2014; Newlin Lew et al., 2015). African American churches have maintained that good health is indicative of having a well-balanced life, whereas having poor health could indicate a division, wickedness, or not having a close relationship with God (Newlin Lew et al., 2015). However, there is an understanding that a person could regain health by participating in religious practices, such as prayer, and adhering to cultural and

conventional therapeutic treatments (Newlin Lew et al., 2015). Many African Americans of today anticipate that God will heal them while possessing the notion that God is the ultimate power, so his healing can also exist through modern medicine (Abel & Greer, 2017). Therefore, the church and the religious/spiritual guidance obtained could be considered influential factors to a person's level of faith. The messages pertaining to health that are advocated in the church could be vital to advancing health behaviors (Harmon, Blake, et al., 2014).

Theoretical Foundation

Social Cognitive Theory

Social cognitive theory was initially introduced by Albert Bandura in the 1960s as the social learning theory (Boston University School of Public Health, 2016). In 1986, the framework transformed into the social cognitive theory (Boston University School of Public Health, 2016). Social cognitive theory provides insight in to how humans operate, which is demonstrated through reciprocal causality (Bandura, 2001). Reciprocal causality refers to a triadic bidirectional influence among personal factors (cognitive, affective, and biological events), behavioral, and environmental factors as illustrated in Figure 1 (Bandura, 2001; Boston University School of Public Health, 2016). Environment, in the structure, refers to three different aspects of environment: imposed, selected, and constructed (Bandura, 2001). Bandura used the concept of the social cognitive theory to evaluate health promotion and disease prevention (Bandura, 1998). According to Bandura (1998), the social cognitive theory assumes a causal structure that consist of many aspects. The way a person views self-efficacy is a major component of the casual

structure; it has an immediate effect on motivation and action, and it influences other determining factors (Bandura, 1998). Social cognitive theory not only accounts for individual determinants but also represents sociostructural factors that determine a person's quality of health (Bandura, 1998). Overall, social cognitive theory identifies factors that influence skills that are learned; these factors are capable of impacting a person's physical and inner health while also impacting the self-regulation of habits that reflect well-being (Bandura, 1998).

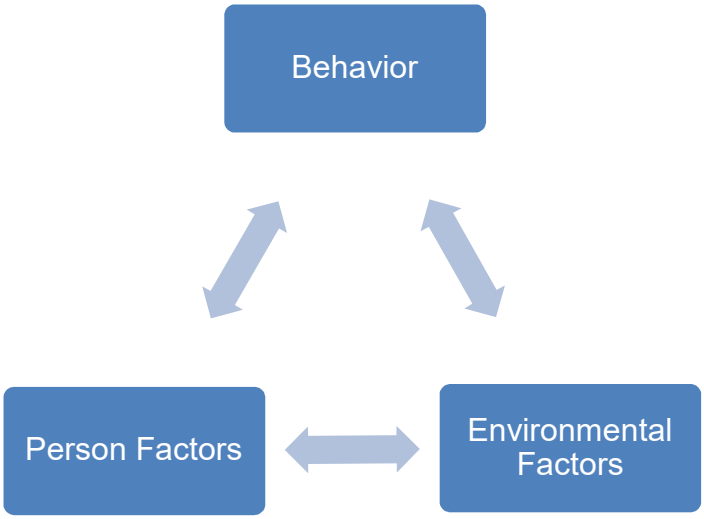

Figure 1. A representation of Bandura's triadic reciprocal causation. Adapted from "Overview of Social Cognitive Theory and of Self-Efficacy," by F. Pajares, 2002, Retrieved from https://www.uky.edu/~eushe2/Pajares/eff.html. In the public domain.

Social cognitive theory was relevant to the current study partially because of the concepts sociostructural and causal structure that were framed in the theory (see Bandura, 1998, 2001). The body of the church represented the social structure, which was defined by the interactions among members and church officials (see Bandura, 1998). The church created an environment that consisted of many different aspects that influenced the member's faith (personal factors) (see Bandura, 2001). Although the current investigation

did not consist of an experiment to determine causation, there were still personal factors, behavioral, and environmental factors interacting. Therefore, the associations that existed between levels of faith in healing, when it comes to taking medications, and medication adherence represented certain features of the causal structure (see Bandura, 2001). Self-efficacy, a key factor in the causal structure, influences the action of adherence (Bandura, 1998). The current study assessed self-efficacy as a part of the framework to address its association to the outcome variable, medication adherence.

Human Agency

Bandura (2001) explained social cognitive theory through an agentic perspective, differentiating between three agentic processes, including personal agency, proxy agency, and collective agency. The current investigation applied social cognitive theory to medication adherence through the concept of agency. Specifically, the personal and collective manner through which agency is exercised were the guiding factors: self- and collective efficacy.

According to Bandura (2001), an agent intentionally produces an effect based on their behavior and is dedicated to invoking that behavior. The fundamental components of agency allow individuals to have an active role in making self-improvements and adjustments and self-rejuvenation as time evolves (Bandura, 2001). Fundamental components of agency include intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura, 2001). These characteristics give rise to an agent who is collectively a planner, fore thinker, motivator and self-regulator, and self-examiner; therefore, an agency is capable of intentional decision-making and action planning,

formulating an action plan that is most feasible, and motivating and regulating what was carried out, as well as being capable of self-assessment (Bandura, 2001).

Personal agency and self-efficacy. Personal agency consists of having the capacity to generate intentional behaviors (Bandura, 2001). The most important operations of personal agency are the individual's perception of their ability to manage how they operate and the circumstances surrounding them (Bandura, 2001). The guiding principle of human agency is the perception of efficacy, which is based on the principle that an individual has the capacity to generate an outcome according to their behavior (Bandura, 2001). Perceived self-efficacy can be defined as the perception of a person's potential to orchestrate and carry-out a plan that is necessary to yield a certain level of achievement (Bandura, 1998). Generally, self-efficacy gets depicted as only pertaining to "self," such as being self-guided; however, the concept plays a significant role in group guidance (Bandura, 1998). Having a high level of self-efficacy is necessary in order to triumph, despite whether it is acquired personally or through joint efforts (Bandura, 1998).

Collective agency and collective efficacy. Because people do not move through life completely alone, a multitude of life's achievements are only obtainable through working together (Bandura, 2001). Collective agency deals with a group's joint confidence in their collaborative ability to yield suitable outcomes (Bandura, 2001). Collectiveness within a social structure is presented as an interaction among people; therefore, perceived collective efficacy should be viewed as a "group-level" factor and not considered a grand total of each of the group member's separate perception of

efficacy (Bandura, 2001). Bandura (2001) described how several studies that assessed collective efficacy all came to the conclusion that the greater perceived collective efficacy was, the higher the groups' supportive characteristics were toward the tasks being performed, the stronger the commitment to continue through adversity, and the greater the achievements.

The current investigation was used to determine the self- and collective efficacy of medication adherence among church members. According to the collective aspect of social cognitive theory, if church members' collective efficacy is strong then they should possess greater characteristics needed to adhere to their medication regimen and their medication adherence level should be high (see Bandura, 1998). This would also remain true for self-efficacy, because high self-efficacy is required to achieve a task even if it is through collective efforts (see Bandura, 1998).

Social cognitive theory strictly abandons the concept of opposition between personal agency and social structure or individualism and collectivism (Bandura, 2001). How people function is based on social structures; therefore, a large system of social networks impact the functionality of personal agency (Bandura, 2001). Having an agentic interaction between people explains how people are both manufacturers and the result of social networks; the functionality of personal agency and social structure are dependent on one another (Bandura, 2001). Perceptions of collective efficacy play an identical role to perceptions of personal efficacy and use identical mechanisms to function (Bandura, 2001).

Efficacy's Role in Self-Regulation

Bandura (1998) acknowledged how perceived efficacy does not function alone. There are other factors within the social cognitive theory that work with perceived efficacy to control motivation, affect, and behavior (Bandura, 1998). In Bandura (2001), he presented another social cognitive theory concept that was also critical to learning, known as self-regulation. Self-regulation is a primary function of agency (Bandura, 2001). Self-regulation is functional by means of psychological sub functions which includes self-monitoring, judgmental function, and self-reactive (Bandura, 1998). Efficacy plays a key role in the self-regulation structure (Bandura, 1998). Self-efficacy perceptions have been viewed as factors that partially dictate how different sub functions of a self-regulatory structure work, and they impact the sub function of establishing self-regulation goals (Bandura, 1998). When people view themselves as being competent then they tend to establish higher goals for themselves and become more dedicated to seeing those goals through (Bandura, 1998).

Bandura (1998) applied the self-regulatory structure to hypertension and medication adherence, which are key factors of the current investigation. In Bandura (1998), the study indicated that adherence was strengthened through a feedback system in which achievements that are usually overlooked were recognized as dependent variables. According to Bandura, in studies that measured improvements, pertinent to antihypertensive medication adherence, people monitored their blood pressures, recorded their medication use, and obtained responses that allowed them to associate their blood pressure to routine medication adherence. Bandura (1998) concluded that participants

who understood that their blood pressure levels were related to a degree of medication adherence would have been able to substantiate the idea that they had the ability to control their blood pressure. Positive outcomes favorably affect self-regulatory efficacy, and the anticipation of those outcomes could lead to the motivation needed to continue a medication regimen (Bandura, 1998).

Literature Review: Synthesis of Relevant Studies

There are different types of research methods. More often, I found that quantitative methods were used in studies that examined African American churches as a targeted population for assessing CVD and CVD risk factor prevalence and management strategies and as social networks to reducing CVD health disparities. In studies that focused on addressing medication adherence to improve CVD health and spiritual/religious connections associated with adherence, quantitative and qualitative methods were equally preferable among investigators. I concluded from reviewing the literature that quantitative studies that examined spiritual/religious beliefs, specifically level of faith in healing as a barrier to medication adherence among Black church members, were scarce. This gap prompted the need for a quantitative investigation that identified medication adherence among an African American church population and addressed faith-based barriers that impact CVD health disparities among African Americans. To better understand the different aspects of the current study, I categorized literature findings into six categories: social networks as CVD reduction strategies, African American churchgoers as a targeted population, barriers to medication adherence, spiritual/religious beliefs and medication adherence, validated tools for assessing

medication adherence, and self-efficacy and medication adherence along with medication adherence self-efficacy scales. These categories were configured to highlight key variables and to justify the utilization of these variables in the study.

Social Networks as CVD Risk-Reduction Strategies

In theory, according to Bandura (2001), social networks impact a person's capacity to produce intentional behaviors. Churches that were already established in the African American community were viewed in the current investigation as social networks. Social networks are part of a social structure working together with personal agency (the member) to induce behaviors (Bandura 2001). Previous CVD studies, which have mainly used quantitative methods to assess the impact of social structures on CVD and CVD risk factors, have used different types of designs to obtain data.

In Shaya et al. (2013) a 'train the trainer' strategy was taken along with the community health worker model in which patients recruited relatives and friends to the treatment group and were compared to a retrospective cohort. The investigation focused on how education that was provided through social networks affected blood pressure control among 248 African Americans with hypertension (Shaya et al., 2013). Participants were selected from primary care offices in Maryland and placed in an intervention group as a part of the Maryland CVD Promotion Program (Shaya et al., 2013). Shaya et al. took a quantitative approach to evaluate the likelihood of participants maintaining blood pressure control at a minimum predetermined systolic and diastolic blood pressure measurement, the absolute reduction in systolic and diastolic pressure,

diabetes maintenance, smoking, baseline high blood pressure, and population characteristics.

Shaya et al. (2013) used descriptive analysis to assess characteristics of the participants in the treatment and control groups. Investigators generally use descriptive statistics to summarize the sample in a study; descriptive statistics describe the data by providing the range, average, and mode (Simpson 2015). Binary logistic regression models were used to determine the chance of reaching the treatment goal after baseline (Shaya et al., 2013). Regression is relevant to studies that determine associations, because it measures the strength of associations (Simpson, 2015). The findings indicated that participants of the Maryland CVD Promotion Program intervention group had a decline in systolic and diastolic pressure compared to the control group (Shaya et al., 2013). Based on findings, Shaya et al. concluded that social networks that are already operative in minority communities could serve as outlets to diminish disproportionate rates of heart disease (Shaya et al., 2013).

In Shaya et al. (2013), the investigators determined that using a retrospective cohort as the control could have led to possible inconsistencies. The investigators also failed to control for medications being used by the participants (Shaya et al., 2013). Shaya et al. recognized that biases could have been attributed to them using a retrospective cohort and not controlling for covariates, such as socioeconomic status or education, however, the participants in the intervention and the control group were perceived to be from a similar African American population from Baltimore who had homologous demographic and medical attributes.

Hawkins and Mitchell (2017) took a quantitative approach that was used to determine the role social networks played in reducing health disparities. Hawkins and Mitchell assessed the impact that social support and social integration, two key features of social networks, had on the association between race and seeking medical services among diabetic men living in the United States. It has been determined that social networks significantly impact the effects of diabetes and health actions taken among diabetics (Hawkins and Mitchell, 2017). A subsample from the 2001 National Health Interview Survey was used that consisted of 7,148 diabetic men who were Latino, African American, and Non-Latino Whites (Hawkins & Mitchell, 2017). The National Health Interview Survey used interviews in which the respondents selected from specific items that were coded to represent categorical variables: 2 to 3 item responses and scaled responses (Hawkins & Mitchell, 2017). One of the variables that were assessed as a characteristic of social networks was social integration, with church attendance being one of the measurements (Hawkins & Mitchell, 2017).

The data were analyzed using multiple logistic regression analysis to determine if emotional support and/or social integration mediated an association between race and provider visits and not seeking medical services (Hawkins & Mitchell, 2017). Hawkins & Mitchell used sociodemographic features to make comparisons, which included the use of Fisher's exact test and Pearson's chi-square. Fisher's exact test was used to assess categorical variables with specific criteria; Pearson's chi-square was applied to assess other categorical factors (Hawkins & Mitchell, 2017). The study showed that social integration and social support were not mediating factors and did not moderate the

relationship between race and seeking medical services among non-Latino White and Latino men (Hawkins & Mitchell, 2017). In comparison, results for African American men indicated that participants who had greater levels of social integration had a decreased chance of refraining from seeking medical services (OR = 0.234, [CI = 0.053, 1.045]) in comparison to non-Latino White men who also had increased levels of social integration, and African American men who did not attend church had a greater chance of refraining from seeking medical services (OR = 0.222, [CI = 0.110, 0.448]) (Hawkins & Mitchell, 2017). Hawkins and Mitchell concluded that there were variations in how social networks function among African American and non-Latino White men with diabetes. Hawkins & Mitchell (2017) also revealed that the study was important because being able to determine how social networks affected well-being based on racial differences could be beneficial to public health officials and legislative bodies to help establish treatment programs that reduce gender and race health disparities among men who suffer from diabetes.

Collins (2015) supported the role of churches as social networks to reduce health disparities. The goal of the informative literature was to summarize health behavior initiatives that could take advantage of the influential aspects of African American churches and its position as a social network to generate positive health outcomes among church members (Collins, 2015). According to Collins, churches could serve as effective entities for improving interventions that could later provide better health outcomes for African American members as well as the community. Strategies such as ministers preaching about the connection among well-being and spirituality, advocating for kitchen

committees to provide better food choices during church functions, initiating a health ministry among members to promote health and wellness, and building relationships between the church and universities to enhance research efforts could generate modified health behaviors (Collins, 2015).

Magrin et al. (2015) took a different quantitative approach that supported the concept of social network; however, the review did not involve churches. Magrin et al used meta-analysis that focused on the different capacities of adherence: adherence to treatment strategies designed to manage hypertension and adherence to medication treatment. A meta-analysis was performed to assess the association between social support and adherence to healthy life choices and medication therapy among patients with hypertension (Magrin et al., 2015). Social support was categorized as structural (based on the formation of the social network that an individual is bounded by, generally defined as the companionship a person possesses) and functional (based on the assistance and motivation that is provided by the social network, generally defined as the emotional, instrumental, and informative social support) (Magrin et al., 2015). To perform the meta-analysis, different databases were used to retrieve relevant articles and search efforts also included assessing the reference lists of those articles (Magrin et al., 2015).

A set of meta-analyses that were performed determined that structural social support did not have a significant association to adherence as a whole; however, functional social support had a significant and positive association to adherence as a whole (Magrin et al., 2015). These results were additionally substantiated through meta-analyses that were performed on different aspects of adherence (Magrin et al., 2015).

Many of the findings were described through the diverseness witnessed across the studies which were somewhat described by moderator analyses (Magrin et al., 2015). Magrin et al. concluded that functional social support rather than structural social support was related to adherence in patients with hypertension.

Magrin et al. (2015) indicated that many of studies used in the meta-analysis were cross-sectional; therefore, an actual causal relationship between support and adherence could not be determined. In addition, many of the studies failed to mention the patients overall medication regimen and the background information pertaining to hypertension, which made it implausible to determine if these elements could have served as moderator variables within the study (Magrin et al., 2015). Magrin et al. also noted the limitation of the effect sizes which were found to be small because of the lack of studies included in the analysis. According to Magrin et al. (2015), the small effect sizes were congruent with the effect sizes of other meta-analyses that had assessed different factors related to adherence. Magrin et al. (2015) revealed how investigators should think about the significance of being able to recognize the difference between the influences that certain aspects of support (instrumental, emotional, and informational) could have on adherence (Magrin et al., 2015).

Each of the studies in the literature provided a synopsis of the role of social networks and how they were being used to reduce CVD and CVD risk, namely hypertension and diabetes. According to the literature review, the features and functions of social networks, which included integrated relationships, support, and motivation, were effective elements that enhanced health behaviors that could lead to better health

outcomes (see Collins, 2015; Hawkins & Mitchell, 2017; Magrin et al., 2015). The African American church was identified as an example of an effective agent within social networks, which supported the concept of using them in the current investigation (see Collins, 2015). The church has a prominent stance in Black communities and many offer health resources and health messages that are needed to assist in behavioral change (Abel & Greer, 2017). The church not only provides social connections but also provides spiritual connections that strengthen a person's faith in God (Collins, 2015). It is important to understand different aspects of a person's faith, as research has revealed faith as being a key factor in determining barriers to behavioral change (see Abel & Greer, 2017).

African American Churchgoers as a Targeted Population

African Americans are considered a vulnerable population when it comes to chronic illnesses such as CVD, diabetes, and hypertension because of disparities that have been acknowledged by associated prevalence and mortality rates. African American churches may be the starting point for determining populations most at risk considering the assemblage of many African American people from all walks of life. Schoenthaler et al. (2015) quantitatively accumulated and assessed baseline characteristic data from participants enrolled in the Faith-based Approaches in the Treatment of Hypertension study known as FAITH. FAITH was a trial that was constructed to assess the success of two different strategies used to reduce blood pressure among African Americans with high blood pressure: faith-based group-counseling therapeutic lifestyle changes (TLC) including motivational interviewing (MINT-TLC) provided by lay health advisors and

health education (HE) control provided by experts (Schoenthaler et al., 2015). Participants consisted of 373 congregants from 32 African American churches in New York City, New York (Schoenthaler et al., 2015). Participates mainly possessed higher levels of education, were females, and had an income $\geq$ 20,000 (Schoenthaler et al., 2015). Baseline information that was accumulated consisted of demographic features: medical data (blood pressures), health actions (diet and physical activity), and psychosocial elements (self-efficacy). The Morisky Adherence Scale was the validated adherence tool chosen to assess medication adherence (Schoenthaler et al., 2015). Although self-efficacy was assessed, it was only assessed for behavioral characteristics, such as eating fruits and vegetables and physical activity; self-efficacy for medication adherence was not evaluated.

The interpretation of baseline characteristics with continuous features were described as mean $\pm$ standard deviation, whereas proportions were used to describe categorical data (Schoenthaler et al., 2015). Independent samples t-test, analysis of variance, and crosstabs with a c^2 statistic were used to assess MINT-TLC against HE groups (Schoenthaler et al., 2015). Findings indicated that average baseline systolic and diastolic blood pressures were 152.1 $\pm$ 16.8 mm Hg and 86.2 $\pm$ 12.2 mm Hg, and average body mass index (BMI) was 32 kg/m^2—both measurements were over normal standards (Schoenthaler et al., 2015). It was also determined that 95% of participants reported having medications to treat their hypertension; however, 79.1% revealed nonadherence to those medications (Schoenthaler et al., 2015). Schoenthaler et al. concluded that participants in the FAITH study displayed an array of negative clinical and behavioral

attributes that were measured as baseline data. In summary, the largely reported percentage of nonadherence to an antihypertension medication regimen indicated that obstacles to comply with medication therapy are not being considered in church environments (Schoenthaler et al., 2015).

Similarly, Powell-Wiley et al. (2013) focused on the assessment of baseline cardiovascular risk characteristics among church members through a quantitative approach. The investigators assessed the difference between cardiovascular risk factors (CVRFs) among participants of a community-based participatory research (CBPR) program comprised of a church-based intervention cohort called GoodNEWS and among people within the community (Powell-Wiley et al., 2013). The assumption of the investigation was that community-based interventions in religious establishments, in African American communities, lead to better control of CVRFs and could pinpoint a population that had a greater chance of developing a disease (Powell-Wiley et al., 2013). A cross-sectional method was used to assess baseline data from an intervention group that advocate for lifestyle modification and from the Dallas Heart Study (DHS), which included African Americans of the exact age and sex of the intervention group who resided in Dallas County, Texas (Powell-Wiley et al., 2013). Self-administered surveys were completed by participants in the GoodNEWS cohort, which consisted of 392 African American church members from 18 to 70 years old (Powell-Wiley et al., 2013).

Chi-square was used to evaluate categorical data (Powell-Wiley et al., 2013). DHS prevalence data were sample-weight adjusted so that it illustrated the Dallas population rather than the study population (Powell-Wiley et al., 2013). Logistic

regression analysis was used to assess the relationship between obese participants and church presence, separate from age and sex, among African Americans in the DHS population; the relationship was determined to be significant. Regardless of having greater higher educational backgrounds, the GoodNEWS participants had worse obesity prevalence, diabetes, and hyperlipidemia compared to DHS participants (Powell-Wiley et al., 2013). However, Powell-Wiley et al. also found that GoodNEWS participants had increased percentages of medical care and management of many of the CVRFs (treated hyperlipidemia and controlled hypertension and diabetes), participated more in physical activities, and had a decreased chance of smoking. The study showed that the intervention group participating in CBPR had greater higher educational backgrounds, had been more physically active, had sought care, and had managed some of the CVRFs; they still had higher obesity rates than the comparison group (Powell-Wiley et al., 2013). After assessing both DHS and GoodNEWS data, Powell-Wiley et al. determined that church presence was related to obesity.

The use of a cross-sectional approach could have limited the study, because a causal relationship could not be determined between church presence and the number of participants with CVRFs (Powell-Wiley et al., 2013). Also, the time frame in which data were collected could have been a limitation (Powell-Wiley et al., 2013). Powell-Wiley et al. collected DHS data from the cohort between 2000 and 2002 whereas GoodNEWS cohort data were collected in 2008. The variations in time frames may have partially led to the variation in the percentage of obesity among the populations; however, the small

variation in time frames would not have accounted for all of the variances among the two populations (Powell-Wiley et al., 2013).

Each of the studies supported African American church members as the targeted population to assess prevalence and behaviors associated with CVD and CVD risk factors. The church generally consists of people from all walks of life which accounts for a diverse population. Although participants in the studies had higher levels of education, they still possessed negative health characteristics; however, behaviors such as medication adherence and other disease management strategies were inconsistent among the different study populations. The assessment pointed to the assumption that health and health behaviors extended beyond educational backgrounds. Other barriers, such as faith in healing, could have persisted that needed to be addressed among African American church populations.

Barriers to Medication Adherence

Patients who do not view medical professionals as reputable, have confidence in their professional ability, or feel safe under their care possess a level of distrust for health providers (Abel & Greer, 2017). The feeling of distrust could affect patients' adherence to medication regimens (Abel & Greer, 2017). Abel and Greer emphasized how historical accounts of unfair treatment of African Americans in medical research, Blacks being tricked to partake in unethical experimental treatments/procedures such as the Tuskegee syphilis experiment, could have contributed to African Americans distrust for the medical community. Minorities have repeatedly received disproportionate medical services, compared to Whites, to treat their medical conditions; therefore there has been an

expansion in healthcare disparity (Abel & Greer, 2017). WHO (as cited in Lam & Fresco, 2015) has accredited various elements as contributing factors to not adhering to a medication regimen, which included socioeconomics; elements that pertained to treatment, patients, and disease; and the healthcare infrastructure. It was important during the current study to determine associated barriers to medication adherence to understand how the behavior of nonadherence could be reduced.

Fan et al. (2016) addressed health literacy as a factor that hindered medication adherence. Poor health literacy has been linked to decreased glycemic maintenance and worsened effects of DMII (Fan et al., 2016). Fan et al. also assessed the relationship between health literacy and both types of nonadherence: unintentional and intentional. The investigators believed that poor health literacy could have prompted nonadherence to medication regimens unintentionally (Fan et al., 2016). Research has indicated that approximately 36% of the population in the United States has poor health literacy and nearly half of the population in the United States have difficulties with comprehending and utilizing information pertaining to well-being (Fan et al., 2016). Fan et al. (2016) conducted a quantitative cross-sectional study, which was comprised of 208 patients with DMII from a primary care facility in St. Louis, Missouri; Fan et al. obtained the data using questionnaires.

The 4-item Morisky Medication Adherence Scale was the validated adherence assessment tool chosen by the researchers (Fan et al., 2016). Characteristics that were emphasized in research as being factors that have had an impact on medication adherence, such as age, gender, race, insurance, diagnosis of depression, and medication

regimen difficulties, were considered as covariates (Fan et al., 2016). Bivariate and multivariable regression were used to assess variables that predicted nonadherence to medications (Fan et al., 2016). The findings in the multivariable models indicated that poor health literacy was significantly related to having greater nonadherence to medication regimens, unintentionally; however, poor health literacy was not significantly related to intentionally not adhering to medications (Fan et al., 2016). The investigators concluded that there were variations in factors that influence intentional and unintentional nonadherence (Fan et al., 2016). According to Fan et al., additional strategies are needed to diminish unintentional nonadherence among patients with DMII and poor health literacy. Because the study was cross-sectional, it had the same limitation as illustrated in Magrin et al. (2015) and Powell-Wiley et al. (2013)—causality could not be defined (see Fan et al., 2016). Also, the adherence survey that was used in the study failed to take into consideration the number of times medications were missed or the entire number of medications that were missed (Fan et al., 2016).

Fredericksen et al. (2018) took a different approach to assess poor health literacy; they used a qualitative design to address poor health literacy as a barrier to medication adherence. Fredericksen et al. conducted an investigation to determine if patients with various chronic illnesses understood medication names and the reasons the medications were used. Individually constructed interviews were used to assemble data from a convenience sample in which participants were obtained from six primary care facilities across the United States (Fredericksen et al., 2018). The study consisted of patients who were positive and negative for HIV (Fredericksen et al., 2018). It was essential that

patients who were chosen for the study had been prescribed three or more medications: medications for CVD, diabetes, and hypertension (Fredericksen et al., 2018). Taped interviews were transcribed and coded according to themes (Fredericksen et al., 2018). A qualitative analysis was obtained through the Dedoose web-based application (Fredericksen et al., 2018). Statistical tests such as Fisher's exact tests were applied to assess variations among medication literacy according to different characteristics, and t-tests were used to assess variations according to age (Fredericksen et al., 2018).

The findings indicated that 30% of patients did not know the name of any of their medications, 19% did not know what they were used for, and 30% had misinterpretations of what their medications were used for (Fredericksen et al., 2018). The investigators concluded that recalling the name and knowing what the medications were used for were problematic for many of the patients, which had not varied significantly between the different demographic groups or according to how the patients medications were packaged (Fredericksen et al., 2018). The study was limited because of the small population, which meant that assumptions based on the results could not have been applied to populations outside of the study group (Fredericksen et al., 2018). The investigators also chose not to assess different aspects of pharmaceutical knowledge, which included determining self-efficacy in a patient's ability to reorder medications or interpret the frequency of taking medications (Fredericksen et al., 2018). The investigators revealed that one advantage to the study was that patients were a diverse sample who represented different regions, races, and types of communities (Fredericksen et al., 2018).

Bazargan et al. (2017) also contributed to findings associated with barriers to adherence. Bazargan et al. assessed the relationships between adherence to medications and different elements associated with medications, such as polypharmacy, medication regimen complexity, using potentially inappropriate medications, and the understanding of the medicinal use of medications and dosage information. The investigators hypothesized that there were associations among adherence to medications and elements associated with medications among underserved elderly African Americans (Bazargan et al., 2017). The study was quantitative in nature and consisted of a sample of 400 African American church members who were 65 years and older from South Los Angeles (Bazargan et al., 2017). The investigation used face-to-face constructed interviews and a visual examination of participants' medications (Bazargan et al., 2017). The Medication Regimen Complexity Index was used to quantify different aspects pertaining to difficulties with taking prescribed medications, and the Beers Criteria was used to assess potentially inappropriate medication use (Bazargan et al., 2017).

The findings indicated that 56% of participants could not determine what their medications were used for, only two-thirds could understand dosage information, 35% revealed they intentionally had not adhered to taking at least one of their medications over a three day period, and only 8% indicated that they had not remembered to take their medications (Bazargan et al., 2017). The participants who understood medication use and the frequency in which they took their medications had a seven times greater chance of adhering to a prescribed medication regimen (Bazargan et al., 2017). It was concluded that there were major nonadherence issues among older African Americans who were not

receiving adequate health services in their communities (Bazargan et al., 2017). Because a cross-sectional study was used, causality among the investigational factors could not have been defined (Bazargan et al., 2017). Bazargan et al. were aware that selection bias may have limited the generalizability of the findings, because the participants were selected from local churches. They also recognized that characteristics may have been different among people who were not churchgoers (Bazargan et al., 2017).

Gross, Anderson, Busby, Frith, and Panco (2013) used the Theory of Planned Behavior to implement a culturally sensitive educational intervention among African American patients in a neighborhood clinic that concentrated on modifying the way people live and medication adherence. The investigators theorized that extensive hypertensive treatment strategies that addressed physical activity, food choices, and medication could improve adherence (Gross et al., 2013). The patients' beliefs, comprehension, and norms pertaining to health were evaluated before offering them personalized education that focused on the awareness of cultural differences (Gross et al., 2013). Patients revealed their barriers to medication nonadherence, which included actual or perceived side effects related to taking their prescribed medications, the choice to use home therapies over prescribed medications, and only adhering to a medication regimen when not feeling well (Gross et al., 2013).

The finding of the investigation suggested that patients who received education displayed better adherence to their course of treatment; the education consisted of lifestyle modifications, food selection, physical activity, and medication (Gross et al., 2013). The investigators informed how customary beliefs, faith-based activities, and

African Americans' lifestyles could impede the treatment plan for hypertension (Gross et al., 2013). According to researchers, culture should not be viewed as an isolated obstacle because having insufficient knowledge of an illness is also a factor (Gross et al., 2013).

Steyl and Phillips (2014) used a qualitative design to highlight barriers that diabetics from urban settings in Western Cape of South Africa faced relative to diabetes control. According to Steyl and Phillips, barriers in low socio-economic settings could impact patients' ability to control their disease. A cross-sectional investigation was conducted using patients from primary health care facilities in Western Cape, South Africa (Steyl & Phillips, 2014). In the study, eight participants who had DMII from each of the six eligible facilities were selected to take part in the investigation; 26 actually volunteered to participate in the focus group (Steyl & Phillips, 2014). Steyl & Phillips interpreted audiotaped data as direct quotes. Steyl & Phillips also used content analysis, which determined if any of the topics were common. The study revealed that there were common topics (Steyl & Phillips, 2014). The common topics that were perceived barriers included healthy eating habits, physical activity, economic hindrances, others knowledge of the illness, and medical care obtained from the community healthcare center (Steyl & Phillips, 2014).

Steyl and Phillips (2014) revealed that social and family support were viewed as obstacles as well as factors that assisted in adhering to interventions that promoted health and blood sugar management. Decreased family and social support were considered predictive factors because of their associations to a decreased amount of efforts in self-managing diabetes; however, there were contradictions that the investigators highlighted.

According to Wing et al. (as cited in Steyl and Phillips, 2014), DMII men with obesity who jointly participated in an educational intervention with their spouse had negative outcomes; however, outcomes were favorable for obese women with DMII who participated in the program. Steyl and Phillips addressed additional barriers to managing diabetes, which included factors such as poverty, poor literacy, insufficient funds, and lack of access to medical services (Steyl & Phillips, 2014).

In Newlin Lew et al. (2015), medical distrust was one of the key arguments in the qualitative study. Participants communicated their lack of trust for the medical community because of factors such as unethical treatment of African Americans through experimental research, financial gains of drug companies, and modern health that solely focuses on biological factors to treat diseases (Newlin Lew et al., 2015). Newlin Lew et al. indicated that diabetic treatment plans for African Americans needed to focus on restoring relationships and taking patients' religious views, medical needs, and favorable treatment options into account. Newlin Lew et al. (2015) concluded that measures such as incorporating religious views into the treatment plan and establishing a trusting relationship in the African American community could lead to better health outcomes.

Both research methods, qualitative and quantitative, were equally used by the investigators to explore barriers to medication adherence. Themes were identified through the use of a qualitative approach, whereas specific barriers were assessed through the use of a quantitative approach. Even though different approaches were taken, lack of knowledge of medication use, disease processes, and medical distrust were still recognized as barriers to medication adherence across the studies. There were numerous

variables as indicated by the investigators that are known barriers to medication adherence; however, faith in healing was not a factor in any of the studies that was readily mentioned or widely investigated.

Spiritual/Religious Beliefs and Medication Adherence

Spirituality and religion are two different concepts, as spirituality is identified with having an internally driven choice to partake in faith and having an interconnection with a higher power or God, although religion can be perceived as an externally driven belief in and following of specified ideologies, practices, and customs that pertain to God, such as going to church (Abel & Greer, 2017). Spirituality and religiosity have been identified as key assets in the lives of people trying to manage chronic illness (Kretchy et al., 2013). Abel and Greer (2017) indicated that programs that focus on spirituality could serve as catalyst to eliminate obstacles to taking medications as prescribed.

Newlin Lew et al. (2015) qualitatively assessed key elements among church affiliates (faith-based views and rituals, diabetes prevention and control measures, and community behaviors as it pertains to diabetes) to inspire the establishment of joint diabetes prevention and self-management strategies that were specifically designed to reach African American adults. A descriptive, longitudinal design was used composed of an inquiry group method (focus group interviewing with the addition of participatory action research fundamentals) (Newlin Lew et al., 2015). The investigation recruited 44 African American church affiliates, consisting of the church attendees and church officials, in Dade County, Florida (Newlin Lew et al., 2015).

Content analysis that was applied to assess qualitative data indicated that Christian worldview, medical distrust and self-management were common topics implied by participants (Newlin Lew et al., 2015). Participants also revealed how their faith in Christianity influenced their conception of the world, which also inspired how they dealt with health and well-being (Newlin Lew et al., 2015). According to participants in Newlin Lew et al., faith in God meant embodying the ideas of God's guaranteed wisdom and prosperity for mankind. The participants provided testimonies and commended God for being the ultimate healer, which led to not depending on medication use in some cases. There were participants in the study who revealed that they self-managed their diabetes medications individualistically without medical influence (Newlin Lew et al., 2015). One elderly participant disclosed that she stopped adhering to her diabetes medication schedule three years prior to the study and started relying on herbal treatments, whereas another had stopped her mother's hypertension medication to rely on diet and faith in God (Newlin Lew et al., 2015). In contrast, other participants had chosen to manage medications by allowing for medical advice but also incorporating the use of common sense that is obtained from God (Newlin Lew et al., 2015). Newlin Lew et al. described one participant's words after finding out that his blood pressure was high when he stopped his medication regimen "Believe in God and use wisdom, because I've gone to the doctor, gotten back on pills…and with prayer…I've gone down to 140/90" (p. 8).

Bockwoldt et al. (2017) conducted a descriptive, qualitative study that used partly structured interviews to obtain data. The Roy adaptation model was used to assist in the construction of interview questions and to identify patterns among datasets (Bockwoldt et

al., 2017). The Roy adaptation model used four adaptive modes in which coping and adaption to stressors were conveyed through actions: self-concept mode, role function mode, interdependence mode, and physiological mode (Bockwoldt et al., 2017). The interdependence mode of the model's adaptive modes focused on interconnections (Bockwoldt et al., 2017). Bockwoldt et al. discussed how common subject matter detected from the interdependence mode was the influence that interconnections had on medication compliance (Bockwoldt et al., 2017). Some participants identified their religious beliefs as a key factor from where they obtained encouragement (Bockwoldt et al., 2017). They expressed that their faith helped them get through the struggle of having diabetes and kept them positive, because they were aware of the negativity associated with not taking medications (Bockwoldt et al., 2017).

Kretchy et al. (2013) assessed the interconnectedness between spirituality and religiosity and a person's commitment to taking their medication. The investigators obtained information from 400 patients (90% Christian, 5%, Muslims, 1%, Traditionalist) who had hypertension and who were18 years living in Ghana (Kretchy et al., 2013). Kretchy et al. indicated that they chose two main tertiary hospitals in the region to gather data because of the variation in spiritual/ religious behaviors among the patients. This method removed the limitations on generalization of the findings, because the sample represented an adequate portrayal of the populations located within the northern and southern portions of the country (Kretchy et al., 2013). Variables such as spirituality, religiosity, and medication adherence were assessed using the Spiritual Perspective Scale, a 10-item scale that assessed a person's understanding of the degree to which they

embraced spiritual beliefs and participated in activities that were spiritual in nature; the Duke Religion Index, a 2-item scale that measured religious views and religious associations, which also included Organized Religious Activity (church or religious meetings) and Non-organized Religious Activity (prayer, meditation, and Bible study); and the 8-item Morisky Medication Adherence Scale that defined low adherence, medium adherence, and high adherence —each displayed acceptable Cronbach's alpha reliability (Kretchy et al., 2013).

Chi-square and logistic regression were used to assess associations between spirituality and religiosity and medication adherence (Kretchy et al., 2013). Most of the patients (93.25%) were not adherent to their medication regimen (Kretchy et al., 2013). Participants were identified as having high spiritual and religious beliefs that impacted their everyday lives (Kretchy et al., 2013). According to Kretchy et al., spirituality (p = 0.018) and not religiosity (p = 0.474) was associated with not adhering to medications. Once demography and the presence of other chronic conditions were controlled, patients with increased spirituality had a 2.68 greater chance of not adhering compared to those who did not consider the relationship between spirituality and well-being (Kretchy et al., 2013). The investigators concluded that patients' spiritual connection with a higher power may have prospectively enhanced their belief in healing rather than adhering to anti-hypertensive therapeutic regimens.

Greer and Abel (2017) determined religious and spiritual behavioral techniques that older African American women with hypertension used to deal with situations that affected their adherence to hypertension medications. According to Greer and Abel,

motivational techniques that consisted of spiritual or religious ideology have contributed to better health outcomes. The investigators used a mixed-method concurrent triangulation design in which quantitative and qualitative techniques were used to gather information simultaneously, and the two sets of data were assessed to identify whether there were connections or variations or a mixture of the two (Greer & Abel, 2017). Physiologic, descriptive, and sociodemographic information were obtained from 20 African American women with hypertension from a rural East Texas African American church (Greer & Abel, 2017). Greer and Abel indicated that audiotaped interviews that were based on an interview guide were used to capture qualitative data, whereas questionnaires were used to capture quantitative data (descriptive and physiologic data). The Hill-Bone Compliance to High Blood Pressure Therapy scale was used to determine adherence, and the Brief Religious/Spiritual Coping scale was used to determine religious/spiritual behavioral techniques that were used to deal with situations (Greer & Abel, 2017).

The five themes that were identified were related to symptoms of high blood pressure, belief in God or a higher power, prayer as the main strategy to deal with difficult situations, complying with a medication regimen being viewed as obedience to God, and wanting healthcare providers to pray and be more informative (Greer & Abel, 2017). Greer and Abel identified prayer as a major behavioral technique used to assist participants who had hypertension medication compliance. The investigators concluded that religious/spiritual behavioral techniques that were used to deal with difficult

situations had an effect on hypertension medication adherence in older African American women who resided in rural areas with scarce medical resources (Greer & Abel, 2017).

Greer and Abel revealed that using a triangulation method was effective because an event could be assessed through the use of two or more approaches that would have a counterbalancing effect on biases. The findings from a triangulation approach, versus a limited single method approach, generally support each other, which strengthens the validity of the results (Greer & Abel, 2017). In contrast, because of the small sample size obtained and the diverse characteristics of the participants, the study's generalizability was limited, and assumptions based on the findings from the sample population could not have been made about the overall population (Greer & Abel, 2017).

Abel and Greer (2017) assessed hypertensive African American women's spiritual/religious faith and the association to adherence to blood pressure lowering medications; they also assessed the association between spiritual/religious faith and confidence in medical practitioners. The investigation was conducted using a secondary data analysis of a cross-sectional study that consisted of a convenience sample of 80 African American women, from the community, who had hypertension (Abel & Greer, 2017). The participants were from age 18 to 60 years old from the Piedmont area of North Carolina who were taking one or more antihypertensive medications (Abel & Greer, 2017). The recruitment plan consisted of flyers that were handed out in beauty parlors, African American churches, neighborhood gatherings, and from person to person (Abel & Greer, 2017).

Abel and Greer used descriptive statistics to describe demographics. Spearman rho correlation was used to assess associations between spiritual/religious faith and medication adherence and spiritual/religious faith and confidence in medical practitioners (Abel & Greer, 2017). The findings indicated that there were no relationships between the four spiritual/religious factors that were measured and adherence (Abel & Greer, 2017). The measured factors included going to church, praying, studying the Bible, and the extent of a person's spiritual faith (Abel & Greer, 2017). There were also no statistical associations indicated between confidence in medical practitioners and the four spiritual/religious factors that were measured (Abel & Greer, 2017). The study did however determine that adherence increased as spiritual/religious faith increased (Abel & Greer, 2017). There was also a significant association found between medication adherence and confidence in medical practitioners (r_s = -.235, p = .036) (Abel & Greer, 2017). Participants who had the highest confidence in medical practitioners had a 33.3 times greater chance of medication adherence than baseline (p for trend = 0.015) (Abel & Greer, 2017). The investigators concluded that women who had strong interconnections with their practitioners had a greater chance of following their prescribed medication regimen (Abel & Greer, 2017).

The investigation was limited because of the use of a convenience sample in which participants enrolled in the study through the snowball method through churchgoers (Abel & Greer, 2017). Abel and Greer also revealed the barriers associated with having a small sample, as generalizations based on the conclusions of the sample population could not have been made about larger populations. Finally, the instrument

used in obtaining spiritual/ religious data had a low reliability which minimized the findings of the investigation (Abel & Greer, 2017).

Although spirituality/religious beliefs are notable investigative factors that influence disease management, the concepts are so broad that they can incorporate different facets, which could explain the inconsistencies in findings among investigators (see Abel & Greer, 2017). In a secondary data analysis of a cross-sectional study, Abel and Greer (2017) were able to conclude that there was no statistical association between going to church, praying, studying the Bible, and medication adherence among African American women. However, in a triangulation design, Greer and Abel (2017) concluded that prayer was identified as a major behavioral technique that assisted older African Americans, who resided in rural areas, in hypertension medication compliance (Greer & Abel, 2017). Kretchy et al. (2013) concluded that spirituality, having a connection with a higher power, but not religiosity was associated with not adhering to medications among adults in Ghana. There were also contrasting beliefs as it pertains to spirituality (faith in God) and medication adherence among African American church affiliates in the qualitative study of Newlin Lew et al. (2015); some participants relied solely on faith in God and not medications to heal them and others relied on the wisdom given to them by God to take their medications. Because there were different aspects of spirituality, identifying some of those levels could have assisted with the inconsistencies. In the current study, I narrowed the concept of spirituality to specifically focus on faith in healing so that a quantitative measure could be used to assess a person's level of faith in healing.

Validated Tools for Assessing Medication Adherence

Čulig and Leppée (2014) assessed different medication adherence scales that provided the benefits and drawbacks and examined the efficacy of the scales in relation to various chronic conditions. According to Čulig and Leppée, self-reporting techniques are advantageous ways of studying adherence behaviors because they are less expensive, quick, are cable of identifying various kinds of nonadherence, simplistic, not invasive, and cable of determining a person's position and views concerning medication. The investigation consisted of articles that assessed self-reported adherence medication scales that were pertinent to chronic conditions and that exhibited a favorable Cronbach's alpha of reliability (Čulig & Leppée, 2014).

The findings indicated that the Medication Adherence Questionnaire (MAQ), which is the most commonly applied scale to measure adherence, had an alpha value of 0.61 (Čulig & Leppée, 2014). The questionnaire provided impediments to nonadherence and was the quickest questionnaire to take, the simplest to tally, and was adjustable to different types of medications (Čulig & Leppée, 2014). The scale was limited because of its inability to detect obstacles associated with self-efficacy (Čulig & Leppée, 2014). Although the investigators indicated that there was no true gold-standard scale for identifying medication adherence, the MAQ scale was closest to being the best adherence assessment tool (Čulig & Leppée, 2014). However, it was indicated that other questionnaires had more effective internal consistency reliability (Čulig & Leppée, 2014).

In Pérez-Escamilla et al. (2017), the investigation consisted of a collection of validated questionnaires that assessed adherence to antihypertensive medications, which

had to have a minimum of one confirmation of the validity, as well as, one confirmation of the reliability. Pérez-Escamilla et al. conducted the study to determine whether questionnaires that have been used in clinical settings met the minimum selection criteria for validity and reliability. Pérez-Escamilla et al. obtained articles from different databases, utilizing PubMed, Excerpta Medica Database, and the Latin American and Caribbean Health Sciences Literature database. Although 234 articles were found during the search, 12 adhered to the inclusion guidelines, whereas six of the questionnaires were validated (Pérez-Escamilla et al., 2017). The validated scales included the Morisky-Green-Levine, Brief Medication Questionnaire, Hill-Bone Compliance to High Blood Pressure Therapy Scale, the 8-item Morisky Medication Adherence Scale, Treatment Adherence Questionnaire for Patients with Hypertension, and Martín-Bayarre-Grau (Pérez-Escamilla et al., 2017). Internal consistency that was used to determine reliability of the scales was measured by Cronbach's alpha which ranged from 0.43 to 0.889 (Pérez-Escamilla et al., 2017). The analytical strategies that were used to evaluate the psychometric characteristics of the questionnaires were identified as being significantly different among the studies (Pérez-Escamilla et al., 2017).

Pérez-Escamilla et al. concluded that neither of the six questionnaires that were considered validated could have been deemed gold standard; some of the questionnaires had suitable indicators of validity but were not acceptable in reliability, which could have been seen conversely. Pérez-Escamilla et al. also did not regard any of the questionnaires as being significantly reliable or valid to the point of strongly suggesting one over the other; however, the Morisky-Green-Levine and the 8-item Morisky Medication

Adherence Scale were the only scales with similar measurements of reliability and validity. The Morisky-Green-Levine and the 8-item Morisky Medication Adherence Scale were also the only scales that provided a medical practitioner a chance to determine that a patient who did not adhere to their medication regimen would be considered not well managed, which would demonstrate a positive predictive value (Pérez-Escamilla et al., 2017). A patient who did adhere to their regimen would be considered well managed, which would demonstrate a negative predictive value (Pérez-Escamilla et al., 2017). Pérez-Escamilla et al. revealed that there may have been selection bias limiting the study because of the inability to obtain foreign articles. Publication bias may have also existed in the investigation because of the likelihood of articles being issued based on favorable findings (Pérez-Escamilla et al., 2017).

Lam and Fresco (2015) assessed different measures of adherence which were defined in research as being subjective and objective or direct and indirect types of measurements. Subjective assessments were associated with the individual's own or the medical practitioner's assessment relative to actions pertaining to adherence, whereas objective assessments were associated with monitoring the number of pills, electronic surveillance, secondary database analysis, and biochemical assessment (Lam & Fresco, 2015). Direct measures consisted of determining the level of a medication or its metabolite from assessing fluids in the body and assessing for a measurable biomarker, whereas indirect measures were affiliated with monitoring the number of pills (Lam & Fresco, 2015).

Lam and Fresco also provided a summation of validated medication adherence scales that were frequently used to assess adherence and provided a field of reference for recognizing nonadherence in conventional settings. Lam and Fresco also explained how questionnaires and scales were subjective strategies that were initially constructed to decrease the shortcomings of other self-reported techniques. They are consistent assessment tools used to determine medication adherence for a particular disease (Lam & Fresco, 2015). Commonly used scales such as Brief Medication Questionnaire, Hill-Bone Compliance Scale, 8-item Morisky Medication Adherence Scale, MAQ, Self-Efficacy for Appropriate Medication Use Scale, and Medication Adherence Report Scale were assessed to describe their functions and to disclose their pros and cons (Lam & Fresco, 2015). Lam and Fresco emphasized that there was no gold standard measurement for medication adherence that has been developed; therefore, a combined strategy had been suggested.

Morisky et al. (1986) investigated the psychological assessment characteristics and checked the concurrent and predictive validity of a 4-item scale that was constructed to assess adherence. The collection of data included random sampling from two separate outpatient facilities from a sizeable teaching hospital (Morisky et al., 1986). Four hundred patients, who had been provided medical treatment from the hospital for a minimum of six months before the data collection process was initiated, were interviewed. Ninety-one percent of the patients were African American, whereas 70% were women (Morisky et al., 1986). The study consisted of an eighteen month, educational intervention that were specific to patient hardships (Morisky et al., 1986).

Morisky et al. constructed a medication adherence scale based on a 5-item scale from Green et al. The newly developed 4-item scale was found to have a Cronbach alpha of 0.61 (Morisky et al., 1986). According to Morisky et al., the scale assumed that patients engaged in medication exclusion either by not remembering to take the medication, terminated medication use once adverse symptoms were no longer present, or initiated medication once adverse symptoms began. The investigation adhered to a two and five year follow-up to assess actions associated with medication adherence and blood pressure management (Morisky et al., 1986).

The corrected item-to-total correlations were checked to provide correlations among scores on each item and the total scale scores (Morisky et al., 1986). A principal components analysis was used to emphasize variations (Morisky et al., 1986). The findings indicated that 75% of patients who had high adherence at the second year follow-up were also able to manage their blood pressure during the fifth year follow-up; however, only 47% of the patients who had low adherence were able to manage their blood pressure during the fifth year follow-up ($p < 0.01$) (Morisky et al., 1986). The investigators were able to construct a scale that assisted in pinpointing and tackling issues and overcoming obstacles associated with medication compliance (Morisky et al., 1986). Morisky et al. also recognized how additional studies would be required to assess and validate the adherence assessment tool in various situations and among different medical conditions. The investigators indicated that through additional studies the tool could have rendered a gold standard for assessing adherence (Morisky et al., 1986).

All of the investigators endorsed that there was no gold standard for determining medication adherence; however, it was the MAQ that had considerable recognition for use. Although the different scales and questionnaires that were assessed were deemed reliable, they had notable advantages and disadvantages. The findings of these studies made it clear that the most appropriate validated adherence tool should be used based on the circumstances of the investigation.

Self-Efficacy and Medication Adherence Self-Efficacy Scales

Glaucoma and hypertension studies have concluded that there is a notable relationship between medication self-efficacy and medication adherence (Sleath et al., 2016). Self-efficacy has been regarded as an essential factor in the social cognitive theory (Sleath et al., 2016). Sleath et al. described how the theory assumed that people with enhanced belief in their ability to successfully complete a specific action, like medication adherence, have a greater chance of completing the action and would fully engage in tackling any unforeseen barriers. Fernandez, Chaplin, Schoenthaler, and Ogedegbe (2008) identified self-efficacy as a usable construct during their investigation for its ability to forecast the initiation and maintenance of positive actions pertaining to health. Fernandez et al. (2008) additionally reported how self-efficacy assessments among patients with chronic illnesses have continuously favored patients' engagement in numerous health actions, such as actions pertaining to food selection, engagement in physical activity, control of their health, and adherence to antiretroviral regimens. Therefore, in the current study, it was important to focus on the influence of self-efficacy on hypertension and diabetic medication adherence and to determine valid assessment

tools that were needed to assess self-efficacy beliefs pertaining to adherence to those medications.

According to Steyl and Phillips (2014), the effectiveness of therapy for patients dealing with diabetes has been found to be related to self-management. Improper diabetes control measures have attributed to factors such as low perceptions of self-efficacy along with decreased family and social support (Steyl & Phillips., 2014). Participants' lack of motivation to modify negative health behaviors was one of the identified significant barriers to diabetes control, which illustrated the importance of enhancing self-efficacy in health management interventions for people with diabetes (Steyl & Phillips, 2014). With diseases such as diabetes, strategies that enhance self-efficacy have led to better maintenance of glucose levels (Sleath et al., 2016). The positive impact that self-efficacy has on diabetes self-management has been continuous among different races, people of different ethnicities, and people with different degrees of knowledge relative to health (Sleath et al., 2016).

Sleath et al. constructed a new 19-item diabetes medication self-efficacy scale that assessed diabetes medication self-efficacy's relationship to self-reported issues with taking diabetes medications and self-reported adherence. The validated 8-item Morisky Medication Adherence Scale was used to assess adherence (Sleath et al., 2016). The newly designed scale was based on the medication adherence self-efficacy scales for hypertension and glaucoma (Sleath et al., 2016). Sleath et al. recognized how diabetes self-efficacy scales that were in use mainly focused on management and not particularly on the medication aspect of self-efficacy. The scale that actually addressed medication

self-efficacy, known as Insulin Management Diabetes Self-Efficacy Scale, only examined people's faith in their insulin use (Sleath et al., 2016). Because diabetes may require different routes or types of medications to manage the disease, an appropriate diabetes medication self-efficacy scale was deemed necessary by the investigators (Sleath et al., 2016). A visual analog scale was used as an inclusion technique, which only allowed recruits to participate if they indicated that they did not adhere to their diabetes regimen (Sleath et al., 2016). The study consisted of 51 English-speaking participants who had DMII from a family medicine clinic and a pharmacy in eastern North Carolina, United States, who were nonadherent to their diabetes medications (Sleath et al., 2016).

The constructed diabetes medication self-efficacy scale had strong reliability as indicated by the Cronbach's alpha ($\alpha = 0.86$) (Sleath et al., 2016). Multivariable regression was used to assess the association between self-efficacy and self-reported medication issues and adherence (Sleath et al., 2016). Investigational findings indicated that diabetes medication issues were prevalent among the participants (6.1 ± 3.1) (Sleath et al., 2016). Taking multiple diabetes medications were found to be related to a decrease in medication adherence (Sleath et al., 2016). Increased medication self-efficacy was significantly associated with medication adherence (Odds ratio: 1.17; 95% confidence interval: 1.05, 1.30), and lower medication self-efficacy was associated with the amount of self-reported medication issues ($\beta = -0.13$; $p = 0.006$) (Sleath et al., 2016). Sleath et al. concluded that enhanced diabetes medication self-efficacy was related to a smaller number of self-reported medication issues and greater medication adherence. Examining medication self-efficacy, can assist in determining medication issues so that practitioners

can assist patients in tackling those issues, leading to better adherence and effects associated with the disease (Sleath et al., 2016).

While providing a summation of validated medication adherence scales, Lam and Fresco (2015) mentioned the Self-Efficacy for Appropriate Medication Use Scale, which possessed a Likert style quality: a 13-item and a 3-point system. According to Lam and Fresco, the scale assessed self-efficacy associated with chronic disease management and assessed obstacles relative to adhering to medication. The Self-Efficacy for Appropriate Medication Use Scale had been substantiated to use among different chronic illnesses and had been deemed reliable with a coefficient alpha of 0.89 and 0.88; however, it may not have always been viewed as appropriate in certain setting, as it was not a brief survey (Lam & Fresco, 2015).

Fernandez et al. (2008) evaluated the validity of the Medication Adherence Self-Efficacy Scale (MASES) while also reconstructing the scale. The purpose of the MASES was to determine patient's efficacy beliefs of their adherence to prescription anti-hypertensive regimens through a self-reported technique (Fernandez et al., 2008). The study consisted of 168 African Americans from a larger investigation in which patients were recruited from primary care facilities (Fernandez et al., 2008). Participants had to respond to the 26-item MASES questionnaire and the 4-item Morisky et al. medication adherence questionnaire during the start of the investigation and at the three month period (Fernandez et al., 2008). Additionally, electronic pill bottles were used as a measure to determine adherence to antihypertensive regimens (Fernandez et al., 2008). Participants

also had to provide demographic information, economic status, and information on whether or not they had insurance (Fernandez et al., 2008).

Confirmatory factor analyses (CFA) and exploratory factor analyses (EFA) were conducted to assess the single dimension of MASES (Fernandez et al., 2008). The classical test theory (CTT) was used in determining the internal consistency of the MASES (Fernandez et al., 2008). The findings revealed that MASES was one dimensional with consistent internal reliability computations over the three months; however, the findings of the item response theory (IRT) analyses resulted in reconstructing the scale to a 13-item rendition, the Medication Adherence Self-Efficacy Scale Revision (MASES-R), which was deemed reliable and valid among the EFA, CTT, and IRT (Fernandez et al., 2008). The investigators concluded that the MASES-R was a tool in which data could be obtained swiftly and was cable of recording pertinent information pertaining to adherence self-efficacy among African Americans (Fernandez et al., 2008). The investigators were able to determine the study was limited because of the exceeding number of women who participated in the investigation which accounts for the inability to make generalizations, surrounding the conclusions of the sample population, to larger populations (Fernandez et al., 2008).

In summation, the literature provided the importance of medication adherence to health behaviors. The different medication adherence self-efficacy scales addressed had been validated and proven reliable through the use of Cronbach's alpha. Because of the complexity of taking diabetes medications, not every efficacy adherence scale for other

chronic illnesses would be compatible. It is important to use evidence based scales that relate to specific chronic illnesses to determine true measures of self-efficacy.

Summary and Conclusions

The literature was configured into six themes: social networks as CVD reduction strategies, African American churchgoers as a targeted population, barriers to medication adherence, spiritual/religious beliefs and medication adherence, validated tools for assessing medication adherence, and self-efficacy and medication adherence along with medication adherence self-efficacy scales. According to the review of the literature, social networks, especially African American churches, could serve as a mechanism to reduce CVD and CVD risk factors, which would allow for positive health outcomes among African American church members. The influence of the church is important because of the trusting relationships that have been built, which could lead to members participating in successful interventions and behavioral change. There is a need for interventions and research strategies that could be used to pinpoint barriers to medication adherence among African American church community members because of the high prevalence of CVD risk factors and behaviors among the members (see Powell-Wiley et al., 2013).

Medication adherence is essential to reducing CVD health disparities among the Black church community. Although there were many well-known barriers addressed in the literature, such as medical distrust and health and medication literacy, it was important in the current study to explore other factors among church members. There were inconsistent findings among the studies in the literature that assessed spirituality and

medication adherence. A meta-analysis of these studies indicated that the contrasting views could have been associated with a person's individual understanding of their faith in God and healing; therefore, more investigations were needed that specifically focused on a person's level of faith in God's healing. The aim of the current study was to address the gap by focusing on levels of faith in healing, through a quantitative lens, and its association to medication adherence, CVD prevalence, and uncontrolled symptoms of hypertension and/or DMII. A 4-item scale was constructed to determine high, moderate, and low levels of faith in healing, when it comes to taking medications; there were no available scales that specifically addressed this particular factor being investigated. Chapter 3 focuses on the methodology of the investigation. This chapter explores the quantitative approach that was chosen while providing a comprehensive overview of the different components of the methodology, so that there is a clear presentation of the various actions that were taken to investigate the problem, and justification for the techniques that were applied to interpret the problem.

Chapter 3: Research Method

The purpose of this study was to examine whether level of faith in God's healing was associated with medication adherence to hypertension and/or DMII medications and whether those factors were associated with prevalence of CVD and uncontrolled symptoms of hypertension and/or DMII, as measured by hospitalizations for severe high blood pressure and/or hyperglycemia among Black churchgoers in the Cincinnati metropolitan area who met selection criteria. The associations were assessed through a quantitative approach using a cross-sectional design with survey data from church members. This chapter includes a description of the population and sampling strategies; recruitment mechanisms; instrumentations to assess adherence, efficacy, and level of faith; data analysis and testing of hypotheses; threats to validity; and ethical procedures.

Research Design and Rationale

A cross-sectional design was used to gather data. This design allows for data to be collected from participants at a particular point in time through the use of surveys, and also allows for prevalence and associations to be determined (Setia, 2016). The design was beneficial in approximating the prevalence of CVD and determining the odds ratio which focused on associations between levels of faith in healing, medication adherence, CVD prevalence, and uncontrolled symptoms of hypertension and/or DMII among the African American church population (see Setia, 2016). The design was also quick to administer and was not as costly as other designs (see Setia, 2016).

A quantitative strategy was chosen because the data obtained from the surveys that were administered could be expressed as numbers and could be examined using a

statistical analysis (see Leppink, 2017; Oak Ridge Associated Universities, n.d.). This approach was also appropriate because it is deductive and was used to assess particular constructs of the social cognitive theory (see Oak Ridge Associated Universities, n.d.). A quantitative strategy allowed for the assessment of associations between level of faith and/or medication adherence and CVD prevalence and uncontrolled symptoms of hypertension and/or DMII. The objective of quantitative studies is to assess associations among independent and outcome variables (University of Southern California, 2018). This investigation adhered to a correlational approach, which allows for relationships and not causality to be determined (see Winston-Salem State University, n.d.; University of Southern California, 2018). A quantitative design was used to fill the gap that in the literature regarding the relationship between levels of faith in healing and medication adherence.

The variables in the investigation were categorized as independent, dependent, covariate, and moderating. An independent variable is a factor that does not depend on other factors and cannot be controlled or influenced by other factors being assessed (National Center for Education Statistics, n.d.). The independent variables of the current investigation were levels of faith in healing and medication adherence. A dependent variable is a factor that relies on other factors (National Center for Education Statistics, n.d.). The dependent variables of the current investigation were CVD prevalence and uncontrolled symptoms of hypertension and/or DMII. Medication adherence also severed as a dependent variable to levels of faith in healing. A moderating variable is a factor that is chosen by the investigator to determine whether it is capable of altering the association

between the independent factor and an event ("Variables, Moderating Types," 2017). The moderating variable of the current investigation was levels of faith in healing, which was used to determine whether levels of faith in healing modified the association between medication adherence and uncontrolled symptoms of hypertension and/or DMII. Levels of faith in healing determined to what degree the association between medication adherence and uncontrolled symptoms were affected by a secondary independent variable (see "Variables, Moderating Types," 2017). A covariate is a factor that is compatible to the dependent factor; therefore, a quantifiable factor with a statistical association to the dependent factor could be viewed as a covariate ("Covariate," 2010). Variables such as age, gender, race, insurance, diagnosis of depression, and medication regimen difficulties have been identified as being impactful on medication adherence (Fan et al., 2016). Patients with chronic conditions have a higher chance of not adhering to medication regimens because of the different medications being prescribed (Čulig & Leppée, 2014; Lam & Fresco, 2015). Therefore, age, gender, insurance status, number of medications prescribed (oral and/or injections) for hypertension and/or DMII, and education level were considered covariates in the current investigation.

Methodology

Population

The population in the current study included members of African American churches in the Cincinnati metropolitan area of Ohio. Approximately 30 churches with websites could be identified as African American churches through internet research. A Google search was conducted using the phrase *African American churches in Hamilton*

County and Cincinnati metro. The churches that were identified from the search were noted to provide church services to members ranging from small numbers to hundreds of church members.

Sampling and Sampling Procedures

A nonprobability sampling technique was used to select samples from the church population. In a nonprobability sampling method, random selection of members from the population does not exist; therefore, it is not clear to what extent the sample varies from the population (Tyrer & Heyman, 2016). A convenience sample, which is a type of nonprobability sample, was used to select samples in a nonrandom fashion (see Tyrer & Heyman, 2016). This type of sampling technique was beneficial because it consisted of simple recruitment methods in which prospective participants were easily reached (see Tyrer & Heyman, 2016).

The sampling frame consisted of two African American churches in the Cincinnati metropolitan area of Ohio. Eligible participants who were included in the sample population met the following criteria: church members who are African American, 18 years and over, diagnosed with DMII and/or hypertension, and prescribed at least one antihypertensive medication for hypertension and/or at least one oral or injection anti-diabetic medication for DMII. African Americans who did not speak English, who had been diagnosed with borderline hypertension and/or prediabetes, who had been diagnosed with diabetes mellitus type 1, or who had not been prescribed at least one medication to treat their illness were not included in the sample population.

Sample size, effect size (ES), alpha (α), and power (1-β) are connected through their ability to affect the inferences that are made from the statistical analysis of data obtained from an investigation (Trochim, 2020). Sample size represents the number of people who are available to participate in an investigation (Trochim, 2020). Trochim (2020) defined the effect size as "the salience of the treatment relative to the noise in measurement" (para. 1). Alpha level, also the significance level, is the likelihood that the outcome detected is caused by chance (Trochim, 2020). Lastly, power is defined as the likelihood of detecting the effect of an intervention when there is one (Trochim, 2020). A higher alpha level increases the likelihood of a type I error (incorrectly rejecting the null hypothesis) but decreases the likelihood of a type II error (incorrectly maintaining a false null hypothesis) and reduces the accuracy of the test (Trochim, 2020). By increasing alpha, power is enhanced from the fact that the more times the null is rejected, the more likely the alternative will be accepted when it is true (Trochim, 2020). Generally, an alpha of .05 and a power of .80 is appropriate to determine an association, difference, or gain and to prove a theory (Trochim, 2020).

Because an alpha of .05 and a power of .80 are appropriate for statistical inferences in social science research, those values were used to determine the minimum sample size (see Trochim, 2020). When determining the ideal effect size for the current investigation, no effect size from homologous studies addressing the same attributes of this investigation could be found. Igbende et al. (2016) evaluated the closely related attribute of belief about spiritual healing and computed an effect size of 30.2% from a sample size of 143 (*Eta sq* = .302). Therefore, I used an effect size of .30 to determine the

minimum sample size. An alpha of .05, power of .80, and effect size of .30 were used to determine the sample size.

G*Power Version 3.1.9.2 was used to compute the sample size (see Faul, Erdfelder, Lang, & Buchner, 2007; Kent State University, 2018). The software was downloaded from Universität Düsseldorf website (see Faul et al., 2007). I calculated the sample size using chi-square goodness-of-fit test/ contingency tables and a priori type of power analysis in G*Power 3.1.9.2; I also had to indicate the degrees of freedom (*df*) (see Faul et al., 2007). According to McClean (n.d.), *df* in chi-square can be calculated by taking the number of classes (*n*) and subtracting one (*n*-1). Taylor (2019) also defined the *df* for a chi-square goodness-of-fit test as being *n*-1, with *n* representing the number of levels for a sole categorical variable, and the *df* for chi-square for independence being *r*-1, *c*-1, with *r* representing the rows that contain the levels for one variable and *c* representing the columns that contain the levels for the other variable, which forms a two-way table; therefore, the value for *df* used was two because there were three levels of faith in healing (low, medium, and high) and two for the medication adherence variable (adherent and nonadherent). Using the values ES = 0.3, $\alpha = .05$, $1-\beta = .80$, and $df = 2$, the minimum sample size was determined to be 108 participants (see Faul et al., 2007).

Procedures for Recruitment, Participation, and Data Collection (Primary Data)

The recruitment process began with contacting the pastors and/or event coordinators of three different African American churches via email and/or telephone during Week 1 to determine interested parties. Carrier mail was also considered throughout the process if the other two means of contact were unsuccessful. Follow-up

emails were initiated on the fourth day when there were no responses. After a full week of no responses to follow-up emails, I extended the contact method to two additional churches. Once churches responded, details about the study were communicated and dates for survey dissemination were coordinated. Recruitment took place in two of the 30 churches in the Cincinnati metro area that were identified as African American churches. Initially, five churches were contacted; however, four were later lost to dropout. As recruitment continued for several months, many of the churches failed to respond to multiple participation attempts. Eventually a second church was obtained and the data collection process continued.

The initial plan was to post flyers about the study around church buildings and to highlight the dissemination event in the churches' bulletins; however, advertisement was left up to each participating church based on how they agreed the data collection process would take place. One hundred two eligible African American church members ages 18 years and over who had been diagnosed with hypertension and/or DMII and had been prescribed at least one medication to treat the disease in question volunteered to participate in the investigation. Those participants were provided informed consent forms before data collection began. The eligible church members who volunteered to participate in the investigation were compensated five dollars after survey completion.

Approval was sought from Walden University's Institutional Review Board (IRB). A cross-sectional design was used to collect data from participants via a survey; therefore, all data were collected from a single visit with no follow-up measures needed. As a rule, participants were entitled to exit the research study whenever deemed

necessary as it was strictly voluntary and reasons for withdrawing did not have to be disclosed (see Washington University in St. Louis, n.d.). The exit rule was explained to all participants. This study did not include an intervention or study medications; therefore, no instructions pertaining to ending the study or no additional contact by the participant was necessary (see Washington University in St. Louis, n.d.). However, contact information was provided in the consents; it may have become useful if participants who were exiting the study had questions or concerns pertaining to the study's results or interpretations (see Washington University in St. Louis, n.d.).

Church contacts volunteered to coordinate the distribution and collection of survey data from participants at each dissemination event. Communication assistance, such as verbal instructions, reading of survey questions, or explanation of inquiries were made available to those participants who had literacy challenges or disabilities.

The survey instructed participants to provide demographic and health data including age, gender, education level, insurance status, CVD status (coronary artery disease, heart failure, arrhythmias, and valve disorder), hypertension and/or diabetes status, number of medications prescribed (oral and/or injections) for hypertension and/or DMII, and number of hospital admissions associated with hyperglycemia and/or severe high blood pressures during the full year of 2018 (see Appendix A). Participants also completed the MAQ, the MASES-R, the Sleath et al. (2016) diabetes medication self-efficacy scale, a DMII medication collective efficacy scale based on the Sleath et al. (2016) diabetes medication self-efficacy scale, and a level of faith in healing scale developed to determine levels of faith in healing for this investigation.

Instrumentation

Medication Adherence Questionnaire. Permission was granted from Dr. Donald E. Morisky via email to the use the Morisky et al. (1986) MAQ. The MAQ is a 4-item scale that was constructed to assess medication adherence (see Appendix B) (Morisky et al., 1986). The four inquires of the scale were phrased in a reverse manner so that the total of yes responses reflected a combined assessment for not adhering to medications (yes = 0 and no = 1), which resulted in having either low, medium, or high adherence (Morisky et al., 1986). According to Morisky et al., scores from 0 to 1 indicated (low adherence) and a score of 4 indicated (high adherence). The MAQ was used to assess hypertension and/or DMII medication adherence among participants in the current investigation to determine the association of levels of faith in healing on medication adherence and the association between levels of faith in healing/medication adherence and CVD prevalence and uncontrolled symptoms of hypertension and/or DMII: measured by hospitalizations from hyperglycemia and/or severe high blood pressure.

In the original study, the collection of data included random sampling from two separate outpatient facilities (Morisky et al., 1986). The study sample consisted of four hundred patients which included 91% African Americans and 70% women (Morisky et al., 1986). The MAQ was constructed based on an original 5-item scale from Green et al. (Morisky et al., 1986). The scale was reconstructed into a 4-item scale detecting low, medium, and high adherence. Medication adherence alongside blood pressure management were assessed during a two and five year follow-up among 290 of the sample population (Morisky et al., 1986). Corrected item-to-total correlations were

checked to provide correlations among scores on each item and the total scale scores (Morisky et al., 1986). A principal components analysis was used to emphasize variations (Morisky et al., 1986). Based on the follow-up data between the scale and blood pressure management, the findings supported the scales concurrent and predictive validity, which was found to have a Cronbach alpha of 0.61 (Morisky et al., 1986). Although the original study was concerned with scores representing low, medium, and high adherence, medication adherence was operationalized in the current investigation as a hypertension and/or DMII management behavior among participants displayed as either an adherent or nonadherent behavior. Participants who scored 2 to 4 on the 4-item scale were recognized as adherent, whereas those who scored 0 to 1 were recognized as nonadherent. Adherent was determined by combining the medium and high medication adherence scores into one category, whereas nonadherent represented the low medication adherence scores.

Medication Adherence Self-Efficacy Scale. Permission was granted from Dr. Gbenga Ogedegbe via email to use the Fernandez et al. (2008) MASES-R. The MASES-R is a revision of the Medication Adherence Self-Efficacy (MASES) which is used to determine patient's efficacy beliefs of their adherence to prescription anti-hypertensive regimens (Fernandez et al., 2008). The original study consisted of 168 African Americans from primary care facilities (Fernandez et al., 2008). Participants initially responded to the 26-item MASES questionnaire during the start of the investigation and at the three month period (Fernandez et al., 2008). Although classical test theory (CTT) acknowledged that MASES had consistent internal reliability computations over the three months, findings of the item response theory (IRT) analyses resulted in reconstructing the

scale to a 13-item rendition—the MASES-R, which was deemed reliable and valid among the EFA, CTT, and IRT (Fernandez et al., 2008). The Cronbach's alpha coefficients for MASES-R were .92 at the start of the investigation and .90 at the three month period (Fernandez et al., 2008). The MASES-R was used to operationalize self-efficacy among church members who had hypertension, through the use of a 13-item questionnaire that provided scenarios to determine confidence in taking anti-hypertensive medications. Scores were based on responses from 13 items on a 4-point Likert scale ranging from 1 (*Not at all sure*) to 4 (*Extremely sure*) (see Appendix C). Participants who had a higher score were equated to having higher self-efficacy (a score of 33 to 52) and in return would have better adherence to hypertension medication(s).

Diabetes Medication Self-Efficacy Scale. Permission was granted from Betsy Sleath via email to use the Sleath et al. (2016) diabetes medication self-efficacy scale that was developed. The diabetes medication self-efficacy scale was constructed to assess diabetes medication self-efficacy, by considering the different routes of diabetes medications (Sleath et al., 2016). The original study consisted of 51 English-speaking participants who had DMII, who were enrolled from a family medicine clinic and from a pharmacy in Eastern North Carolina, United States, and who were detected by a visual analog of not being adherent to diabetes medications (Sleath et al., 2016). The study concluded that enhanced diabetes medication self-efficacy was related to a smaller number of self-reported medication issues and greater medication adherence (Sleath et al., 2015). The constructed diabetes medication self-efficacy scale had strong reliability as indicated by Cronbach's alpha ($\alpha = 0.86$) (Sleath et al., 2016).

The diabetes medication self-efficacy scale was used to operationalize both of the constructs: self-efficacy and collective efficacy. The 19-item questionnaire consisted of scenarios to determine confidence in taking DMII medications. The participants who had been diagnosed with DMII were asked to respond to 19 questions, choosing from *not at all sure*, *somewhat sure*, and *very sure*. The questions were scored from 19 (lower self-efficacy) to 57 (higher self-efficacy) (see Appendix D). Using the same 19-item scale, the questions were slightly changed to reflect the collective efforts of all diabetic church members' confidence in taking their DMII medications. The collective efficacy questionnaire used the same response choices: *not at all sure*, *somewhat sure*, and *very sure* (see Appendix E). According to the social cognitive theory, those who had higher self-efficacy would have better medication adherence compared to those with lower self-efficacy (see Bandura, 2001). Collective efficacy would be equivalent because perceptions of collective efficacy play an identical role to perceptions of self-efficacy; they both use identical mechanisms to function (see Bandura, 2001).

Level of Faith in God's Healing Scale. A 4-item scale was developed to determine level of faith in God's healing among participants. A review of the literature revealed a study that discussed the development of a scale that pertained to faith in healing. Igbende et al. (2016) discussed a scale that was developed called Beliefs about Potency of Spiritual Healing Questionnaire. The scale was used to assess beliefs about the potency of spiritual healing among Nigerian respondents who were Muslims, Christians, and traditional Nigerian worshippers; however, the scale in its entirety was not disclosed. An extensive internet and database search of the mentioned scale only

resulted in that particular study. Contact was not made to obtain the scale; the scale had not been readily cited in American studies that had addressed its use among Christian African American church members. I decided to proceed with the construction of a faith in healing scale. A 4-item scale was constructed using four dichotomous *yes/no* questions (see Appendix F). The scale was designed using similar logic as the MAQ scale, which included reversing how the questions were phrased (see Morisky et al., 1986). The questionnaire was reversely designed so that each question would not automatically trigger a yes response to determine a higher levels of faith in healing (see Morisky et al., 1986). Each question was formulated so that yes measured a lower level of faith in healing, when it comes to taking medications: scoring for yes = 0 and scoring for no = 1 (see Morisky et al., 1986). The methodology behind the actual wording of the questions was based on reviews of qualitative studies concerning the participants' beliefs pertaining to healing. In Newlin Lew et al. (2015), total trust and faith in God's healing seemed to be a relevant theme to nonadherence to medications, whereas wisdom seemed to be relevant to medication adherence. The 4 items used to address levels of faith in healing, were scored low to high. Levels of faith in healing scores ranged from 0 to 1 (low level of faith in healing) to 4 (high level of faith in healing). The level of faith in healing scale was not created to assess a person's overall faith in healing, but rather it was used to measure a person's faith in healing when it comes to taking medications. The purpose of the scale was to determine whether a person relied only on healing or if they believed also in the use of medications. A person with a high level of faith in healing would only believe in God's healing, when it comes to taking medications.

Because the scale was being newly developed, internal consistency reliability needed to be established. Internal consistency was used to determine whether items on the scale that are being used to measure levels of faith in healing would generate like scores (Tang, Cui, & Babenko, 2014). For instance, if a participant answers the different items on the scale that is being used to measure levels of faith in healing in an identical fashion, then the test is believed to have internal consistency (Tang et al., 2014). According to Nunnally (as cited in Tang et al., 2014), the magnitude of reliability coefficient depends on the internal consistency and the amount of items on the scale. The coefficient alpha (Cronbach's alpha) measures reliability through the influence of internal consistency, which explains intercorrelation between the scale items (Barbaranelli, Lee, Vellone, & Riegel, 2015; Tang et al., 2014). The Cronbach's alpha method in SPSS was used to measure reliability of the level of faith in healing scale; however, because of the dichotomous nature of the scale, the measure becomes known as the Kuder-Richardson Formula 20 (KR-20) ("Reliability, Kuder-Richardson," 2017).

Generally, a notable instrument for measuring level of faith in God's healing would have served as the criterion for which the criterion validity of a new instrument would be compared to; however, no such prominent scale was found (see Laerd dissertation, n.d.-b). It is only through continued validation, through the scale's use in other studies, could criterion validity be established for the level of faith in healing scale (see Laerd dissertation, n.d.-b). Correlation measurements are used to assess the strength of the relationship between the scores of a new instrument and the scores of a previously accepted form of measurement to determine concurrent or predictive validity. Concurrent

and predictive validity are types of criterion validity; however, in this investigation, there were no well-established measurements to measure faith in healing (see Laerd dissertation, n.d.-b). The coefficient of determination, R^2, was used to assess predictive ability (see IBM, n.d.). The coefficient was used to assess the strength between levels of faith in healing and the dependent variable in logistic regression analysis, determining what percent of the variation in the outcome variable was explained by the variation in levels of faith in healing if there was a significant relationship (see IBM, n.d.). Because the variables in the investigation were categorical, I used Nagelkerke R^2 to approximate the coefficient of determination in logistic regression (see IBM, n.d.). The Pearson's correlation coefficient, *r*, which is the square root of the decimal value for the coefficient of determination, R^2, is also generally used to determine predictive ability of a scale by determining the correlation between two variables (see Penn State Eberly College of Science, n.d.-b). Pearson's correlation coefficient is used to measure continuous variables; therefore, I used the Pearson's chi-squared test to assess the relationship between levels of faith in healing and medication adherence (see Penn State Eberly College of Science, n.d.-a, n.d.-b).

Operationalization of Constructs

Age. A characteristic pertaining to the number of years old; eligible participants were defined as ages 18 years and over (continuous/ratio data). Participants were asked to provide their age in the demographics section of the survey (see Appendix A). Descriptive statistics were used to measure age, determining the minimum and maximum age as well as the mean age of participants. Age is considered a covariate to medication

adherence according to research; however, an analysis of covariance (ANCOVA) could not have been used to control the variable as assumptions for performing the test were violated.

Collective efficacy. People's collaborative trust in their joint ability to complete and achieve a task (interval data) (Bandura, 2000). Participants were asked to complete a 19- item diabetes medication collective efficacy scale (see Appendix E). The instructions directed them to circle one number for each of the 19 situations that best described how sure they thought church members were about taking their DMII medications. Participants were to choose between 1 (*not at all sure*), 2 (*somewhat sure*), and 3 (*very sure*). Collective efficacy was determined based on total scores across the items. The participants who scored 19 represented lower collective efficacy, whereas those who scored 57 represented higher collective efficacy. Collective efficacy scores ranged from 19 to 37 (low collective efficacy) and 38 to 57 (high collective efficacy). Collective efficacy was measured as categorical data based on low or high collective efficacy. A chi-square test was used to determine the association between DMII medication collective efficacy and medication adherence among participants who had DMII.

CVD prevalence. The number of church members determined to have CVD (dichotomous nominal data). Participants were asked to indicate yes or no, in the demographics section of the survey, if their doctor had told them that they had heart disease (see Appendix A). Descriptive statistics were used to determine the number and percent of CVD among participants. Multivariable binary logistic regression was used to

measure the association between levels of faith in healing, medication adherence, and CVD prevalence (number of cases with CVD) among participants.

Educational level. The highest grade completed, which was defined as elementary school completion, some high school, high school graduate, some college/trade/vocational school, or college/trade/vocational school graduate (ordinal data) (see Appendix A). Participants were asked to circle the number for the grade that best described them. 1 (*elementary school*), 2 (*some high school*), 3 (*high school graduate*), 4 (*some college/trade/ vocational school*), or 5 (*college/trade/vocational school graduate*). Descriptive statistics were used to describe education levels, determining the number and percentage of participants who had the different levels of education. Education is also a covariate to medication adherence according to research; however, ANCOVA could not have been used to control the variable as assumptions for performing the test were violated.

Gender. A characteristic for being either a man or a woman (dichotomous nominal data). Participants were asked to indicate whether they were 1 (*female*) or 2 (*male*). Descriptive statistics were used to describe gender, determining the number and percentage of participants who were men and the number and percentage of participants who were women. Gender is also a covariate to medication adherence according to research; however, ANCOVA could not have been used to control the variable as assumptions for performing the test were violated.

Insurance status. A characteristics of having or not having private or government health benefits that cover medical expenses (dichotomous nominal data). Participants were

asked to indicate whether they had insurance 1 (yes) or 2 (no) (see Appendix A). Descriptive statistics were used to describe insurance status, determining the number and percentage of participants who had insurance and the number and percentage of participants who did not have insurance. Insurance is also a covariate to medication adherence according to research; however, ANCOVA could not have been used to control the variable as assumptions for performing the test were violated.

Level of faith in God's healing. The degree in which one believes God is the ultimate healer when it comes to taking medications (interval data). The participants were asked to fill out a 4-item scale that was developed (see Appendix F). The participants chose from yes or no questions in which yes = 0 and no = 1. The scores were converted into ordinal data so that scores from 0 to 1 indicated (low level of faith in healing) and a score of 4 indicated (high level of faith in healing). Chi-square test was used to measure the association between independent variable, levels of faith in healing, and the dependent variable, medication adherence. Multivariable binary logistic regression was used to measure the association between levels of faith in healing, medication adherence, CVD prevalence, and uncontrolled symptoms of hypertension and/or DMII among participants.

Medication adherence. The behavior of taking medications routinely according to the provider's prescription (interval data). Medication adherence is referred to as having low, medium, and high medication adherence (ordinal data) according to the Morisky et al. (1986) MAQ scale; however, in this investigation adherence was reconfigured into a status of adherent or nonadherent (categorical/nominal data). The

participants responded to the 4-item MAQ (see Appendix B). The MAQ consisted of four questions requiring a yes or no response. The yes = 0 and no = 1, ranging from a score of 0 to 4 (Morisky et al., 1986). According to Morisky et al. (1986), the original adherence scores from 0 to 1 indicated (low adherence) and a score of 4 indicated (high adherence); however, during this investigation, medium and high adherence categories were combined. Participants who scored 2 to 4 on the 4-item scale were recognized as adherent, whereas those who scored 0 to 1 were recognized as nonadherent (categorical data). Chi-square test was used to measure the association between levels of faith in healing and medication adherence. Multivariable binary logistic regression was used to measure the association between levels of faith in healing, medication adherence, CVD prevalence, and uncontrolled symptoms of hypertension and/or DMII among participants.

Number of medications prescribed. The number of medications (oral and/or injections) that had been ordered by the doctor to treat the participant's disease, which was measured for hypertension and/or DMII (ratio data). Participants were asked to indicate the number of medications (oral and/or injections) that they take for their high blood pressure and/or DMII. Number of medications prescribed is another covariate to medication adherence according to research; however, ANCOVA could not have been used to control the variable as assumptions for performing the test were violated.

Self–efficacy. A person's perceived notion of their ability to perform actions that are mandatory in accomplishing particular activities (interval data) (Carey & Forsyth, n.d.). Participants were asked to complete a 13-item medication adherence self-efficacy scale for anti-hypertensive medications called MASES-R (see Appendix C). The

participants were asked to circle the number for each of the 13 situations that best described how confident they felt about taking their blood pressure medication. Participants chose between 1 (*not at all sure*), 2 (*a little sure*) 3 (*fairly sure*), and 4 (*extremely sure*). The end score was based on the total across responses to the 13 items. The higher scores represented having a higher level of self-efficacy for adherence to anti-hypertensive medications. For the purpose of this investigation, self-efficacy was measured as categorical data, either having low or high self-efficacy. Anti-hypertensive medication self-efficacy scores ranged from 13 to 32 (low self-efficacy) to 33 to 52 (high self-efficacy). Chi-square was used to determine the association between anti-hypertensive medication adherence self-efficacy and medication adherence among participants who had hypertension.

Participants were also asked to complete a 19- item diabetes medication self-efficacy scale (see Appendix D). The instructions directed them to circle one number for each of the 19 situations that best described how sure they were about taking their DMII medication. Participants were to choose between 1 (*not at all sure*), 2 (*somewhat sure*), and 3 (*very sure*). Self-efficacy was determined based on total scores across the items. The participants who scored 19 represented lower self-efficacy, whereas those who scored 57 represented higher self-efficacy. DMII medication self-efficacy scores ranged from 19 to 37 (low self-efficacy) to 38 to 57 (high self-efficacy). Self-efficacy was measured as categorical data based on low or high self-efficacy. A chi-square test was used to determine the association between DMII medication adherence self-efficacy and medication adherence among participants who had DMII.

Uncontrolled symptoms of diabetes. An elevated blood sugar level (hyperglycemia) that led to a hospital admission for inpatient treatment to correct a blood sugar level that was not controlled at home (categorical/ nominal data). Participants were first asked whether they had DMII 1 (yes) or 2 (no). If they said yes, then they were asked to indicate how many hospital admissions they had in 2018 because of high blood sugar (see Appendix A). The variable was categorized as either uncontrolled symptoms of DMII for two or more hospital admissions occurring within a given year or controlled symptoms of DMII for one or less hospital admissions. Multivariable binary logistic regression was used to measure the association between levels of faith in healing and medication adherence and uncontrolled symptoms of DMII among participants.

Uncontrolled symptoms of hypertension. An elevated blood pressure that led to a hospital admission for inpatient treatment to correct a blood pressure level that was not controlled at home (categorical/nominal data). Participants were first asked whether they had high blood pressure 1 (yes) or 2 (no). If they said yes, then they were asked to indicate how many hospital admissions they had in 2018 because of high blood pressure (see Appendix A). The variable was categorized as either uncontrolled symptoms of hypertension for two or more hospital admissions occurring within a given year or controlled symptoms of hypertension for one or less hospital admissions. Multivariable binary logistic regression was used to measure the association between levels of faith in healing, medication adherence, and uncontrolled symptoms of hypertension among participants.

Data Analysis Plan

I used IBM SPSS 25 software during the investigation to create tables and charts, recode variables, and run analyses using descriptive and inferential statistics. I also created a dataset using an Excel spreadsheet to transcribe all the data that was obtained from the participants; the dataset was imported into SPSS 25. Data screening and cleaning occurred, which consisted of repairing the data for analysis. During the screening process, I reviewed the data for mistakes, missing responses, values that were considered outliers, and to address any transformations or standardizations that were needed (see University of Massachusetts, n.d.). I used descriptive statistics analysis in SPSS to run frequencies, which were used to determine missing data. If I had found missing data, the replace missing values function in SPSS would have been used to replace the missing data with a mean value; univariate or multivariate outliers could have been assessed in SPSS as well (see University of Massachusetts, n.d.). The following section contains an outline of the data analysis plan and the statistical tests that were used to assess the hypotheses for RQ1, RQ2, RQ3, RQ4, RQ5, and RQ6.

RQ1: What is the association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII?

$H_0$1: There is no association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

H_A1: There is an association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

To determine whether a statistical relationship existed between levels of faith in God's healing (IV) and medication adherence (DV) among African American congregants with hypertension and/or DMII, a two-way contingency table analysis was conducted, along with the use of the chi-square statistic, and a Fisher's test was added if the sample population was small. Follow-up tests were also considered based on significance and other conditions. According to Green and Salkind (2014b), an analysis that obtains a significant chi-square value, that is an omnibus test consisting of a variable containing greater than two levels, and that has a degree of freedom that is greater than one for the Pearson or likelihood ratio, should be accompanied by follow-up tests such as pairwise comparisons and a Holm's sequential Bonferroni technique. A clustered bar graph was used to display the interpretation if there was a significant association between levels of faith in healing and medication adherence.

RQ2: What is the association between levels of faith in healing and prevalence of cardiovascular disease (CVD) among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

H_02: There is no association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A2: There is an association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors, hypertension and/or DMII.

To determine whether a statistical relationship existed between levels of faith in God's healing (IV) and CVD prevalence (DV), multivariable binary logistic regression was used to measure the association between levels of faith in healing and CVD prevalence. Medication adherence (IV) was the other predictor variable that was assessed along with levels of faith in healing, that is further discussed in RQ4. According to the University of California Los Angeles Institute for Digital Research and Education (n.d.), predictor variables in logistic regression that are categorical and greater than two levels require dummy variables. The SPSS categorical function created dummy variables for the levels of faith in healing and the medication adherence variables to account for either the number of levels or data being coded categorical. Multivariable binary logistic regression was further being used to interpret the coefficients based on the Exp(B) by determining the odds ratio or the odds of having CVD given each level of faith in healing for the relationships that were found to be significant.

RQ3: What is the association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0$3: There is no association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in

blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A3: There is an association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

To determine whether there was a statistical relationship between levels of faith in God's healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII, multivariable logistic regression was used to measure the association between levels of faith in healing (IV) and uncontrolled symptoms of hypertension and/ or DMII (DV). Medication adherence (IV) was the other predictor variable that was assessed along with levels of faith in healing, that is further discussed in RQ5. The dummy variables for levels of faith in healing were used to assess against the binary outcome, uncontrolled or controlled symptoms. Logistic regression was being applied to interpret the coefficients based on the Exp(B), determining the odds ratio or the odds of having uncontrolled symptoms of hypertension and/or DMII given each level of faith in healing if the relationship was significant.

RQ4: What is the association between medication adherence to hypertension and/or DMII medications and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

$H_0$4: There is no association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A4: There is an association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

To determine whether there was a statistical relationship between medication adherence to hypertension and/or DMII medications and CVD prevalence among African American congregants with hypertension and/or DMII, multivariable logistic regression was used incorporating the following variables: medication adherence (IV); previously mentioned independent variable from RQ2, levels faith in God's healing; and CVD prevalence (DV). Logistic regression was being used to interpret the coefficients based on the Exp(B) by determining the odds ratio or the odds of having CVD given the medication adherence status if the results were significant.

RQ5: What is the association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0$5: There is no association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII,

defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A5: There is an association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

To determine whether there was a statistical relationship between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII, multivariable logistic regression was used to measure the association between medication adherence (IV); previous discussed predictor variable, levels of faith in healing; and uncontrolled symptoms of hypertension and/ or DMII (DV). Logistic regression was being applied to interpret the coefficients based on the Exp(B), to determine the odds ratio or the odds of having uncontrolled symptoms of hypertension and/or DMII given the medication adherence status if the relationships were found to be significant.

RQ6: What is the association between medication adherence to hypertension and/or DMII medications and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII?

$H_0$6: There is no association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

H_A6: There is an association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

Logistic regression analysis was also applied to determine effect modification. Medication adherence and uncontrolled symptoms were assessed separately and assessed while controlling for the different dummy variables for levels of faith in healing, which was to evaluate whether there was evidence of an effect.

Threats to Validity

Internal Validity

Threats to validity are important factors that should be considered during observational investigations such as cross-sectional studies. Internal and external validity are both relevant factors in the assessment of these types of studies (Carlson & Morrison, 2009). Internal validity focuses on the potency of the assumptions being made in the investigation (Carlson & Morrison, 2009). It is concerned with determining whether the changes that are noted during the investigation could be accredited to the explanatory/independent variable rather than other causing variables (Carlson & Morrison, 2009). The internal validity of an investigation could be limited without the

use of a control group or if the control group was unequal to a treatment group (Carlson & Morrison, 2009). In the current cross-sectional study, not having a control group or randomization could have served as a threat to internal validity; therefore, to address those threats, possible covariates (age, gender, insurance status, number of medications prescribed for hypertension and/or DMII, and education level) were to be assessed using ANCOVA if statistical assumptions were met (see Whittemore & Melkus, 2016).

External Validity

External validity is concerned with determining to what extent the findings of the investigation would be true for other populations in different locations (Carlson & Morrison, 2009). External validity relies on internal validity, because the explanatory variable must indicate that it is responsible for the change in the outcome before generalizations can be made regarding the explanatory variable being responsible for the outcome in every case (Carlson & Morrison, 2009). In the current investigation, threats to external validity were present based on the lack of randomization. Randomization reflects the representation of a population, which is a difficult task in observational studies when samples are acquired from one location (Carlson & Morrison, 2009). To account for this type of threat in the current study, samples were obtained from two different African American churches around the Cincinnati metropolitan area which included different geographical locations, allowing for greater representation of the population (see Carlson & Morrison, 2009). According to Whittemore and Melkus (2016), taking great measures to control the sample, environment, and the methodology is beneficial in strengthening internal validity; however, these measures can also restrict external validity which can

lessen the generalizability of findings from the sample to the population that the sample originated from (Whittemore & Melkus, 2016). Because control of important aspects of a sample to secure internal validity could ultimately affect external validity, such as obtaining a sample with extremely similar characteristics, researchers must decide the primacy of internal validity over external validity (Whittemore & Melkus, 2016).

Construct Validity

Being able to generalize the findings from the investigation sample to other populations is also contingent on how the constructs are being determined (Laerd dissertation, n.d.-a). Generalizations from the findings can only be made based on the limitations of how the constructs are being operationalized and measured in the investigation (Laerd dissertation, n.d.-a). Making generalizations across measures for a specific construct could cause a threat to external validity, especially if a uniform measure was used for the construct in question (Laerd dissertation, n.d.-a). For example, when a construct is being measured simplistically, such as on a nominal scale, but it is a really complex variable with different features, then there is a risk of not representing the construct to the fullest extent (Laerd dissertation, n.d.-a). To avoid this type of threat to construct validity in the current study, most of the constructs such as self-efficacy and medication adherence were being measured using validated scales. Faith was the only construct in which a measurement had to be created; however, this construct was narrowed down to a more specific aspect of faith called levels of faith in God's healing, when it comes to taking medications. A wider measurement was also used, which assessed high, medium, and low levels of faith in God's healing.

Ethical Procedures

The IRB oversees university research making sure every angle of the process adheres to ethical considerations of the university as well as ass federal guidelines (Walden University, n.d.). The IRB serves as a regulatory entity, preserving the rights of human subjects being investigated (Creswell, 2014). They are responsible for examining the research plan, before the investigation can get underway, to make sure the proposal adheres to the protection of rights and ethical treatment of participants (Walden University, n.d.). Walden University IRB approval was sought before the investigation was initiated; the study was approved, study number #11-05-18-0453435.

One way of upholding the rights of the subjects is gaining consents prior to the gathering of participant information, so that participants assent to the investigational plan (Creswell, 2014; Walden University, n.d.). Informed consents were obtained from participants prior to data collection to serve as an access agreement. Although the IRB necessitates that informed consents be obtained from participants prior to gathering data, it was divulged, as noted in research, that participation was strictly on a volunteer basis, and the member had the right to pullout of the study at any time (Creswell, 2014; National Institute of Health, 2017). The agreement was verbally communicated and provided in written form. To reiterate that the investigation was completely voluntary, the first page of the survey included the following statements: This survey is strictly voluntary. If you do not choose to continue with answering any of the questions, you may stop at any time.

One of the inclusion criterion of the study was race, targeting specifically African Americans who attend majority Black churches; therefore, additional ethical precautions needed to be regarded. Survey questions and the manner in which the investigation was conducted upheld and respected cultural and religious beliefs. Volunteers that helped with the data collection during the study were also made aware of the intolerance to acts that are culturally or religiously insensitive. The right to privacy was also safeguarded. Health or personal information from the surveys were not tied to any of the participants, as this was an anonymous data collection process. The survey information was sealed in a manila envelope after completion of the surveys. Survey information was filed in a locked file cabinet until it is needed for data entry into SPSS.

Getting minorities to volunteer and participate in research investigations continues to be a difficult task (Hughes, Varma, Pettigrew, & Albert, 2017). African Americans lack of participation in clinical investigations are mostly associated with some of different rationales: little knowledge about clinical investigations, lack of trust, scared of the idea of experiments, and scared of treatment side-effects (Hughes et al., 2017). One of the recruitment resolutions to engage potential African American participants that was identified in other studies was the use of compensation (Hughes et al., 2017). Therefore, the decision was made to offer a compensation of five dollars for eligible church members' participation in completing the survey. According to Grady (n.d.), compensating participants with a small sum such as five dollars actually strengthens the rate of completions, however there were ethical concerns that needed to be considered for the use of compensation. Because, money could have been more enticing to people who

were financially less fortunate, the findings of the current investigation could have become skewed based on the fact that the sample could have consisted of participants who were more financially disadvantaged (see Grady, n.d.). Grady (n.d.) explained how the US Code of Federal Regulations necessitates that researchers attain informed consents based on situations in which coercion or undue influence is reduced. Therefore, it was important to make sure that money was not coercive or viewed as participation that was not voluntary (see Grady, n.d.). It was also essential that the money didn't lead to undue inducement which could have hindered participants from utilizing appropriate judgement when it came to harm or provoked them to hide information that would make them ineligible (see Grady, n.d.). This investigation addressed ethical considerations by making sure compensation was a small amount of money (five dollars), which had been provided to participants for the time and effort required to complete the survey. It also had been reiterated that participation was strictly voluntary.

Summary and Transition

Chapter 3 provided an in-depth synopsis of the methodology, describing how the investigation was to be conducted. There were extensive details of the population, sampling techniques, recruitment and data collection strategies, constructs and variables, the data analysis plan and threats to validity for easy replication of the investigation. An overview of the ethical considerations was also included to highlight the importance of preserving research integrity. The outlined procedures that were used to conduct the investigation allowed for the assessment of an African American church population to determine population CVD risks and faith barriers to medication adherence. The survey

that was used to gather data was essential to the analytical process. Chapter 4 is specific to the analytical process detailing data collection, statistical analysis of the data, and data results.

Chapter 4: Results

The purpose of this quantitative cross-sectional study was to examine whether levels of faith in God's healing, when it comes to taking medications, was associated with medication adherence, and whether the two elements were associated with prevalence of cardiovascular disease and uncontrolled symptoms of cardiovascular risk factors (hypertension and DMII) among African American Christian churchgoers in the Cincinnati metropolitan area. Six research questions were used to guide this investigation. The main question was the following: What is the association between levels of faith in healing and medication adherence among African American churchgoers with hypertension and/or DMII? The question was designed to address the null hypothesis: There is no association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American churchgoers with hypertension and/or DMII. This chapter provides an overview of results of the data analysis, including baseline demographics and health characteristics of the sample. I also provide descriptive statistics of scaled variables and report the inferential statistical analyses that were conducted to answer the six research questions by testing the associated hypotheses.

Data Collection

Demographics and Health Characteristics

Data collection was conducted over a 9-month period in the Cincinnati metropolitan area of Ohio. During that time frame, six churches had agreed to participate in the study, but four were lost to dropout. Convenience sampling was used to recruit

eligible African American church members who were from two of the remaining churches. Recruits were English speaking, 18 years and over who had been diagnosed with hypertension and/or DMII and had been prescribed at least one medication to treat the disease in question. The initial plan was to post flyers about the study around church buildings and to highlight the dissemination event in the churches' bulletins; however, participating churches decided that advertisement would proceed in the form of announcements. Announcements were made by the pastors during church services to obtain volunteers to participate in the study. The total number of participants from each of the two churches was roughly the same. A total of 102 members volunteered to participate in the study out of the 108 needed. The lack of participation is discussed in the limitations section of Chapter 5. All of the surveys were collected face-to-face after Sunday services, which were scheduled by the individual churches.

Participants were asked to provide their age, gender, insurance status, number of medications prescribed (oral and/or injections) for hypertension and/or DMII, and education level on the survey. These factors were considered covariates to medication adherence according to research (see Fan et al., 2016). Descriptive statistics were used to summarize demographic data. The mean age of participants was 60.60 (SD = 11.03) years, with a minimum of 30 years and a maximum of 85 years. The mean age represented older adults (60 years); however, this age range may have been representative of the heart disease and heart disease risk factors experienced by the Black population in Hamilton County, Ohio. According to a CDC (n.d.-b) statistical profile for Black hypertension hospitalization rate per 1,000 Medicare beneficiaries 65 years and older,

both genders, between 2014 and 2016 the rate was 10.6, which was the same as the national rate. The rate for total Black CVD hospitalization rate per 1,000 Medicare beneficiaries 65 years and older, both genders, between 2014 and 2016 was 80.4, which was similar to the national rate of 81 (CDC, n.d.-b).

Demographic data such as gender, insurance status, and education level obtained from the survey were described through the use of frequency distributions presented in Table 1. Most (72.5%) of the participants were female and most (92.2%) had insurance. Half (50.0%) were college/trade/vocational school graduates, 32.4% attended some college/trade/vocational school, 11.8% were high school graduates, and a few (5.9%) did not complete high school.

Table 1

*Frequency Distribution: Demographics of the Sample (*N = *102)*

Demographics	*n*	%
Gender		
Female	74	72.5
Male	28	27.5
Insurance status		
Yes	94	92.2
No	8	7.8
Education level		
Some high school	6	5.9
High school graduate	12	11.8
Some college/trade/vocational school	33	32.4
College/trade/vocational school graduate	51	50.0

The participants were also asked to report personal health characteristics, such as high blood pressure (HBP) status, DMII status, and CVD status, which were described through the use of frequency distributions, along with the number of medications

prescribed (oral and/or injections) for hypertension and/or DMII, which was broken into two groups (1–2 medications and 3 or more medications), as shown in Table 2. Most of the participants (92.2%) reported having HBP, and most (82.4%) were prescribed 1–2 HBP medications to treat hypertension, which was a valid percent of 89.4% when considering the percent from the total number of actual participants who had hypertension (n = 94). Many participants reported having DMII (43.1%), and 35.3% indicated they had been prescribed 1–2 DMII medications, which was a valid percent of 81.8% when considering the percent from the total number of actual participants who had DMII (n = 44). The prevalence of CVD cases was 28.4%. Most (71.6%) participants reported not having CVD.

Table 2

*Frequency Distribution: Personal Health Characteristics (*N = *102)*

Demographics	Frequency	Percent	Valid percent
HBP status			
Yes	94	92.2	92.2
No	8	7.8	7.8
DMII status			
Yes	44	43.1	43.1
No	58	56.9	56.9
CVD status			
Yes	29	28.4	28.4
No	73	71.6	71.6
Number of HBP medications			
1–2 HBP meds	84	82.4	89.4
3 or more HBP meds	10	9.8	10.6
Number of DMII medications			
1–2 DMII meds	36	35.3	81.8
3 or more DMII meds	8	7.8	18.2

Medication Adherence Scales

The participants were asked to respond to the Morisky et al. (1986) MAQ for hypertension and/or DMII (see Appendix B). The MAQ is a 4-item scale that was constructed to assess medication adherence. In the current study, the mean score for HBP medication adherence was 2.98 (*SD* = 1.13) with a median of 3.00 on a 0 to 4 point scale. Participants' scores ranging from 2 to 4 indicated that participants were adherent to hypertension medications; scores ranging from 0 to 1 indicated participants were nonadherent. Participants' scores ranged from 0 to 4.

According to the same 4-point scale, the mean score for DMII medication adherence was 3.16 (*SD* = .96), with a median of 3.50. Participants' scores ranged from 1 to 4. Scores of 2 or higher indicated that participants had positive adherence; scores of 0 to 1 indicated nonadherence.

Medication Adherence Efficacy Scales

Participants were asked to complete the MASES-R, 13-item, HBP medication adherence self-efficacy scale (see Appendix C). The mean score for the HBP medication adherence self-efficacy scale was 44.69 (*SD* = 8.66), with a median of 48.00. The participants' scores ranged from 13 to 52. Scores from 13 to 32 indicated low self-efficacy, and scores from 33 to 52 indicated high self-efficacy.

Participants responded to the Sleath et al. (2016) 19-item, diabetes medication self-efficacy scale (see Appendix D). The mean score for the DMII medication adherence self-efficacy scale was 49.73 (*SD* = 9.54), with a median of 54.00. Participants' scores ranged from 24 to 57. A score of 19 represented participants having lower self-efficacy; a score of 57 represented participants having higher self-efficacy. Possible DMII medication self-efficacy scores ranged from 19 to 37 (low self-efficacy) to 38 to 57 (high self-efficacy).

Participants were also asked to complete a collective version of the Sleath et al. (2016) diabetes medication self-efficacy scale (Appendix E). The responses revealed a mean score of 39.64 (*SD* = 13.33), with a median of 38.00. Participants' scores ranged from 19 to 57. The highest score (57) indicated participants had high collective efficacy.

As indicated for medication adherence self-efficacy, possible collective efficacy scores ranged from 19 to 37 (low collective efficacy) and 38 to 57 (high collective efficacy).

Level of Faith in God's Healing Scale

Participants responded to a level of faith in God's healing, when it comes to taking medications, scale (see Appendix F). The mean score was .29 (*SD* = .62), with a median of .00. The participants' scores ranged from 0 to 4. The highest score (4) indicated that the participants had the highest level of faith in healing, when it comes to taking medications, and the lowest score (0) indicated that participants had the lowest level of faith in healing, when it comes to taking medications.

Table 3 includes the scaled data of the sample population, providing the number of samples, mean, standard deviation, median, and range for HBP and DMII medication adherence scales; medication adherence efficacy scales, which include HBP/DMII medication adherence self-efficacy and DMII medication adherence collective efficacy; and level of faith in healing scale among participants.

Table 3

Descriptive Statistics: Scaled Variables

					Range	
Variable	*n*	*M*	*SD*	Median	Minimum	Maximum
HBP med adherence score	94	2.98	1.13	3.00	0	4
DMII med adherence score	44	3.16	.96	3.50	1	4
HBP med self-efficacy score	94	44.69	8.66	48.00	13	52
DMII med self-efficacy score	44	49.73	9.54	54.00	24	57
DMII med collective efficacy score	44	39.64	13.33	38.00	19	57
Level of faith in healing score	102	.29	.62	.00	0	4

A reliability analysis was run in SPSS to determine internal consistency of the level of faith in healing scale. I used the same analysis that is used to determine Cronbach's alpha; however, because of the dichotomous nature of the questions in the scale, the Cronbach's alpha was considered the Kuder-Richardson coefficient. Table 4 revealed a KR-20 value of .511, which is the same as the Cronbach's alpha. The value was not considered acceptable because it was below .7; however, as shown in Table 5, I discovered that internal consistency could be increased with the deletion of Question 4. After I deleted Question 4, the KR-20 value or the Cronbach's alpha became .750, which was acceptable. Deletion of the other three items would have decreased internal consistency, indicating that these items were better correlated with one another.

Table 4

Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	*N* of items
.511	.767	4

Table 5

Item: Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
Qu1	.28	.324	.477	.	.438
Qu2	.28	.324	.477	.	.438
Qu3	.25	.251	.504	.	.298
Qu4	.06	.115	.314	.	.750

Efficacy and Medication Adherence

Chi-square testing was used to determine the association between HBP medication adherence self-efficacy and HBP medication adherence among participants; as shown in Table 6. Self-efficacy for HBP medication adherence was measured as categorical data, low or high self-efficacy. HBP medication adherence self-efficacy scores from 13 to 32 indicated (low self-efficacy) and scores from 33 to 52 indicated (high self-efficacy). HBP medication adherence self-efficacy and HBP medication adherence were found to be significantly related, Pearson $\chi^2(1, n = 94) = 12.412, p <$

.001. The two variables were also assessed using a crosstab/two-way contingency table analysis with the addition of the Fisher's exact test to account for the violation of one of the assumptions of the two-way contingency table analysis, as there were more than 20% of the cells that had expected frequencies less than five (Green & Salkind, 2014b; Williams & Quave, 2019). The Fisher's exact test statistic provided a *p* value of .006 which was also statistically significant (given an alpha level of .05).

Table 6

Chi-Square Tests: HBP Medication Self-Efficacy and HBP Medication Adherence

	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)
Pearson chi-square	12.412[a]	1	.000	.006
Continuity correction[b]	8.692	1	.003	
Likelihood ratio	8.236	1	.004	.006
Fisher's exact test				.006
Linear-by-linear association	12.280[c]	1	.000	.006
N of valid cases	94			

Note. [a]1 cells (25.0%) have expected count less than 5. The minimum expected count is .94. [b]Computed only for a 2x2 table. [c]The standardized statistic is 3.504.

Chi-square along with the addition of Fisher's exact test were used to determine the association between DMII medication adherence self-efficacy and DMII medication adherence among participants (see Table 7). Self-efficacy for DMII medication adherence was measured as categorical data based on low or high self-efficacy. DMII self-efficacy scores ranged from 19 to 37 (low self-efficacy) to 38 to 57 (high self-

efficacy). DMII medication adherence self-efficacy and DMII medication adherence were not significantly related, Pearson $\chi^2(1, n = 44) = .331$, $p = .57$. The Fisher's exact test statistic provided a p value of 1.0 which was also considered not significant (given an alpha level of .05)

Table 7

Chi-Square Tests: DMII Medication Self-Efficacy and DMII Medication Adherence

	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)
Pearson chi-square	.331[a]	1	.565	1.000
Continuity correction[b]	.000	1	1.000	
Likelihood ratio	.601	1	.438	1.000
Fisher's exact test				1.000
Linear-by-linear association	.323[c]	1	.570	1.000
N of valid cases	44			

Note. [a]2 cells (50.0%) have expected count less than 5. The minimum expected count is .27. [b]Computed only for a 2x2 table. [c]The standardized statistic is -.569.

Chi-square testing along with the addition of Fisher's exact were used to determine the association between DMII medication adherence collective efficacy and DMII medication adherence among participants; as shown in Table 8. Collective efficacy was measured as categorical data based on low or high collective efficacy. DMII collective efficacy scores ranged from 19 to 37 (low collective efficacy) to 38 to 57 (high collective efficacy). DMII medication adherence collective efficacy and DMII medication

adherence were not significantly related, Pearson $\chi^2(1, n = 44) = 1.319$, $p = .25$. The Fisher's exact test statistic provided a p value of .52 which was also not significant (given an alpha level of .05)

Table 8

Chi-Square Tests: DMII Medication Collective Efficacy and DMII Medication Adherence

	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)
Pearson chi-square	1.319[a]	1	.251	.515
Continuity correction[b]	.164	1	.685	
Likelihood ratio	2.013	1	.156	.515
Fisher's exact test				.515
Linear-by-linear association	1.289[c]	1	.256	.515
N of valid cases	44			

Note. [a]2 cells (50.0%) have expected count less than 5. The minimum expected count is .77. [b]Computed only for a 2x2 table. [c]The standardized statistic is -1.135.

Study Results

Six research questions were used in guiding the study. The associated hypotheses were tested through the use of inferential statistical analyses to determine statistically significant relationships.

RQ1: What is the association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII?

$H_0$1: There is no association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

H_A1: There is an association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

The variable levels of faith in healing was initially identified as a scaled variable in SPSS. The variable required recoding into an ordinal variable with categories. A new variable for levels of faith in healing was created to categorize the scores (0 to 4) by three different groupings: scores from 0 to 1 indicated (group 1), scores from 2 to 3 indicated (group 2), and a score of 4 indicated (group 3). New value labels were defined for the different groups (1 = *low level of faith in healing*, 2 = *medium level of faith in healing*, and 3 = *high level of faith in healing*). Variables HBP medication adherence scores and DMII medication adherence scores were also configured into new categories in SPSS. New variables for HBP and DMII medication adherence scores were created to categorize the scores (0 to 4) by two different groupings: scores from 0 to 1 indicated (group 1) and scores from 2 to 4 indicated (group 2). New value labels were also defined for the different groups: 1 (nonadherent) and 2 (adherent). Before conducting an analysis, the dataset was transformed into either a DMII or a HBP aggregated dataset so that the frequency combinations for the different levels of faith in healing (low, medium, and high) and different categories for HBP medication adherence or DMII medication adherence (adherent and nonadherent) were weighted. Table 9 illustrates a two-way

contingency table analysis that was conducted to assess whether there was a relationship between levels of faith in healing, when it comes to taking medications, and HBP medication adherence. The two variables were levels of faith in healing, which only had scores for two levels (low and medium) for the participants who had HBP, and HBP medication adherence, which consisted of two categories (adherent and nonadherent). Levels of faith in healing and adherence to HBP medications were found to be significantly related, Pearson $\chi^2(1, n = 94) = 15.419$, $p < .001$. The two variables were also assessed using a crosstab/two-way contingency table analysis with the chi-square statistic and the addition of the Fisher's exact test to account for the small population among levels, because one of the assumptions of the two-way contingency table analysis were violated as there were more than 20% of the cells that had expected frequencies that were less than five (see Green & Salkind, 2014b; Williams & Quave, 2019) The Fisher's exact test was used as a more precise way to look for differences. The Fisher's exact test statistic provided a p value of .01 which was also considered significant (given an alpha level of .05); therefore, the null hypothesis (there is no association between levels of faith in healing and medication adherence to hypertension medications among African American congregants with hypertension) was rejected and the alternative hypothesis was accepted. The results indicated that for this sample, levels of faith in healing, when it comes to taking medications, had an effect on HBP medication adherence meaning: members with HBP who had low levels of faith in healing, when it comes to taking medications, tended to be adherent to HBP medications, whereas members with HBP who had medium level of faith in healing, when it comes to taking medications, tended to

be nonadherent—the difference was statistically significant. For participants who had HBP, there were scores for only two of the levels for levels of faith in healing: low and medium. There was one degree of freedom; therefore, the different levels did not meet the condition for performing follow-up tests, such as pairwise comparisons and a Holm's sequential Bonferroni technique. A clustered bar graph, interpreting the significant association between levels of faith in healing and HBP medication adherence and showing the difference of medication adherence among the levels of faith in God's healing, when it comes to taking medications, is displayed in Figure 2.

Table 9

Chi-Square Tests: Levels of Faith in Healing and HBP Medication Adherence

	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)
Pearson chi-square	15.419[a]	1	.000	.013
Continuity correction[b]	7.924	1	.005	
Likelihood ratio	8.927	1	.003	.013
Fisher's exact test				.013
N of valid cases	94			

Note. [a]2 cells (50.0%) have expected count less than 5. The minimum expected count is .23. [b]Computed only for a 2x2 table.

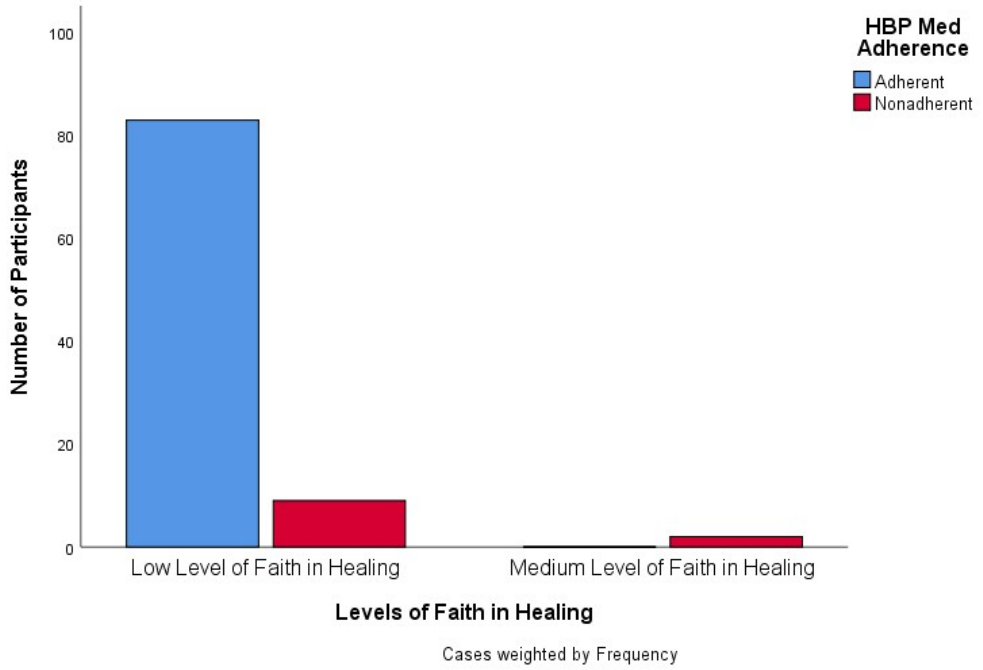

Figure 2. Association between levels of faith in healing and high blood pressure medication adherence.

For participants who had DMII, the sample size was small and the chi-square assumptions of expected values were also violated; more than 20% of the expected frequencies for a particular outcome were less than five (see Green & Salkind, 2014b). Therefore, a contingency table using the chi-square statistic and the addition of the Fisher's exact test also was conducted for the aggregated dataset to correct for the smaller sample size (see Williams & Quave, 2019). A crosstab/two-way contingency table analysis using a chi-square statistic and a Fisher's exact test was conducted to assess whether there was a relationship between levels of faith in healing, when it comes to taking medications, and DMII medication adherence; as shown in Table 10. The two variables were levels of faith in healing, which consisted of three levels (low, medium, and high) among the diabetic participants, and DMII medication adherence, which

consisted of two categories (adherent and nonadherent). Levels of faith in healing and DMII medication adherence were found to be not significantly related, Pearson $\chi^2(2, n = 44) = .100$, $p = .95$. The Fisher's exact test statistic provided a p value of 1.0 which was also considered not significant (given an alpha level of .05); therefore, the alternative hypothesis was not accepted so I failed to reject the null hypothesis (there is no association between levels of faith in healing and medication adherence to DMII medications among African American congregants with DMII). For participants who had DMII, there were scores for all three levels for the levels of faith in healing variable and two degrees of freedom; however, pairwise comparisons and a Holm's sequential Bonferroni technique were not performed because of the lack of significance.

Other characteristics such as age, gender, insurance status, number of medications prescribed (oral and/or injections) for hypertension and/or DMII, and education level were considered covariates; these factors had been previously emphasized in research as being impactful to medication adherence (see Fan et al., 2016). Although age, gender, insurance status, number of medications prescribed for hypertension and/or DMII, and education level had been identified as covariates in other studies, ANCOVA, to determine whether there was a medication adherence difference between levels of faith in healing while controlling for the possible covariates, was not used because one or more of the analysis's assumptions (normality, homogeneity of variance, random independent samples, and linearity) were violated. To have continued with ANCOVA, would have yielded unreliable results for this study (see Green & Salkind, 2014a).

Table 10

Chi-Square Tests: Levels of Faith in Healing and DMII Medication Adherence

	Value	*df*	Asymp. sig. (2-sided)	Exact sig. (2-sided)
Pearson chi-square	.100[a]	2	.951	1.000
Likelihood ratio	.191	2	.909	1.000
Fisher's exact test	2.834			1.000
N of valid cases	44			

Note. [a]5 cells (83.3%) have expected count less than 5. The minimum expected count is .05.

RQ2: What is the association between levels of faith in healing and prevalence of cardiovascular disease (CVD) among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

$H_0$2: There is no association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A2: There is an association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors, hypertension and/or DMII.

An aggregated dataset was created for hypertension and DMII, consisting of the levels of faith in healing variable, HBP/DMII medication adherence variable, and the CVD status variable so that the data were weighted by frequency using SPSS. First a multivariable logistic binary regression analysis was conducted to determine whether

there was a relationship between levels of faith in healing, when it comes to taking medications, and CVD prevalence among the study group with hypertension; as shown in Table 11. The variables were levels of faith in healing, an independent variable with responses for only two levels (low and medium), and CVD status, the dependent binary outcome variable (CVD and no CVD) that represent prevalence of CVD cases among the study group. Multivariable regression was also being used to simultaneously assess RQ4 variable, HBP medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and its relationship to CVD prevalence among the study group with hypertension. A model was run to predict the outcome variable of an individual falling into the target group of having CVD. There were two predictor variables: levels of faith in healing and HBP medication adherence. SPSS's categorical function assigned dummy variable (1) to label variables medium levels of faith in healing and nonadherent, which are the variables that are present in the equation with relating coefficients. The reference groups of the model, which had been omitted from the equation, were low levels of faith in healing and adherent. The coefficients represented the difference between each of the levels that were coded (1) and the reference group for that variable (see University of California Los Angeles Institute for Digital Research and Education, n.d.). Results of the regression analysis indicated there was no significant relationship between the predictor, levels of faith in healing, and the outcome variable, CVD status when controlling for all other variables in the model. The *p* value was .44 for levels of faith in healing, indicating fail to reject the null hypothesis (There is no

association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factor, hypertension).

Table 11

Logistic Regression: Variables in the Equation (Association between Levels of Faith in Healing/HBP Medication Adherence and Prevalence of CVD for Hypertension)

		B	*SE*	Wald	*df*	Sig.	Exp(*B*)
Step 1[a]	HBP med adher (1)	-.411	.837	.242	1	.623	.663
	LOF in healing (1)	1.253	1.626	.594	1	.441	3.500
	Constant	-.842	.239	12.373	1	.000	.431

Note. [a]Variable(s) entered on step 1: HBP Med Adherence, Levels of Faith in Healing.

The same binary logistic regression methods were used to assess the relationship between levels of faith in healing, when it comes to taking medications, and CVD prevalence among the study congregants with DMII. The variables were levels of faith in healing, an independent variable with responses for three levels (low, medium, and high), and CVD status, the dependent binary outcome variable (CVD and no CVD). Multivariable regression was also being used to simultaneously assess RQ4 variable, DMII medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and its relationship to CVD prevalence among the study congregants with DMII. Again, a model was run to predict the outcome variable of an individual falling into the target group of having CVD (see Table 12). There were two predictor variables in the analysis: levels of faith in healing and DMII medication adherence. SPSS used dummy variables to label low levels of faith in healing (1) and

medium levels of faith in healing (2) in the equation. DMII medication adherence is also categorical, with two categories (adherent and nonadherent). SPSS identified nonadherent with dummy variable (1) in the equation. The reference groups of the model, which had been omitted from the equation, were high levels of faith in healing and adherent. The test for the overall levels of faith in healing variable was not significant as the *p* value was 1.0, indicating there was no significant relationship between the predictor, levels of faith in healing, and the outcome variable, CVD status when controlling for all other variables in the model. The dummy variable low levels of faith in healing (1) was not statistically significantly different from the reference variable high levels of faith in healing, with a *p* value of 1.0, and the dummy variable medium levels of faith in healing (2) was also not statistically significantly different from the reference variable high levels of faith in healing, with a *p* value of 1.0; therefore, the alternative was not accepted and I failed to reject the null hypothesis (There is no association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factor, DMII).

Table 12

Logistic Regression: Variables in the Equation (Association between Levels of Faith in Healing/DMII Medication Adherence and Prevalence of CVD for DMII)

		B	*SE*	Wald	*df*	Sig.	Exp (*B*)
Step 1[a,b,c]	DMII med adher (1)	-20.584	28420.722	.000	1	.999	.000
	LOF in healing			.000	2	1.000	
	LOF in healing (1)	20.584	40192.991	.000	1	1.000	869870896.8
	LOF in healing (2)	.000	56841.458	.000	1	1.000	1.000
	Constant	-21.203	40192.991	.000	1	1.000	.000

Note. [a]Variable(s) entered on step 1: DMII Med Adherence, Levels of Faith in Healing. [b]Variable(s) entered on step 1: DMII Med Adherence. [c]Variable(s) entered on step 1: Levels of Faith in Healing.

RQ3: What is the association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0$3: There is no association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A3: There is an association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

An aggregated dataset was created for hypertension and DMII, consisting of the levels of faith in healing variable, HBP/DMII medication adherence variable, and the uncontrolled symptoms of hypertension/ DMII variable so that the data were weighted by frequency using SPSS. First, a multivariable logistic binary regression analysis was conducted to determine whether there was a statistical relationship between levels of faith in God's healing, when it comes to taking medications, and uncontrolled symptoms of hypertension, defined by hospitalizations for severe increase in blood pressure, among African American congregants with hypertension. The variables were levels of faith in healing, an independent variable with responses for only two levels (low and medium), and, the dependent binary outcome variable, HBP symptoms based on admissions (controlled and uncontrolled). A participant was deemed uncontrolled based on their acknowledgement of having two or more hospitalizations for HBP in a given year. Multivariable regression was also being used to simultaneously assess RQ5 variable, HBP medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and its relationship to HBP symptoms. A model was run to predict the outcome variable of an individual falling into the target group of having uncontrolled symptoms; as shown in Table 13. There were two predictor variables: levels of faith in healing and HBP medication adherence. SPSS's categorical function assigned

dummy variable (1) to label the low levels of faith in healing variable and the nonadherent variable, which are the variables that are present in the equation with relating coefficients. The reference groups of the model, which had been omitted from the equation, were medium levels of faith in healing and adherent. Results of the regression analysis indicated there was no significant relationship between the predictor, levels of faith in healing, and the outcome variable, HBP symptoms based on admissions when controlling for all other variables in the model. The *p* value was 1.0 for levels of faith in healing, indicating fail to reject the null hypothesis (There is no association between levels of faith in healing and uncontrolled symptoms of hypertension, defined by hospitalizations for severe increase in blood pressure, among African American congregants with hypertension).

Table 13

Logistic Regression: Variables in the Equation (Association between Levels of Faith in Healing/HBP Medication Adherence and Uncontrolled Symptoms of Hypertension)

		B	*SE*	Wald	*df*	Sig.	Exp (*B*)
Step 1[a]	HBP med adher (1)	-18.456	13397.658	.000	1	.999	.000
	LOF in healing (1)	-21.203	13397.658	.000	1	.999	.000
	Constant	18.456	13397.658	.000	1	.999	103556079.9

Note. [a]Variable(s) entered on step 1: HBP Med Adherence, Levels of Faith in Healing.

The same binary logistic regression methods were used to assess the relationship between levels of faith in healing, when it comes to taking medications, and uncontrolled symptoms of DMII, defined by hospitalizations for hyperglycemia, among African

American congregants with DMII. The variables were levels of faith in healing, an independent variable with responses for three levels (low, medium, and high), and, the dependent binary outcome variable, DMII symptoms based on admissions (controlled and uncontrolled). A participant was considered uncontrolled based on their survey response of having two or more hospitalizations for hyperglycemia in a given year. Multivariable regression was also being used to simultaneously assess RQ5 variable, DMII medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and its relationship to uncontrolled symptoms of DMII among the study group with DMII. A model was run to predict the outcome variable of an individual falling into the target group of having uncontrolled symptoms of DMII; as shown in Table 14. There were two predictor variables in the analysis: levels of faith in healing and DMII medication adherence. SPSS used dummy variables to label low levels of faith in healing (1) and medium levels of faith in healing (2) in the equation. DMII medication adherence was also categorical, with two categories (adherent and nonadherent). SPSS identified nonadherent with dummy variable (1) in the equation. The reference groups of the model, which had been omitted from the equation, were high levels of faith in healing and adherent. The test for the overall levels of faith in healing variable was not significant as the *p* value was 1.0, indicating there was no significant relationship between the predictor, levels of faith in healing, and the outcome variable, DMII symptoms based on admissions when controlling for all other variables in the model. The dummy variable low levels of faith in healing (1) was not statistically significantly different from the reference variable high levels of faith in healing, with a *p*

value of 1.0, and the dummy variable medium levels of faith in healing (2) was also not statistically significantly different from the reference variable high levels of faith in healing, with a *p* value of 1.0; therefore, the alternative was not accepted and I failed to reject the null hypothesis (There is no association between levels of faith in healing and uncontrolled symptoms of DMII, defined by hospitalizations for hyperglycemia, among African American congregants with DMII).

Table 14

Logistic Regression: Variables in the Equation (Association between Levels of Faith in Healing/DMII Medication Adherence and Uncontrolled Symptoms of DMII)

		B	*SE*	Wald	*df*	Sig.	Exp (*B*)
Step 1[a,b,c]	DMII med adher (1)	-17.539	28420.722	.000	1	1.000	.000
	LOF in healing			.000	2	1.000	
	LOF in healing (1)	.000	56841.443	.000	1	1.000	1.000
	LOF in healing (2)	17.539	40192.969	.000	1	1.000	41422431.85
	Constant	-21.203	40192.991	.000	1	1.000	.000

Note. [a]Variable(s) entered on step 1: DMII Med Adherence, Levels of Faith in Healing. [b]Variable(s) entered on step 1: Levels of Faith in Healing. [c]Variable(s) entered on step 1: DMII Med Adherence.

RQ4: What is the association between medication adherence to hypertension and/or DMII medications and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

$H_0$4: There is no association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A4: There is an association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

The multivariable logistic binary regression analysis that was used to assess the relationship between levels of faith in healing and CVD prevalence among congregants with hypertension/DMII for RQ2 was also used to determine the relationship between medication adherence to hypertension and/or DMII medications and CVD prevalence among African American congregants with hypertension and/or DMII. The analyses contained the HBP/DMII medication adherence variables. The logistic regression analysis for the hypertension group consisted of the following variables: HBP medication adherence (IV), a categorical variable with two categories (adherent and nonadherent); levels of faith in healing (IV), a categorical variable with responses for only two levels (low and medium); and CVD status, the dependent binary outcome variable (CVD and no CVD). The model in Table 11 that was run to predict the outcome variable of an individual falling into the target group of having CVD, consisted of two predictor variables: HBP medication adherence and levels of faith in healing. Variables medium levels of faith in healing and nonadherent were represented in the equation as dummy

variable (1) with relating coefficients. The reference groups of the model, which had been omitted from the equation, were low levels of faith in healing and adherent. Results of the regression analysis indicated there was no significant relationship between the predictor, HBP medication adherence, and the outcome variable, CVD status when controlling for all other variables in the model. The *p* value was .62 for HBP medication adherence, indicating fail to reject the null hypothesis (There is no association between medication adherence to hypertension medications and the prevalence of CVD, among African American congregants, defined by those diagnosed with CVD risk factor, hypertension).

The same binary logistic regression methods that were used for RQ2, for the DMII study group, were also used to assess the relationship between medication adherence to DMII medications and CVD prevalence among the study group with DMII. The variables were DMII medication adherence (IV), a categorical variable with two categories (adherent and nonadherent); levels of faith in healing (IV), a categorical variable with responses for three levels (low, medium, and high); and CVD status, the dependent binary outcome variable (CVD and no CVD). The model that was run to predict the outcome variable of an individual falling into the target group of having CVD consists of two predictor variables: DMII medication adherence and levels of faith in healing; as shown in Table 12. SPSS used dummy variables to label low levels of faith in healing (1) and medium levels of faith in healing (2) in the equation. DMII medication adherence, which was also categorical (adherent and nonadherent), was identified by SPSS with dummy variable (1) in the equation. The reference groups of the model, which had been omitted from the equation, were high levels of faith in healing and adherent.

The model indicated there was no significant relationship between the predictor, DMII medication adherence, and the outcome variable, CVD status when controlling for all other variables in the model. The *p* value was indicated as 1.0; therefore, the alternative was not accepted and I failed to reject the null hypothesis (There is no association between medication adherence to DMII medications and the prevalence of CVD, among African American congregants, defined by those diagnosed with CVD risk factor, DMII).

RQ5: What is the association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0$5: There is no association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A5: There is an association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

The aggregated weighted dataset for hypertension and DMII was used, consisting of the levels of faith in healing variable, HBP/DMII medication adherence variable, and the uncontrolled symptoms of hypertension/ DMII variable. Initially, a multivariable logistic binary regression analysis was conducted to determine whether there was a

statistical relationship between HBP medication adherence and uncontrolled symptoms of hypertension, defined by hospitalizations for severe increase in blood pressure, among African American congregants with hypertension. The variables were HBP medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and the dependent binary outcome variable, HBP symptoms based on admissions (controlled and uncontrolled). A participant was deemed uncontrolled based on their survey response of having two or more hospitalizations for HBP in a given year. Multivariable regression was also being used to simultaneously assess previously discussed RQ3 variable, levels of faith in healing, an independent variable with responses for only two levels (low and medium) among the hypertension group and its relationship to HBP symptom (uncontrolled). A model was run to predict the outcome variable of an individual falling into the target group of having uncontrolled symptoms of hypertension; refer to Table 13. There were two predictor variables: HBP medication adherence and levels of faith in healing. SPSS's categorical function assigned dummy variable (1) to label the nonadherent variable and the low levels of faith in healing variable, which are the variables that are present in the equation with relating coefficients. The reference groups of the model, which had been omitted from the equation, were adherent and medium levels of faith in healing. Results of the regression analysis indicated there was no significant relationship between the predictor, HBP medication adherence, and the outcome variable, HBP symptoms based on admissions when controlling for all other variables in the model. The *p* value was 1.0 for levels of faith in healing, indicating, fail to reject the null hypothesis (There is no association between medication adherence to

hypertension medications and the uncontrolled symptoms of hypertension, defined by hospitalizations for severe increase in blood pressure, among African American congregants with hypertension).

The same binary logistic regression methods were used to assess the relationship between DMII medication adherence and uncontrolled symptoms of DMII, defined by hospitalizations for hyperglycemia, among African American congregants with DMII. The variables were DMII medication adherence, an independent categorical variable with two categories (adherent and nonadherent) and, the dependent binary outcome variable, DMII symptoms based on admissions (controlled and uncontrolled). A participant was considered uncontrolled based on their survey response of having two or more hospitalizations for hyperglycemia in a given year. Multivariable regression was also being used to simultaneously assess previously discussed RQ3 variable, levels of faith in healing, an independent variable with responses for three levels (low, medium, and high) for the DMII study group, and its relationship to uncontrolled symptoms of DMII. A model was run to predict the outcome variable of an individual falling into the target group of having uncontrolled symptoms of DMII (refer to Table 14). There were two predictor variables in the analysis: DMII medication adherence and levels of faith in healing. DMII medication adherence was categorical, with two categories (adherent and nonadherent). SPSS identified nonadherent as dummy variable (1) in the equation. SPSS also used dummy variables to label the low levels of faith in healing variable (1) and the medium levels of faith in healing variable (2) in the equation. The reference groups of the model, which had been omitted from the equation, were adherent and high levels of faith

in healing. The test for the DMI medication adherence variable was not significant as the *p* value was 1.0, indicating there was no significant relationship between the predictor, DMII medication adherence, and DMII symptoms based on admissions when controlling for all other variables in the model; therefore, the alternative was not accepted and I failed to reject the null hypothesis (There is no association between medication adherence to DMII medications and the uncontrolled symptoms of DMII, defined by hospitalizations for hyperglycemia, among African American congregants with DMII).

RQ6: What is the association between medication adherence to hypertension and/or DMII medications and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII?

$H_0$6: There is no association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

H_A6: There is an association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

To assess whether the relationship between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for

severe increase in blood pressure and/or hyperglycemia, was modified by levels of faith in healing among African American congregants with hypertension and/or DMII, first a simple logistic regression had to be performed for medication adherence and uncontrolled symptoms to compare the values of the simple logistic regression to the values of the multivariable logistic regression. A simple logistic regression was run for variables HBP medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and HBP symptoms based on admissions, a dependent binary outcome variable (controlled and uncontrolled). A model was run to predict the outcome variable of an individual falling into the target group of having uncontrolled symptoms of hypertension. Table 15 revealed an R^2 of .004, indicating that only .4% of the variation in uncontrolled symptoms was explained by HBP medication adherence when no other variables were being held constant or controlled. The value for the coefficient, in Table 16, was .445, indicating a positive relationship between HBP medication adherence and uncontrolled symptoms; however, the *p* value was .70 which meant the relationship was not significant for the simple logistic regression model.

Table 15

Simple Logistic Regression: Model Summary (HBP Medication Adherence and Uncontrolled Symptoms of Hypertension)

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	44.489 [a]	.001	.004

Note. [a]Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 16

Simple Logistic Regression: Variables in the Equation (HBP Medication Adherence and Uncontrolled Symptoms of Hypertension)

		B	*SE*	Wald	*df*	Sig.	Exp(*B*)
Step 1[a]	HBP med adher (1)	.445	1.146	.151	1	.698	1.560
	Constant	-2.747	.461	35.464	1	.000	.064

Note. [a]Variable(s) entered on step 1: HBP Med Adherence.

When the simple regression was compared to the multivariable logistic regression model that was run for variables HBP medication adherence (IV) and HBP symptoms based on admissions (DV) with the addition of the levels of faith in healing variable, the R^2 increased to .112, which indicated 11% of the variance in uncontrolled symptoms was explained by the predictor variables, HBP medication adherence and levels of faith in healing; as shown in Table 17. The relationship was negative between HBP medication adherence and uncontrolled symptoms of hypertension, with a coefficient of -18.456 (see Table 18). The difference in the values between the simple and multivariable logistic regression indicated that the variable levels of faith in healing modified the effect; however, the effect was not significant as the *p* value for dummy variable (1), representing the nonadherent individuals to HBP medications, was 1.0 when controlling for the levels of faith in healing. Because of these results, I failed to reject the null hypothesis (There is no association between medication adherence and uncontrolled symptoms of hypertension, defined by hospitalizations for severe increase in blood

pressure, modified by levels of faith in healing among African American congregants with hypertension).

Table 17

Multivariable Logistic Regression: Model Summary (HBP Medication Adherence and Uncontrolled Symptoms of Hypertension and Effect Modification of Levels of Faith in Healing)

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	40.559 [a]	.042	.112

Note. [a]Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Table 18

Multivariable Logistic Regression: Variables in the Equation (HBP Medication Adherence and Uncontrolled Symptoms of Hypertension and Effect Modification of Levels of Faith in Healing)

		B	*SE*	Wald	*df*	Sig.	Exp(*B*)
Step 1[a]	HBP med adher (1)	-18.456	13397.658	.000	1	.999	.000
	LOF in healing (1)	-21.203	13397.658	.000	1	.999	.000
	Constant	18.456	13397.658	.000	1	.999	103556079.9

Note. [a]Variable(s) entered on step 1: HBP Med Adherence, Levels of Faith in Healing.

To assess the DMII group, a simple logistic regression was run for variables DMII medication adherence, an independent categorical variable with two categories (adherent and nonadherent), and DMII symptoms based on admissions for hyperglycemia, a dependent binary outcome variable (controlled and uncontrolled). A model was run to predict the outcome variable of an individual falling into the target group of having

uncontrolled symptoms of DMII. Table 19 revealed an R^2 of .011, indicating that 1% of the variation in uncontrolled symptoms was explained by DMII medication adherence when no other variables are being held constant or controlled. A coefficient of -17.489 in the model, as shown in Table 20, indicated a negative relationship, meaning that the odds of a nonadherent DMII group member being uncontrolled was lower than the odds of an adherent individual among the group; however, the relationship was not significant as the *p* value was 1.0.

Table 19

Simple Logistic Regression: Model Summary (DMII Medication Adherence and Uncontrolled Symptoms of DMII)

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	9.451 [a]	.002	.011

Note. [a]Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Table 20

Simple Logistic Regression: Variables in the Equation (DMII Medication Adherence and Uncontrolled Symptoms of DMII)

		B	*SE*	Wald	*df*	Sig.	Exp(*B*)
Step 1[a]	DMII med adher (1)	-17.489	28420.722	.000	1	1.000	.000
	Constant	-3.714	1.012	13.462	1	.000	.024

Note. [a]Variable(s) entered on step 1: DMII Med Adherence.

When compared to the multivariable logistic regression model that was run for variables DMII medication adherence (IV) and DMII symptoms based on admissions (DV) with the addition of independent variable levels of faith in healing, the R^2 (see

Table 21) slightly increased to .022, indicating 2% of the variance in uncontrolled symptoms was explained by the predictor variables, DMII medication adherence and levels of faith in healing. When controlling for levels of faith in healing, the relationship remained closely similar to the simple logistic model; there was still a negative relationship between DMII medication adherence and uncontrolled symptoms, with a coefficient of -17.539 (Table 22). The lack of modification in the values between the simple and multivariable logistic regression, to assess the relationship between DMII medication adherence and uncontrolled symptoms of DMII modified by levels of faith in healing, indicated that the variable levels of faith in healing did not modify the effect. The effect was still not significant as the *p* value for dummy variable (1), representing nonadherent individuals to DMII medications, was 1.0 when controlling for the levels of faith in healing. According to these findings, I failed to reject the null hypothesis (There is no association between DMII medication adherence and uncontrolled symptoms of DMII, defined by hospitalizations for hyperglycemia, modified by levels of faith in healing among African American congregants with DMII.

Table 21

Multivariable Logistic Regression: Model Summary (DMII Medication Adherence and Uncontrolled Symptoms of DMII and Effect Modification of Levels of Faith in Healing)

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	9.353 [a]	.004	.022

Note. [a]Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Table 22

Multivariable Logistic Regression: Variables in the Equation (DMII Medication Adherence and Uncontrolled Symptoms of DMII and Effect Modification of Levels of Faith in Healing)

		B	*SE*	Wald	*df*	Sig.	Exp(*B*)
Step 1[a]	DMII med adher (1)	-17.539	28420.722	.000	1	1.000	.000
	LOF in healing			.000	2	1.000	
	LOF in healing (1)	.000	56841.443	.000	1	1.000	1.00
	LOF in healing (2)	17.539	40192.969	.000	1	1.000	41422431.85
	Constant	-21.203	40192.969	.000	1	1.000	.000

Note. [a]Variable(s) entered on step 1: DMII Med Adherence, Levels of Faith in Healing.

Summary and Transition

One hundred and two church members from two Christian churches located in the Cincinnati metropolitan region (Baptist and nondenominational) volunteered to participate in the study. The participants had either HBP, DMII, or both, and they were taking at least one medication for that disease. The participants' mean age was 60, with a range from 30 to 85 years. Most of the participants were female; had high blood pressure; had graduated from college/trade/vocational schools; had health insurance; took 1-2 medications for either HBP or DMII; did not have a diagnosis of CVD, and did not have uncontrolled symptoms of hypertension/DMII. There were six research questions and related hypotheses that were tested through the use of inferential statistics to determine

statistical relationships. Only RQ1 had statistical findings in which the null hypothesis was rejected; however, the rejection only applied to the HBP population and not the DMII population—the alternative was not accepted for DMII. Because of the findings from RQ2, RQ3, RQ4, RQ5, and RQ6 I failed to reject the null hypothesis. Levels of faith in healing and adherence to HBP medications were found to be significantly related. Members with HBP who had low levels of faith in healing, when it comes to taking medications, tended to be adherent to HBP medications, whereas members with HBP who had medium level of faith in healing, when it comes to taking medications, tended to be nonadherent. No statistically significant relationships were found between either levels of faith in healing or HBP/DMII medication adherence and CVD prevalence and uncontrolled symptoms of hypertension/DMII. Chapter 5 provides a discussion of the findings and limitations; a summary of future recommendations and social impact; and conclusions of the study, defining key points.

Chapter 5: Discussion, Recommendations, and Conclusions

The purpose of this quantitative cross-sectional study was to assess whether levels of faith in God's healing, when it comes to taking medications, was associated with medication adherence to HBP and/or DMII medications, and whether those factors were associated with prevalence of CVD and uncontrolled symptoms of hypertension and/or DMII among Black Christian churchgoers with hypertension and/or DMII in the Cincinnati metro area. One hundred and two church members from two Christian churches, who were 18 years or older, had HBP and/or DMII, and were taking at least one medication for their disease, volunteered to complete a survey consisting of demographic and health data, the MAQ, the MASES-R, a diabetes medication self-efficacy scale, a DMII medication collective efficacy scale, and a level of faith in healing scale. Findings for the main research question (What is the association between levels of faith in healing and medication adherence among African American churchgoers with hypertension and/or DMII?) were partially significant; levels of faith in healing and adherence to HBP medications among congregants with hypertension were significantly related, whereas levels of faith in healing and adherence to DMII medications were not.

Interpretation of Findings

The social cognitive theory was used to guide the investigation because of the social and causative structures that are asserted in the theory and that are demonstrated through triadic reciprocity, which includes the influences between personal factors, behavioral factors, and environmental factors (see Bandura, 2001). The body of the church represented a social structure, which was defined by the interactions among

members and church officials (see Bandura, 1998). The church creates an environment with many different aspects that influence an individual's personal level of faith (see Bandura, 2001). The research questions and hypotheses were constructed to assess the relationship between personal factors (level of faith) and behavioral factors (medication adherence) and also to assess the relationship between those two factors and other factors affected by behaviors, such as CVD prevalence and uncontrolled symptoms. Of the six null hypotheses tested, $H_0$1 was the only null hypothesis that was rejected, indicating a significant relationship between levels of faith in healing and HBP medication adherence.

Research Question 1

What is the association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII?

$H_0$1: There is no association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

H_A1: There is an association between levels of faith in healing and medication adherence to hypertension and/or DMII medications among African American congregants with hypertension and/or DMII.

Level of faith in healing was the participants' level of belief that God is the sole healer, when it comes to taking medications. Medication adherence refers to participants taking medications routinely according to the provider's prescription. Participants' levels of faith in healing, when it comes to taking medications, were categorized by three levels

(low level of faith in healing, medium level of faith in healing, and high level of faith in healing), and participants were identified as being adherent or nonadherent. For participants with HBP, participants fell into two levels of faith in healing categories (low and medium) and were assessed as being adherent or nonadherent to HBP medications. The results from a crosstab/two-way contingency table analysis using the chi-square statistic and the Fisher's exact test revealed that levels of faith in healing and adherence to HBP medications were significantly related, Pearson $\chi^2(1, n= 94) =15.419, p < .001$. The Fisher's exact test statistic revealed a p value of .01. Levels of faith in healing, when it comes to taking medications, had an effect on HBP medication adherence. Members with HBP who had low levels of faith in healing, when it comes to taking medications, tended to be adherent to HBP medications, whereas members with HBP who had medium levels of faith in healing, when it comes to taking medications, tended to be nonadherent; the difference was statistically significant.

For participants with DMII, participants fell into three levels of faith in healing categories (low, medium, and high) and were assessed as being adherent or nonadherent to DMII medications. The results from a crosstab/two-way contingency table analysis using a chi-square statistic and a Fisher's exact test revealed that levels of faith in healing and DMII medication adherence were not significantly related, Pearson $\chi^2(2, n = 44) =.100, p = .95$. The Fisher's exact test statistic provided a p value of 1.0.

The literature review included studies that addressed the effects of social networks and support systems, such as churches, which provide integrated relationships, assistance, and motivation that generate positive health outcomes among church members

and reduce health disparities (see Collins, 2015). The church not only provides social connections but also provides spiritual connections strengthening a person's faith in God. According to Abel and Greer (2017), spirituality/religious beliefs are notable factors that influence disease management; however, there are inconsistencies in the findings among investigators when it comes to medication adherence. Abel and Greer concluded that there was no statistical association between going to church, praying, studying the Bible, and medication adherence among African American women. Kretchy et al. (2013) found that spirituality, which included having a connection with a higher power, was associated with not adhering to medications among adults in Ghana, although religiosity was not. In a qualitative study, Newlin Lew et al. (2015) found contrasting beliefs pertaining to spirituality (faith in God) and medication adherence among African American church members; some participants relied solely on faith in God and not medications to heal them, and others relied on the wisdom given to them by God to take their medications. The broad terminology of spirituality/religion that can incorporate different facets and levels could be the reason for consistencies among studies, which is why I defined religion/spirituality as faith in healing using a more condensed quantitative scale. Levels of faith in healing and medication adherence were examined to assess a relationship, and the null hypothesis was rejected for HBP based on significant findings. Findings revealed that most participants had low level of faith in healing, when it comes to taking medications, and that most had medication adherence. A statistical relationship was found between levels of faith in healing and medication adherence to hypertension medications among African American congregants with hypertension.

Research Question 2

What is the association between levels of faith in healing and prevalence of cardiovascular disease (CVD) among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

$H_0$2: There is no association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A2: There is an association between levels of faith in healing and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

The relationship between levels of faith in healing and prevalence of CVD was assessed using logistic regression. The prevalence of CVD was low among the sample population, with 29 cases. The results revealed that there was no relationship between levels of faith in healing and prevalence of CVD. Therefore, the null hypothesis was not rejected.

Research Question 3

There is an association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0$3: There is no association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in

blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A3: There is an association between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

The relationship between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII was assessed using logistic regression. Most of the sample population had low levels of faith in healing, when it comes to taking medications, and controlled hypertension/DMII symptoms. The results revealed that there was no significant relationship between levels of faith in healing and uncontrolled symptoms of hypertension and/or DMII. Therefore, the null hypothesis was not rejected.

Research Question 4

What is the association between medication adherence to hypertension and/or DMII medications and prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII)?

H_04: There is no association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

H_A4: There is an association between medication adherence to hypertension and/or DMII medications and the prevalence of CVD among African American

congregants, defined by those diagnosed with CVD risk factors (hypertension and/or DMII).

The relationship between medication adherence to hypertension and/or DMII medications and prevalence of CVD was assessed using logistic regression. Most of the sample population was adherent to hypertension/DMII medications and had low CVD prevalence. The results revealed that there was no significant relationship between medication adherence to hypertension and/or DMII medications and the prevalence of CVD. Therefore, the null hypothesis was not rejected.

Research Question 5

What is the association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII?

$H_0$5: There is no association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

H_A5: There is an association between medication adherence to hypertension and/or DMII medications and the uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, among African American congregants with hypertension and/or DMII.

The relationship between medication adherence to hypertension and/or DMII medications and uncontrolled symptoms of hypertension and/or DMII was assessed using logistic regression. Most of the sample population was adherent to hypertension and/or DMII medications and had controlled hypertension/DMII symptoms. The results revealed that there was no relationship between adherence to hypertension and/or DMII medications and uncontrolled symptoms of hypertension and/or DMII. Therefore, the null hypothesis was not rejected.

Research Question 6

What is the association between medication adherence to hypertension and/or DMII medications and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII?

$H_0$6: There is no association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

H_A6: There is an association between medication adherence and uncontrolled symptoms of hypertension and/or DMII, defined by hospitalizations for severe increase in blood pressure and/or hyperglycemia, modified by levels of faith in healing among African American congregants with hypertension and/or DMII.

The relationship between medication adherence and uncontrolled symptoms of hypertension and/or DMII modified by levels of faith in healing was assessed using simple and multivariable logistic regression. The results revealed there was no relationship between medication adherence and uncontrolled symptoms of hypertension and/or DMII modified by levels of faith in healing. Therefore, the null hypothesis was not rejected.

Self- and Collective Efficacy and Medication Adherence

The relationship between HBP and DMII medication self-efficacy and medication adherence and between DMII medication collective efficacy and medication adherence were assessed using chi-square and the Fisher's exact test statistic. The results for the relationship between HBP medication adherence self-efficacy and medication adherence was the only statistically significant findings. A null hypothesis of there being no relationship between HBP medication adherence self-efficacy and medication adherence would have been rejected. Although the relationships between self- and collective efficacy and medication adherence for DMII were found to be not statistically significant, the mean score for DMII medication self-efficacy was 49.73, and the mean score for DMII medication collective efficacy was 39.64. Both of the mean scores fell between 38 and 57 which represented high self- and collective efficacy: meaning that high self- and collective efficacy were common among the participants.

Self-efficacy is based on the principle that an individual has the capacity to generate outcomes according to their behaviors (Bandura, 2001). The concept of social networks enable supportive systems that are needed to enhance self-efficacy, which is

beneficial in sustaining healthy behaviors and complying with therapeutic regimens (Shaya et al., 2013). It would have been expected that most of church members would have high self-efficacy and in return would have medication adherence. The literature review evaluated several works that assessed the relationship between medication efficacy and medication adherence. Glaucoma and hypertension investigations have suggested that there is an obvious relationship between medication self-efficacy and medication adherence (Sleath et al., 2016). Fernandez et al. (2008) identified self-efficacy as a functional construct for its ability to forecast health actions: noting how increased self-efficacy among patients with chronic illnesses has shown to be favorable toward numerous health actions, one of them being adherence to certain regimens. Steyl and Phillips (2014) indicated that the efficacy of therapy for patients dealing with diabetes is largely related to self-management and attributes improper management to low perceptions of self-efficacy and decreased social support. Participants' lack of motivation to modify negative health behaviors was an identified significant barrier to diabetes control, recognizing the importance of enhancing self-efficacy in health management interventions for people with diabetes (Steyl & Phillips, 2014). Studies have shown, that diabetes strategies that enhance self-efficacy have led to better maintenance of glucose levels (Sleath et al., 2016).

Having a high level of self-efficacy is imperative for progression to occur, whether it is acquired personally or through joint efforts, and self-efficacy plays a significant role in group guidance (Bandura, 1998). People do not maneuver through life in a solitary fashion; therefore, a host of achievements that are obtained in life are only

obtainable through working together (Bandura, 2001). Collective agency deals with a group's joint confidence in their collaborative ability to gain desirable outcomes (Bandura, 2001). Bandura (2001) summarized how several studies came to the conclusion that an increase in perceived collective efficacy yielded characteristics required to achieve a task and led to greater achievements. Although, in the current study, the association between medication self-and collective efficacy and medication adherence for DMII was not statistically significant, most of congregants demonstrated having high medication self- and collective efficacy and were adherent to DMII medications. Results could have been limited by the small population obtained.

Limitations of Findings

One of the possible limitations in the study were confounding or covariate variables such as medical distrust, low health literacy, age, gender, insurance status, number of medications prescribed, and education level that have been linked to medication adherence (see Fan et al., 2016; Newlin Lew et al., 2015). These variables were not controlled in the study. Confounders could have threatened the study only if they met the conditions of being confounding and were associated with the independent variable, which would have made it difficult to distinguish between their effects (see Laerd dissertation, n.d.-c). This correlation was not the case between the independent variable of the study, levels of faith in healing, and independent variables, medical distrust and low health literacy. Covariates such as age, gender, insurance status, number of medications prescribed, and education level that were obtained in the survey are generally controlled through the use of inferential statistics (see Green & Salkind, 2014a).

ANCOVA was going to be used to control for these covariates; however, the analysis could not be used because one or more of the analysis's assumptions (normality, homogeneity of variance, random independent samples, and linearity) were violated, indicating the variables were not good covariates for this investigation (see Green & Salkind, 2014a). To have continued with ANCOVA, would have yielded unreliable results for this study (see Green & Salkind, 2014a).

Only African American Christian churches in the Cincinnati metro area were considered during the investigation; therefore, generalizations about the results were limited to African American Christian church members of similar denominations from a similar geographical location. Generalizations could not have been made to the entire African American church population across the United States. Selection bias in the investigation may have also been an issue because randomization was not used. The use of nonrandomized studies questions the representation of the African American population as a whole. This limitation was most likely addressed through the use of two different types of Christian churches located within two different types of income neighborhoods.

The study may have been limited by the size of the study population because there were not as many churches that volunteered to participate or not as many participants who responded to the survey as expected. Having a smaller survey population could have affected the statistical analysis for DMII results. Meaning, the assumption of not having a significant relationship between levels of faith in healing and medication adherence for DMII participants might not have been reliable as the findings suggested. By surveying

members from more than one church, the research pool was increased in hopes of obtaining the required number of participants. The inability to obtain churchgoer participation was still an issue, which led to fewer access to church members who had diabetes and who may have been willing to participate.

Finally, the tool that was developed to assess levels of faith in healing was found to have a low reliability (KR-20 = .511). A decreased reliability could have minimized the findings of the investigation. However, internal consistency was increased with the deletion of Question 4, creating a new 3-item scale. The new 3-item level of faith in healing scale provided an acceptable internal consistency (KR-20 = .750). Even with a change in groupings based on new scores for a 3-item scale, the participants would have been categorized as having the same level of faith in healing (1 = *low level of faith in healing*, 2 = *medium level of faith in healing*, and 3 = *high level of faith in healing*). Groupings for the new 3-item scale were based on the following scores: 0 to 1 (group 1), 2 (group 2), 3 (group 3) rather than 0 to 1 (group 1), 2 to 3 (group 2), 4 (group 3) that were based on the scores for the 4-item scale. Level of faith in healing groups would not have changed with the use of the more reliable 3-item scale, and the same relationship outcomes would have been obtained.

Recommendations

Although research has suggested that having multiple chronic illnesses, such as CVD, diabetes, and hypertension, could lead to increased chances of nonadherence, 36 of the 44 diabetics in the study also had HBP; however, the theme was adherence among both illnesses (see Čulig & Leppée, 2014; Fredericksen et al., 2018). This would indicate

that the congregants in the current study had control of their diseases even though they were managing more than one comorbidity, which suggest that faith-based factors could have played a role in adherence among the congregants. Control also had been noted among many of the participants of the studies in the literature review. Because there had been some inconsistencies when it came to the relationship between religious/spiritual factors and adherence, it is important for future studies to continue to assess the relationship between faith in healing and medication adherence in African American Christian church members who have multiple risk factors to CVD. In the current study, members with HBP who had low levels of faith in healing, when it comes to taking medications, tended to be adherent to HBP medications, whereas members with HBP who had medium level of faith in healing, when it comes to taking medications, tended to be nonadherent. Because there appeared to be a significant relationship between having a lower and higher level of faith in healing and adherence, additional quantitative studies are needed, which solely focus on scaling levels of faith in healing.

Researchers should further assess different African American Christian denominations, considering there are certain denominations that follow more stringent religious guidelines; these guidelines could lead to congregants having a different level of faith in healing, when it comes to taking medications, than the Baptist and nondenominational Christian church members who were assessed in the current investigation. It is important to examine other denominational churches' faith in healing, when it comes to taking medications, because denominations that are more stringent may have more congregants who rely solely on their faith in God for healing. Additional

denominational studies will allow researchers to better assess higher levels of faith in healing, when it comes to taking medications, as a barrier to medication adherence and have a broader picture of faith-based medication adherence disparities.

Criterion validity could have been established for the new level of faith healing scale through continued validation that is only gained by using the instrument in various studies (see Laerd dissertation, n.d.-b). Future studies should explore the validity of the 3-item level of faith in healing scale, rather than the 4-item scale, by using it to measure the construct in different faith and adherence assessments. Continued use of the 3-item scale is endorsed because of its acceptable internal consistency (KR-20 = .750). Understanding levels of faith in healing through continued research is beneficial to determine faith-based barriers among larger African American Christian church communities.

Implications for Social Change

The study helped bridge the gap of limited quantitative studies that examined medication adherence based on levels of faith in healing, when it comes to taking medications, among Black Christian church members. Comprehending faith-based barriers is crucial because many African American congregants perceive faith as an important part of healing. Having a better understanding of the relationship between level of faith in healing and medication adherence could identify faith-based adherence issues that would help African American church community members, who are not being reached by other effective educational programs, tackle cardiovascular disparities through tailored faith-based programs. Congregants would be able to identify negative adherence behaviors through educational church programs that address faith in healing. Church

members could also gain social support from other church members by participating in these programs, which could lead to collaborative efforts: enhance collective efficacy and improve adherence.

Healthcare systems could benefit from the church's position as a social network and the connectivity between the church and its members. Healthcare systems should collaborate with the church to provide accessible faith-based initiatives so that devout African American patients could participate in educational programs that combine health and faith. Providing education/programs that are sensitive to faith will allow for tailored treatment plans. Health initiatives that that focus on faith as an essential component could help build trusting relationships that are lacking between the healthcare and African American community. A better relationship could prompt African Americans Christians to want to engage in faith-based programs that promote healthier medication adherence behaviors. Because ministers are tremendously respected and maintain a position as trusted figures within the church community, they are pivotal in sparking actions that could be a catalyst to better health outcomes: as they are advocates for the spiritual, physical, and the inner health of the parishioners (Collins, 2015). Overall, a minister's role in the church is conducive to program initiation and deciding which strategies are most favorable to reducing health disparities; therefore, healthcare systems and other health promotion agencies should seek to strengthen their relationship among churches to gain the trust of congregants as well as the community (Collins, 2015).

Positive behavioral change begins with the individual. The social influences that are encountered in a person's environment, such as a minister's sermons that focus on

honoring God through positive health behaviors, could help sustain positive behaviors. The findings of this study are instrumental to social change in the African American church community, because they identified the relationship between the different levels of faith in healing, when it comes to taking medications, and medication adherence, which is essential to determine and correct faith-based adherence issues. The findings also identified prevalence of CVD among the African American congregants. Determining and correcting faith-based adherence issues could lead to better management and control of CVD risk factors. Programs that are developed based on faith-based adherence issues, would be beneficial to church members who have CVD risk factors and whose faith is strengthened through the church. Members would be able to gain the tools needed to maintain positive adherence by participating in supportive programs offered through trusting networks that share similar biblical ideologies when it comes to faith in healing. Churches play a key role in changing the dynamics of CVD health disparities among their congregations. It is only through collaborative efforts between churches, practitioners, and health agencies can these tailored programs that target faith-based adherence barriers be used across many African American church communities to address CVD health disparities, which could invoke positive social change on a societal level.

Conclusions

This study was conducted to assess the relationship between level of faith in healing, when it comes to taking medication, and medication adherence and to determine whether these factors were related to CVD prevalence and uncontrolled symptoms of

hypertension and/or DMII. Although many of the congregants in the study were managing more than one chronic illness, the results revealed that most of the participants were adherent to their medication regimen. This would suggest that faith-based factors played a role in adherence.

The findings supported higher levels of faith in healing as a barrier to medication adherence among the study population; there appeared to be a significant relationship between having a lower and higher level of faith in healing and HBP medication adherence. In the study, members with HBP who had low levels of faith in healing, when it comes to taking medications, tended to be adherent to HBP medications, whereas members with HBP who had medium level of faith in healing, when it comes to taking medications, tended to be nonadherent. The outcome was not the same for members with DMII– possibly due to a lower number of DMII participation. Fortunately, prevalence of CVD was low among the study population; however, CVD risk factors remained an issue among African American church community members. The results indicated a need for continued assessment of higher levels of faith in healing as a barrier to mediation adherence and the development of tailored faith-based educational programs that focus on faith in healing to control and manage CVD risk factors. Having access to tailored faith-based programs, that directly target church members, could lead to a reduction in CVD health disparities among African American church communities.

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Appendix A: Demographic/Background Information (Sample Survey)

This survey is strictly voluntary. If you do not choose to continue with answering any of the questions, you may stop at any time. Please return the survey to the researcher when you are finished.

Answer the question in the space provided or circle the number that best describes you.

What is your age? ___Years old

What is you gender? Female…….. 1

Male……..... 2

Do you have health insurance? Yes……. 1

No……..2

What is the **highest** level of education completed?

Elementary school……. 1

Some high school…….. 2

High school graduate……. 3

Some college/trade/vocational school

……..……. 4

College/trade/vocational school graduate

……5

Has your doctor told you that you have **heart disease** (example: congestive heart failure; coronary artery disease; arrhythmia such as atrial fibrillation, bradycardia, or tachycardia; or valve disease)? Yes……. 1

No……..2

Do you have high blood pressure? Yes……. 1

No……..2

If you have high blood pressure, how many medications do you take for your high blood pressure? **(leave blank if you do not have high blood pressure)** _____

How many hospital admissions have you had in 2018 because of high blood pressure (from the beginning of January 2018 until the end of December 2018/ enter 0 if you did not have any admissions)? _____

Do you have diabetes type II? Yes……. 1

No……..2

If you have diabetes how many medications do you take for your diabetes type II, including oral and insulin injection medications? **(leave blank if you do not have diabetes)** _____

How many hospital admissions have you had in 2018 because of high blood sugar (from the beginning of January 2018 until the end of December 2018/ enter 0 if you did not have any admissions)? _____

Appendix B: Medication Adherence Questionnaire

Taking medication daily isn't always easy. I would like to know if you have trouble taking your medications as prescribed. **Please check** one box for yes or no for each of the four questions. **There are no wrong or right answers.**

	Yes	**No**
1. Do you ever forget to take your medicine?		
2. Are your careless at times about taking your medicine?		
3. When you feel better do you sometimes stop taking your medicine?		
4. Sometimes if you feel worse when you take the medicine do you stop taking it?		

Note. The MAQ was Adapted from "Concurrent and Predictive Validity of Self-Reported Measure of Medication Adherence," by D. E. Morisky, L. W. Green, and D. M. Levine, 1986, *Medical Care, 24*(1), 67-74. Adapted with permission.

Appendix C: Medication Adherence Self-Efficacy Scale

There are different reasons that prevent people from taking their prescribed blood pressure medication(s). Below are 13 different situations that may affect taking medications.

I want you to tell me how confident you are with taking your blood pressure medicine(s) when you are faced with the different situations below. **Circle the number** for each of the 13 situations that best describes how confident you feel about taking your medication. There are no wrong or right answers. (If you **DO NOT** have **high blood pressure** then skip this section.)

Items	Not at all sure	A little sure	Fairly sure	Extremely sure
How confident are you that you can take your blood pressure medications:				
1. When you are busy at home	1	2	3	4
2. When there is no one to remind you	1	2	3	4
3. When you worry about taking them for the rest of your life	1	2	3	4
4. When you do not have any symptoms	1	2	3	4
5. When you are with family members	1	2	3	4
6. When you are in a public place	1	2	3	4
7. When the time to take them is between your meals	1	2	3	4
8. When you are travelling	1	2	3	4
9. When you take them more than once a day	1	2	3	4
10. When you have other medications to take	1	2	3	4
11. When you feel well	1	2	3	4
12. If they make you want to urinate while away from home	1	2	3	4
Please rate how sure you are that you can carry out the following task:				
13. Make taking your medications part of your routine	1	2	3	4

Adapted from "Revision and Validation of the Medication Adherence Self-Efficacy Scale (MASES) in Hypertensive African Americans," by S. Fernandez, W Chaplin, A. Schoenthaler, G. Ogedegbe, 2008, *Journal of Behavioral Medicine*, *31*(6), 453–462. Adapted with permission.

Appendix D: Diabetes Medication Self-Efficacy

There are different reasons that prevent people from taking their prescribed diabetes medication(s). Below are 19 different situations that may affect taking medications. I want you to tell me how sure you are about taking your diabetes medicine(s) if you are faced with the different situations below. **Circle one of the numbers** for each of the 19 situations that best describes how sure you are about taking your diabetes medication. There are no wrong or right answers. (If you **DO NOT** have **diabetes** then skip this section.)

How sure are you that you can take your diabetes medicines if…	**Not at all sure**	**Somewhat sure**	**Very sure**
1) … you are busy at home?	1	2	3
2) … there is no one to remind you?	1	2	3
3) … they cause some side effects?	1	2	3
4) … you worry about taking them for the rest of your life?	1	2	3
5) … they cost a lot of money?	1	2	3
6) … you come home late from work or other activities?	1	2	3
7) … you do not have any symptoms of diabetes?	1	2	3
8) … you are with family members?	1	2	3
9) … you are in a public place?	1	2	3
10) … you feel you do not need them?	1	2	3
11) … you are traveling?	1	2	3
12) … you take them more than once a day?	1	2	3
13) … they sometimes make you tired?	1	2	3
14) … you have other medicines to take?	1	2	3
15) … you feel okay?	1	2	3
16) … you are shaky or jittery?	1	2	3
17) … you are confused?	1	2	3
18) … your vision is blurry?	1	2	3
19) … you have a headache?	1	2	3

Adapted from "Development of a new diabetes medication self-efficacy scale and its association with both reported problems in using diabetes medications and self-reported adherence," by B. Sleath, D. M. Carpenter, S. J. Blalock, S. A. Davis, R. P. Hickson, C. Lee … D. M. Cummings, 2016, *Patient Preference and Adherence*, *10*, 1003–1010. Adapted with permission.

Appendix E: Diabetes Medication Collective Efficacy

I want to know how sure you think all of the church members with diabetes in this church are with taking their diabetes medicine(s) when they are faced with the different situations below. **Circle one number** for each of the 19 situations that best describes how sure you think church members are about taking their diabetes medications. There are no wrong or right answers. (If you **DO NOT** have **diabetes** then skip this section.)

How sure are members in this church that they can take their diabetes medicines if…	**Not at all sure**	**Somewhat sure**	**Very sure**
1) … they are busy at home?	1	2	3
2) … there is no one to remind them?	1	2	3
3) … they cause some side effects?	1	2	3
4) … they worry about taking them for the rest of their life?	1	2	3
5) … they cost a lot of money?	1	2	3
6) … they come home late from work or other activities?	1	2	3
7) … they do not have any symptoms of diabetes?	1	2	3
8) … they are with family members?	1	2	3
9) … they are in a public place?	1	2	3
10) … they feel they do not need them?	1	2	3
11) … they are traveling?	1	2	3
12) … they take them more than once a day?	1	2	3
13) … they sometimes make them tired?	1	2	3
14) … they have other medicines to take?	1	2	3
15) … they feel okay?	1	2	3
16) … they are shaky or jittery?	1	2	3
17) … they are confused?	1	2	3
18) … their vision is blurry?	1	2	3
19) … they have a headache?	1	2	3

The diabetes medication collective efficacy scale was based on the diabetes medication self-efficacy scale Adapted from "Development of a new diabetes medication self-efficacy scale and its association with both reported problems in using diabetes medications and self-reported adherence," by B. Sleath, D. M. Carpenter, S. J. Blalock, S. A. Davis, R. P. Hickson, C. Lee … D. M. Cummings, 2016, *Patient Preference and Adherence*, *10*, 1003–1010. Adapted with permission.

Appendix F: Level of Faith in God's Healing Scale

A person's faith plays a huge role in their belief in healing which may also play a role in taking medication(s). I want to know your beliefs about healing.
Please check one box for yes or no for each of the four questions. **There are no wrong or right answers.**

	Yes	**No**
1. Do you believe God also gave you wisdom so it is ok to get treatment for a disease even if you have already prayed to be healed?		
2. Do you believe that you can have faith in God and still believe in the benefits of modern medicine?		
3. Do you believe that taking medications can help heal you from getting worse?		
4. When you feel better after taking medications do you believe that the medicines are the reason you feel better?		