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The Relationship Between Spirituality and Mental Health Among Kidney Dialysis Patients

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Walden University
2020

Abstract

The Relationship Between Spirituality and Mental Health Among Kidney Dialysis Patients

by

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MA, University of Phoenix, 2011

BS, California State University Long Beach, 2000

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

The 9th leading cause of death in the United States is kidney disease. An estimated 37 million Americans in the United States, or about 15% of the adult population, have some level of chronic kidney disease. Kidney disease is multifaceted and has implications for both physical and psychological health of a patient. However, research on kidney dialysis patients has primarily focused on physical health. Grounded in social learning theory, this quantitative study used a correlational research design to examine the relationship between spirituality and mental health in 128 kidney dialysis patients with end-stage renal disease. Kidney dialysis patients at kidney dialysis centers completed the Spiritual Involvement Beliefs Scale-Revised, which assessed their spirituality, and the General Health Questionnaire, which assessed their mental health. A multiple linear regression analysis with backward elimination was conducted to address the hypotheses. The results suggested that there is a significant predictive relationship between the spirituality and mental health of patients who received kidney dialysis treatment. Spiritual explorations and activities provide comfort and a deeper meaning to life, which improves the patients' quality of life and can result in increased benefit from medical treatment. The indications are that providing efficient mental health support to this group of patients should take the patients' spirituality in consideration. The findings extend current literature on the topic and may initiate positive social change by suggesting that spiritual explorations and activities designed to give comfort and a deeper meaning to life may improve quality of life and increase benefits from medical treatments for patients with end-stage renal disease.

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Dedications

I dedicate my dissertation work to my lovely family and many friends. A deep feeling of gratitude to my father Arnoldo Perez, who got ahead of us and resides above the clouds, thank you for the many blessing from up above and the advice that you always gave me, I LOVE YOU, DADDY. A special feeling of gratitude to my loving mother Bertha Perez whose words of encouragement and push for tenacity have rung in my ears, I LOVE YOU, MOMMY. To my loving sister Marjorie, and my loving brother Albert who has never left my side and who are very special to me, I love you BOTH very much. To all my sisters-in-law and brothers-in-law for all your support and words of encouragement. I also dedicate my dissertation work to "Los Hermanitos," who have supported me throughout this process spiritually and I will always appreciate all that you have done for my family and me. To my beautiful wife Nataly Perez, soon to also be Dr. Nataly Perez, for all your words of encouragement and for providing me the opportunity at a second chance at life, LOVE YOU ALWAYS, and THANK YOU. To our beautiful angel in heaven "Alex," I will always "LOVE YOU" my little angel. And to our little rainbow baby "Sidney N. Perez", what can I say my little princess, but you are the sparkle that makes daddy continue. Always remember you are braver than you believe, stronger, than you seem, smarter than you think. Love you more than you know. And finally but not least, I will like to dedicate my dissertation work to my many friends, for your friendship and words of encouragement. To all my chairs, specifically to Dr. Fearrington, for your words of wisdom and guidance throughout this incredible journey, thank you for believing in me and for always providing me a helping mind.

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Chapter 1: Introduction to the Study

Introduction

Kidney disease has implications for both the physical and psychological health of a patient. Relationships between spirituality and the mental health of dialysis patients have not received much attention (Theofilou, 2012). Patients who have kidney disease and who are on dialysis face many daily obstacles. Most importantly for this study, living with a chronic illness can affect a patient's quality of life, mental health, and social functioning. This study explored the relationship between spirituality and mental health among kidney dialysis patients. The findings of this study were expected to contribute to understanding the role spirituality plays in kidney patients' mental health.

This chapter covers the following topics: background of the study, problem statement, and purpose of the study. Research questions and hypotheses, theoretical foundation, nature of the study, and definitions of relevant terms, assumptions, scope and delimitations, limitations, significance, and a summary.

Background

The kidneys' function is to filter the blood and extra amount of water in the body, as well as the waste, through the blood and urine (National Institute of Diabetes and Digestive and Kidney Diseases, 2012). Kidney disease is a heterogeneous disorder in which the kidney function and structures are affected (Levey & Coresh, 2012). In the United States, there are two major kidney diseases: chronic kidney disease (CKD) and end-stage renal disease (ESRD). The United States Renal Data System's Annual Data Report (2016) found an upward trend of CKD and ESRD cases in the United States. One

in seven American adults, estimates of 15%, or about 37 million people have some level of CKD (Centers for Disease Control & Prevention, 2019; U.S. Department of Health & Human Services, 2019). CKD or ESRD patients, usually, in the course of time, develop mental health issues (Theofilou, 2011, 2012). The most common are depression, anxiety, suicide, and delirium (National Institute of Mental Health [NIMH], 2014). Good mental health is important to any individual to function well and as such needs to be ensured at all times.

For kidney dialysis patients, two types of dialysis treatments are currently available: hemodialysis (HD) and peritoneal dialysis (PD) (National Kidney Foundation, 2019). HD is used for a patient who has been diagnosed with ESRD. Blood is slowly filtered through a dialyzer (artificial kidney) and then returned to the body. PD removes the toxic wastes and extra fluid in the body through the peritoneal cavity in the abdomen as it uses the lining of your abdomen called the peritoneum as a filter. The peritoneal gland can hold a cleaning solution, called dialysate fluid, which uses the peritoneum, the membrane around the peritoneal cavity, as a filter to clean the blood.

Kidney disease can cause physical and psychological health complications (National Kidney Foundation, 2019). The published research literature shows how socio-demographical factors, such as age, race, ethnicity, and socioeconomic status, among others, relate to mental health; but relationships between religion/spirituality and the mental health of dialysis patients have received less attention (Theofilou, 2012). Just like other patients suffering from the malfunctioning of a body organ, patients with chronic kidney disease face many daily obstacles, affecting their quality of life, mental health,

and social functioning. Researchers have found significant relationships between religion, as an established institution of faith and spirituality, as believing in something greater than oneself and mental health and links between religion/spirituality and physical health (Powell, Shahabi, & Thoresen, 2003; Theofilou, 2012).

Problem Statement

In the United States only, the two major conditions of kidney disease are CKD and ESRD. According to the Centers for Disease Control and Prevention (2014), there is an upward trend of CKD and ESRD cases in the United States. Treatment for CKD and ESRD can use either HD or PD. Patients' quality of life and mental health can vary between the treatments of PD or HD (Theofilou, 2011). According to the American Kidney Fund (2012), patients suffering from depression and any other chronic disease are less likely to respond positively to treatment, compared to patients with no pre-existing conditions such as diabetes or high blood pressure. As such, other factors such as religious beliefs or psychological therapy must be considered to ensure the effective treatment of depression and thus address the mental health of CKD or ESRD patients.

According to Theofilou (2012), few studies have researched the impact of religion on the quality of life and mental health of kidney dialysis patients. Although psychologists and theologians have seen differences between religion and spirituality, they agree on changes in both terms due to social and scholarly influences (Schlehofer, Omoto, Adelman, Omoto, & Adelman, 2016). Because both terms have been seen as equivalent throughout time, religion was defined as a sense of community within a religious group that offers feelings of hope, safety, religious means, and methods to

search for the sacred with religious rituals (Schlehofer et al., 2016). Spirituality was defined as a concept of the scared, in search of the scared for a better understanding and keeping a relationship with one's personal god (Schlehofer et al., 2016). In spite of that there has been no research on the impact of spirituality on the mental health of kidney dialysis patients with ESRD. Therefore, this study focused on the analysis and the discovery of the role of spirituality on the mental health of dialysis patients with ESRD.

Purpose of the Study

The purpose of this quantitative, correlational study was to determine the relationship between spirituality and mental health in kidney dialysis patients with ESRD. Though the relationship between spirituality and physical health of patients has received increased attention over the years, there is no empirical evidence of the relationship between spirituality and the mental health of kidney dialysis patients. In this study, the predictor variable was spirituality with the four domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), of kidney patients on dialysis, as measured by the Spiritual Involvement Beliefs Scale-Revised (SIBS-R; Hatch, Burg, Naberhaus, & Hellmich, 1998). The criterion variable was the mental health status with the four domains (somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression) of kidney dialysis patients, as measured by the General Health Questionnaire (GHQ-28; Goldberg, 1978).

Research Questions and Hypotheses

The following research question, and its four hypotheses, guided this study: To what extent is spirituality related to the mental health status of kidney dialysis patients?

$H_0$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to somatic symptoms, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to somatic symptoms, as measured by GHQ-28, of kidney dialysis patients.

$H_0$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to anxiety/insomnia, as measured by GHQ-28, of kidney dialysis patients.

$H_1$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the anxiety/insomnia, as measured by the GHQ-28, of kidney dialysis patients.

$H_0$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to social dysfunctions as measured by GHQ-28, of kidney dialysis patients.

$H_1$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the

SIBS-R, are significantly related to social dysfunctions, as measured by the GHQ-28, of kidney dialysis patients.

$H_0$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

Theoretical Framework for the Study

The theoretical base for this study was social learning theory (SLT) developed by Rotter (1954) and later refined by Bandura (1971). Seems like this, which is concerned with how cognitive factors influence development, is the most influential theory of learning (Bandura (1971). According to SLT, behaviors can be learned from the environment through a process of observational learning. Individuals learn from the environment based on observing and imitating the behaviors of others through the process of observational learning. Then, individuals can reinforce such behavior by being rewarded or punished. Positive reinforcement is likely to reinforce that specific behavior (Rotter, 1982).

SLT is the basis for the locus of control (LOC) construct developed by Rotter (1954). LOC is an individual's general cross-situational belief as to whether or not they

get reinforced and how previous experiences and variables attributes can be classified along a scale from internal to external (Rotter, 1954; Wallston & Wallston, 1978; Wallston & Wallston, 1981). The LOC is the degree to which an individual believes that they, opposed to external influences, may have control over the events and outcomes in their life. The external LOC is, how the individual attributes their success to outside influences, versus the internal LOC, how the individual attributes their success to their work and believe they are in control. Internal versus external control of reinforcements are the most researched variables in psychology and other social sciences (Mearns, 2009; Rotter, 1966, 1982, 1989; Rotter & Hochreich, 1975). Wallston and Wallston (1978) found that the concept of internal and external locus of control provides direction for health education programs to determine whether they are working or accomplishing their goals. Wallston and Wallston (1981) also found that LOC relates to patient behavior in health care situations, such as chronic conditions and mental health disorders. In addition, they found evidence that the LOC construct is a relevant and significant predictor of health behaviors and sick-role behaviors in patients (Wallston & Wallston, 1978).

SLT and LOC are the basis for the development of the *health locus of control* (HLOC) construct developed by Wallston, Wallston, Kaplan, and Maides in 1976. HLOC describes the degree of an individual's belief that a health-related issue is a consequence of his or her behaviors, as such it reflects the degree to which an individual believes that health is controlled by internal or external factors. For example, an individual's external belief is that health is supervised by powerful others (i.e., doctors) and is determined by other means, such as fate or chance. On the other hand, internal factors refer to an

individual's belief that health outcomes are directly associated with his or her behaviors. More detailed information about the development of HLOC and its relevance to the study are discussed in Chapter 2. In this study, the spirituality of an individual is considered as an internal factor; it may affect the behavior of kidney dialysis patients with ESRD. As such, through the idea of HLOC, it is hypothesized that spirituality will have a role in their mental health.

Researchers have found correlations between HLOC, religion, and spirituality. Dednam et al. (2012) found that internal HLOC dealt with active coping and found significant correlations on spiritual HLOC beliefs, disease prevention, and health risks behaviors. Park et al. (2012) concluded that patients who were in an organized religious group had higher internal HLOC and were less depressed than patients who were not in a religious group. Park et al. (2012) also found associations among spirituality, HLOC, and health behaviors in African Americans and examined the role of spiritual HLOC beliefs in coping with different types of diseases. They found that patients who were in an everyday spiritual situation compared to none, were also less depressed compared to those who reported lower internal HLOC. In sum, spiritual HLOC beliefs are positively related to healthy behaviors.

Nature of the Study

A quantitative method with a correlational research design was utilized for this study. According to Burns and Grove (2009), the main purpose of quantitative research is to identify or determine relationships between and among study variables. Quantitative methods explain trends and impacts of variables that can be measured numerically

(Williams, 2007). The purpose of this study was to determine if spirituality can predict the mental health of kidney dialysis patient with ESRD, and provide statistical evidence to the underlying relationships between the study variables (Leedy & Ormrod, 2010) and thus, the quantitative method was deemed appropriate for the study.

A correlational research design was used to identify the magnitude and direction of existing relationships between and among the independent and dependent variables (Leedy & Ormrod, 2010). With that, the primary purpose of a correlational design was to provide statistical evidence to the underlying relationships between the study variables (Leedy & Ormrod, 2010). A correlational research design was deemed adequate for the study because it did not require a controlled environment or manipulation of variables, which happen only in an experimental research design (Goertz & Mahoney, 2012). The statistical technique used for the computation of the sample size showed a minimum sample size of 128 participants. The data collection will be accomplished by administering the GHQ-28 and the SIBS-R surveys to kidney dialysis patients.

Definitions

Kidney failure. A kind of failure that occurs because there is a loss of some (but not all) of the organ's filtration capacity, which is clinically identified by a reduced glomerular filtration rate (Kahan & Ashar, 2008).

Mental health. A level of psychological well-being, or an absence of mental illness. It is considered as the individual’s psychological state functioning at a satisfactory level of emotional and behavioral adjustment (NIMH, 2006).

Spirituality. Spirituality can be defined as the searching for the sacred (Hill et al., 2000). The term searching refers to the concept of God or a higher power and any part of an individual's life, either positive or negative, can be endowed with a sacred status. Spirituality is the ultimate or the most personal path of an individual, which is used to discover the essence of their being.

Assumptions

In every study, assumptions are inevitable, particularly in quantitative studies, where the aim is to make inferences about unknown population parameters (Cooper & Schindler, 2013). This study involved two assumptions. First, it was assumed that the participants were accurate in reporting their spirituality and mental health responses. If so, participants understood the instructions and every survey item and could accurately answer each item. Second, it was assumed that the survey instruments would accurately measure the constructs of spirituality and mental health as they were intended. As such the assumptions made cannot be demonstrated to be in fact true, but necessary in making inferences about what is unknown about the population. Assumptions are deemed necessary in the study as they help describe the phenomenon in question and help test the theories.

Scope and Delimitations

The focus of this study was patients with ESRD undergoing kidney dialysis at selected kidney dialysis centers across California. The data were limited to the information provided by the participants from the surveys. The first survey measure spirituality rather than religiosity, where the higher scores, indicate a higher endorsement

to spiritual involvement. The second survey is used to detect those likely to have or be at risk of developing psychiatric disorders. There were no delimitations in terms of gender and ethnicity, as long as the patient was diagnosed with ESRD. Given that the sample was recruited from select kidney dialysis centers, the entire kidney dialysis population was not represented, and thus the generalizability of the results was limited, to the information that participants provide on surveys.

Limitations

This study had some limitations. (a) Participants' mental health and spirituality was self-reported. As such, participants could have misperceived their mental health and spirituality and thus affected the findings of this study. (b) To address any ambiguity in the questions, I used validated instruments that had been tested for reliability and validity. (c) The selection of a correlational research design intrinsically limited the analysis to the significance, direction, and magnitude of the relationships between variables. Such a design provided information about the differences between the value of the dependent variables across groups and the causal relationship of variables. A correlational design was deemed appropriate because the focus of the study was not to identify causes of relationships. The focus of the study was to identify whether relationships exist between the variables. Reasonable measures to address limitations were to utilize instruments with high reliability and tested validity.

Significance

This research was an attempt to better understand the role of spirituality on the mental health of kidney dialysis patients. According to Theofilou (2012), the relationship

between spirituality and physical health have increased interest because of several studies that have demonstrated relationships between spirituality and physical health outcomes. Potential benefits of this study included the better understanding of how spirituality is related to the mental health of kidney dialysis patients, which could be used in developing programs or interventions to decrease mental health symptoms among this population.

Summary

Kidney disease is multifaceted, and has implications for both physical and psychological health of a patient. Research on kidney dialysis patients has primarily focused on physical health. A few studies have investigated the role of religion on the quality of life and the mental health of patients on dialysis, but none have focused on the role of spirituality on the mental health of patients on dialysis. As such, the purpose of this quantitative correlational study was to determine the role of spirituality on the mental health of kidney dialysis patients. The predictor variable was spirituality, as measured by the SIBS-R, and the criterion variable was the mental health status of the kidney dialysis patient, as measured by the GHQ-28. Grounded in social learning theory, this quantitative study used a correlational research design to examine the relationship between spirituality and mental health in 128 kidney dialysis patients with end-stage renal disease. Kidney dialysis patients at kidney dialysis centers completed the Spiritual Involvement Beliefs Scale-Revised, which assessed their spirituality, and the General Health Questionnaire, which assessed their mental health. The findings can extend current literature on the topic and may initiate positive social change by suggesting that spiritual explorations and

activities designed to give comfort and a deeper meaning to life may improve the quality of life and increase benefits from medical treatments for patients with ESRD.

Chapter 2 provides a review of the published literature on spirituality, mental health, SLT, LOC, and HLOC. Chapter 3 presents the methodology for the study, Chapter 4 presents the data and results for the study, and Chapter 5 will present the final discussion, conclusions and recommendations for the study.

Chapter 2: Literature Review

Introduction

In this chapter, I review the literature on SLT, LOC, HLOC and the role of spirituality in the mental health of kidney dialysis patients. First, I discuss kidney disease in the American population by defining it, describing. The different types of treatments and the most common psychological symptoms.

Second, I define and review the relevant studies on SLT, LOC, HLOC, and the role of spirituality in both individual beliefs and health outcomes that can be controlled. I also review studies on the internal and external factors of individual beliefs, and how such factors control health, and more specifically, how spirituality impacts the mental health of kidney dialysis patients.

Third, I review research on the relationship between spirituality and the mental health of kidney dialysis patients. I discuss the links between spirituality and physical and mental health and their outcomes in chronically ill patients. The practical implications of this research are important, because they can inform the delivery of effective mental health service to those on kidney dialysis.

Literature Search Strategy

The following databases were used to search the peer-reviewed literature for the previous 10 years: SAGE, PsycINFO, PsycARTICLES, and Google Scholar. The following search terms were used: *dialysis, mental health, kidney dialysis patients, end-stage renal disease , chronic kidney disease, depression, dialysis, spirituality, kidney*

disease, renal failure, quality of life, GHQ-28, SIB-R, kidney disease statistics, kidney disease treatment, locus of control, health locus of control, and *social learning theory.*

Kidney Disease Background

The function of the kidneys is to filter the blood and extra amount of water in the body as well as the waste through the blood and urine (National Institute of Diabetes and Digestive and Kidney Diseases, 2012). Kidney disease can be defined as a heterogeneous disorder in which the kidney function and structures are affected (Levey & Coresh, 2012). It is also defined as having impaired kidneys that are not able to filter blood resulting in a buildup of waste in the body (Levey & Coresh, 2012). The glomerular filtration rate (GFR) is the best test to measure kidney function level and determine the stage of kidney disease (National Kidney Foundation, 2019). A blood or urine test can determine the GFR, and knowing the GFR can determine if someone has or is at risk for kidney disease. A GFR of 60 or higher is a normal level; a GFR below 60 may suggest kidney disease, and a GFR of 15 or below means kidney failure.

Kidney disease can be classified as a five-stage disease. Stage 1 is a GFR of more than 90, Stage 2 is a GFR of 60-89, Stage 3 is a GFR of 30-59, Stage 4 is a GFR of 15-29, and finally, Stage 5 is a GFR of less than 15 (Levey & Coresh, 2012). The two leading causes of kidney failure are diabetes and high blood pressure (National Kidney Foundation, 2015; U.S. Department of Health & Human Services, 2012). According to Levey and Coresh (2012), the leading causes of kidney disease are old age, diabetes, hypertension, obesity, and heart-related problems. Diabetes and hypertension are responsible for two-thirds of kidney disease cases in the United States.

Kidney Disease Statistics

In the United States, kidney disease statistics include two major chronic diseases: CKD and ESRD. Many CKD or ESRD patients have restrictions to specific foods and some fluid intake. Some patients experience changes in the body, work schedules, economic status, sexual activity levels, self-image, health status, and their mental health can be unknown because of treatments (Theofilou, 2011; Theofilou, 2012). The United States Renal Data System's Annual Data Report (2016) found an upward trend and movement of CKD and ESRD cases in the United States. One in seven American adults, estimates of 15%, or about 37 million people have some level of CKD (Centers for Disease Control & Prevention, 2019; U.S. Department of Health & Human Services, 2019).

The American Kidney Fund (2012) reported an increase in cases and an upward movement of elderly cases in the United States. CKD cases are the fastest growing population disease among ages 65 and older, and cases have increased from 18.8–24.5%, more than doubling between 2000 and 2008 (American Kidney Fund, 2012; National Health & Nutrition Examination Survey, 1988-1994; U.S. Department of Health & Human Services, 2012). Kidney disease is one of the fastest growing issues in the United States that needs to be researched further. The most commonly diagnosed mental health symptom in kidney dialysis patients, is depression, anxiety, suicide, and delirium. These symptoms can be observed in both peritoneal dialysis (PD) and hemodialysis (HD) patients with kidney disease (National Institute of Mental Health, 2014). According to NIMH, (2014) estimates of 22.1% of American adults ages 18 or older, will fit the

criteria for mental disorder in any given year. In sum, exploring the mental health status of kidney disease patients can help improve and provide effective mental health treatments. The following section will discuss kidney dialysis treatments that are widely available today.

Kidney Disease Treatments

According to DaVita, 2017 and the National Institute of Diabetes and Digestive and Kidney Disease, 2012, two unique types of dialysis treatments are currently available for those patients who have been diagnosed with ESRD. The two kinds of dialysis treatments are Hemodialysis (HD) and Peritoneal Dialysis (PD). Dialysis is the artificial process of eliminating waste and unwanted fluid from the blood and body. The blood is slowly removed from the body so that it can be filtered through a dialyzer (artificial kidney) and is returned to the body once the blood has been cleaned and filtered. The blood is returned through an access point, either with an Arteriovenous (AV) fistula or graft (DaVita, 2017; National Institute of Diabetes and Digestive and Kidney Disease, 2012).

According to DaVita, 2017 and the National Institute of Diabetes and Digestive and Kidney Disease, 2012, PD is the process that removes the toxic wastes, blood, and or extra fluid in the body through the peritoneal cavity in the abdomen within the body. The peritoneal gland in the body can hold dialysate fluid in the peritoneal gland, which uses the peritoneum membrane around the cavity, to act as a filter. A PD catheter needs to be surgically inserted into the abdomen cavity to fill the gland with dialysate fluid so the waste can go through the peritoneum into the dialysate. Once this process has been

completed, and the cavity has been filled with dialysate, the fluid needs to be removed after several hours along with the waste (DaVita, 2017; National Institute of Diabetes and Digestive and Kidney Disease, 2012). According to DaVita, 2017 and the National Institute of Diabetes and Digestive and Kidney Disease, 2012), once the kidneys are damaged this function is impaired, and the kidneys cannot carry this process resulting in the need for dialysis. Patients who are in ESRD will eventually select their type of treatment, or a nephrologist will recommend the best treatment for that individual patient.

Theofilou (2011) found that the quality of life and the mental health of kidney dialysis patients have differences between the two types of dialysis. Female patients were more depressed than males; however, both genders do demonstrate a higher level of depression than found in normal populations. Theofilou (2012) also discovered the importance of religion and spirituality in being able to better understand health perceptions of patients with ESRD and the contributions of religion and spirituality to their mental health. In sum, the following section discussed findings that are relevant to this study as they explored the relationships of spirituality on the mental health of kidney dialysis patients.

Mental Health of Dialysis Patients

Kidney disease is a multifaceted issue that has implications on both physical and psychological health for the patient. Theofilou (2012) found relationships between religion and spirituality and the mental health of dialysis patients have not received much attention. Likewise, Powell, Shahabi, and Thoresen (2003) found a dearth of research on the impacts of spirituality on physical health, which suggests a need for further studies.

Patients who have kidney disease and who are on dialysis face many daily obstacles. Most importantly, living with a constant chronic disease can affect a patient's quality of life, mental health, and social functioning. Researchers found relationships among religion and spirituality to mental health and links between religion and spirituality to physical health (Powell et al., 2003; Theofilou, 2012).

Several researchers found impairments, impacts, and complications related to the mental health of kidney patients on dialysis (Jain, Acharya, & Shukla, 2017; Martinez & Custodio, 2014; Sharif, Hojjati, Nazari, Qorbani, & Akhoondzade, 2012). Jain et al. (2017) found that cognitive impairment and depression in ESRD patients is a common occurrence, and depression significantly compromises and affects the disease outcome, morbidity, and mortality. Understanding the pathophysiologic phenomena, renal impairment, and mental health occurrences in ESRD patients are critical in minimizing the risk of cognitive impairments. These set of causes and the additional burden of ESRD need to be recognized and treated appropriately. The need for multidisciplinary involvement of nephrologists, neurologists, physicians, psychiatrists, and clinical psychologists is essential (Jain et al., 2017). Likewise, Sharif et al. (2012) found that hemodialysis (HD) treatments could bring complications to patients' mental health in causing disorders and impacting the quality of life.

Along with the everyday occurrences of HD, psychological as well as physical and social complications can occur as mental instability, and uselessness can result from the lack of spiritual fulfillment of the patient. Sharif et al. (2012) concluded that prayer is suitable to adapt to the disease and also mitigates the stress, which in turn improves

spiritual health. In the future, it is hoped that physicians, as well as nursing staff, can play a fundamental role of ideological beliefs in the patients' life, and may see the effect of care creations of peace to the quality of life and a rapid recovery in health conditions. The results from Jain et al. (2017) and Sharif et al. (2012) studies were consistent with the results from Martinez and Custodio (2014) that found that living with a terminal illness has a negative impact on the mental health of HD patients. Spirituality can be a coping mechanism in helping HD patients in stressful experiences (Martinez & Custodio, 2014). Martinez and Custodio (2014) concluded that studies on the relationship between spirituality and mental health among HD patients are limited. Furthermore, it was found that HD patients who had poor mental health were associated with lower spiritual well-being and in turn had complications for care (Martinez & Custodio, 2014).

The American Kidney Fund (2012) found that depression amongst patients with medical illnesses is less likely to positively respond to treatments, compared to patients without any underlying chronic diseases. Likewise, De Sousa, (2008) found depression to be the most common psychological disorder in ESRD patients. The results from the American Kidney Fund (2012) and De Sousa (2008) were consistent with results reported by the NIMH (2014). Researchers found depression, anxiety, suicide, and delirium are common symptoms in both PD and HD patients with kidney disease (NIMH, 2014). Keskin and Engin (2011) found depression as the most common symptom in renal failure patients as in other chronic diseases; however, Kellerman, Christensen, Bladwin, and Lawton (2010) reached a different conclusion on the role of depression in dialysis patients. Depression was reported to be the main psychological symptom of ESRD;

however, underdiagnosed to the lack of awareness of depression within this population because of an overlap in symptoms. Symptoms related to kidney failure with indicators of depression such as fatigue, lack of appetite, low energy, and cognitive impairments are some of these overlapping symptoms (Kellerman et al., 2010).

Several researchers found effects on quality of life-related to the mental health of kidney patients on dialysis (Anees, Hameed, Mumtaz, Ibrahim, & Khan, 2011; Keskin & Engin, 2011; Theofilou, 2011). Theofilou (2011) concluded that ESRD has an adverse effect on the patient's life, affecting social, financial, psychological well-being, and overall quality of life. The quality of life was found to be significantly affected, and patients are most likely to withdraw from dialysis treatments compared to patients with diabetes, cardiovascular failure, arthritis, and chronic lung disease (Anees et al., 2011). Likewise, Christensen, Turner, Smith, Holman & Gregory (1991) also found that for many patients on dialysis, depression is the leading impairment to the patient's quality of life and is more likely for ESRD patients to have a higher rate of suicide. The results from Anees et al. (2011) and Theofilou (2011) were consistent with results reported by Keskin and Engin (2011). Keskin and Engin discovered the most common problems among ESRD patients were psychiatric and physical problems as with many other diseases, but also found connections between anxiety, depression, and socio-demographic factors. These factors found that 67.5% of dialysis patients have depression and that older patients are at greater risk for depression (Keskin & Engin, 2011).

Devins, Binik, Hollomby, Barr, and Guttmann (1981) found depression to be an unavoidable occurrence for ESRD patients; although, this is dependent on the patient's

modality of treatment and the patient's good non-renal health. When patients are in good non-renal health, fewer patients can be classified as clinically depressed; however, patients with many complications and poorer health have a higher level of depression as it is not an inevitable psychological reaction (Devins et al., 1981). The quality of life for an individual on dialysis is a major factor that can determine how well an individual will cope with his or her treatment, and maybe depression. In sum, depression is the most common symptom in kidney disease patients; however, more research is needed to address mental health issues related to kidney disease. Regardless of gender, social economic status, or psychological well-being, depression is the most common occurrence in kidney dialysis patients. The following section will discuss the theoretical foundation of this study, incentives, and individual generalized expectancies and beliefs about reinforcement.

Theoretical Foundation

In the following section, the theoretical framework of this study and the interrelated set of constructs that served as its foundation are covered. Furthermore, SLT is discussed, including how its development helped create the locus of control construct, which led to the development of the health locus of control that is geared towards health outcomes. When applied to health outcomes and health behaviors, individuals can apply specific health outcomes to either internal or external sources. This theoretical expectation based on SLT is supported by this study.

Social Learning Theory

The theoretical base for this study was social learning theory (SLT) developed by Rotter (1954) and later refined by Bandura (1971). SLT is known as the most influential theory of learning. According to SLT, behavior can be learned from the environment through a process of observational learning. SLT states that individuals learn based on observing and imitating the behaviors of others, then through being rewarded or punished for behaving as such. According to Bandura (1971), SLT adopts models that influence learning principles that informative functions can represent a model of activities, rather than specific stimulus-response associations that the observer can learn. Among several factors that exist within observational learning, associations play a significant role (Bandura, 1971). SLT is concerned with how cognitive factors influenced development. According to SLT, positive reinforcement is when the consequences are likely to increase that specific behavior to occur (Rotter, 1982). Rotter (1954) suggested that human behavior can be predicted with two general elements: (a) expectancies that individuals have that a behavior will be a certain way and be rewarded, and (b) the individual's internal interest and value toward the reward as they attempted to acquire it.

Expectancies and Incentives

Within SLT, Bandura (1971) found that behaviors can be determined by three types of expectancies which, can be divided into three categories. The first consists of expectancies with environmental cues, such as an individual's beliefs of how an event is linked and what may lead to what. The second consists of expectancies with consequences to one's own actions, such as how an individual's behavior will influence the outcomes and finally the third pertains to expectancies on one's competence of

specific behaviors to influence an outcome known as efficacy, such as self-efficacy. Incentives of a specific outcome may be in the form of health status, physical appearance, and acceptance of others, economic success, or any other consequence regulated by its reinforcement (Rosenstock et al., 1988).

Expectancy is the subjective possibility that a specific behavior can lead to a specific outcome or reinforcement. The odds that a behavior will lead to the outcome is seen in individuals having high or strong expectancies, which translates to the individual being confident enough that the behavior will result in that outcome (Mearns, 2015; Rotter, 1989). According to Mearns (2015), when an individual has low expectancy it is uncertain that his or her behavior will result in reinforcement. However, for those that are equally on expectancy, the individuals can participate in the behaviors that have the greatest likelihood in high expectancy (Mearns, 2015). Individuals with high expectancy must have the capacity to enact behaviors efficiently, and behaviors must result in reinforcement (Mearns, 2015). Based on past experiences, expectancies are formed, and specific behaviors lead to reinforcements from the past. The stronger the individual's expectancy, the higher the probability those behaviors will reinforce that outcome (April et al., 2012; Mearns, 2015).

However, it is important to note that individuals do not need prior experience with reinforcement for a specific behavior. Those who had previously observed the outcomes from others behavior have had a profound effect on that individual (Mearns, 2015). For every specific situational expectancy, there is a cross-situational generalized expectancy. The generalized expectancies of perception of control are a collection of specific

expectancies that can be different from one life function to another (April & Smit, 2010; Mearns, 2015). A generalized type of expectancy can occur when the individual views a specific relationship between his or her behavior and the reinforcement that may follow (Rotter, 1982, 1966). The term used for a specific generalized expectancy/reinforcement, from one's behavior and beliefs, is referred to as internal LOC (Rotter, 1982, 1966). The most relevant researched expectancies are the construct of LOC that focuses on the extent to which the individual connects between what they will do and what will happen to them.

Locus of Control

The construct of LOC was developed by Rotter (1954). The generalized concept of expectancies for control of reinforcement is commonly known as the locus of control (Mearns, 2009; Rotter, 1954, 1966, 1989). LOC can be referred to as an individual's general cross-situational belief as to whether or not they get reinforced in life and it is classified along a scale from either internal or external (Mearns, 2009; Rotter, 1954, 1966, 1989). Internal versus external control of reinforcements are the most researched variable in psychology and other social sciences (Mearns, 2009; Rotter, 1966, 1982, 1989; and Rotter & Hochreich, 1975).

The LOC construct is a type of expectancy-base theory that individuals should expect to achieve, as long as the individuals feel in control of their successes and or failures and evidence can support this prediction (Eccles & Wigfield, 2002). Basic assumptions can be made that an individual's behavior cannot just be determined by the size of the reinforcement or by the presence, but by the individual's beliefs about how the

results of their behavior are likely to be or how likely the individual is to get the reinforcement (Mearns, 2015). Besides the internal and external locus of control expectancy, the concept of having two controls mixes internality and externality in the individual (April et al., 2012; Torun & April 2006).

Those who have an internal locus of control beliefs believe that their outcome is the result of their actions (April et al., 2012). The individual believes that their efforts and abilities have led to the positive outcome and interpret the received reinforcement as part of their actions (April et al., 2012). External LOC refers to when an individual construes a reinforcement to his/her behavior that is not the result of their actions but from the control of powerful others or other forces such as chance, luck, and fate (Rotter, 1982). Individuals who have an external locus of control are reluctant to change their behaviors, as they cannot see this as the main driving force for altering reinforcements (April et al., 2012). Individuals with an internal locus of control believe their actions are the result of the desired outcomes, and those with an external locus of control believe that outside factors are the result of those controlled outcomes (Rotter, 1982). Both internal and external are equally important in identifying an individual's LOC.

Numerous studies have found the relationships between LOC and the quality of life (QoL) of Parkinson's disease (PD) patients, diabetes, depression, renal disease, and other chronic medical illnesses (Lopez-Larrosa, 2013; Zampieri & Pedroso de Souza, 2011). Lopez-Larrosa (2013) found that more active participation endorses higher QoL and as a result better adherence to treatments and better informed of health status. Correlations were found of QoL satisfaction with a better mental health status for

individuals who attended multiple family groups (MFG) compared to those who did not (Lopez-Larrosa, 2013; Zampieri & Pedroso de Souza, 2011). These results were constant with those individuals who scored the highest in internal LOC (Lopez-Larrosa, 2013; Zampieri & Pedroso de Souza, 2011). The results indicated improved QoL and better mental health and coping with a chronic illness with improved mental health state and better physical condition, as crucial factors for having positive health perceptions and achieving higher internal LOC (Lopez-Larrosa, 2013; Zampieri & Pedroso de Souza, 2011). In sum, it can be concluded that individuals who focused on their QoL, positive behaviors, and personal control can contribute to enhancing adaptations and prevent adverse impacts to their QoL.

The studies by Theofilou (2011, 2012) provide support to the relationships between the QoL, the internal LOC, and the external LOC of patients on dialysis. Evidence supports that internal LOC among kidney dialysis patients is significantly higher, and found significant mental health differences between PD and HD treatments (Theofilou, 2011; Theofilou, 2012). HD patients reported lower QoL in their social relationships and reported more symptoms such as anxiety, insomnia, severe depression, and suicidal thoughts. Furthermore, the findings significantly reported higher depression on HD, compared to patients on PD (Theofilou, 2011; Theofilou, 2012). Internal beliefs on the LOC in health, both HD and PD patients had similar patterns in scoring higher on internal LOC followed by external LOC as chance, doctors, and powerful others (Theofilou, 2012). The overall evidence demonstrated that patients on HD were more prone to anxiety and depression, compared to those patients on PD (Theofilou, 2011;

Theofilou, 2012). These findings are essential in being able to determine the importance of spirituality and health representations of kidney dialysis patients and the contributions of spirituality to their mental health.

Additional, studies have also examined the relationships between the LOC, religious functioning, and psychological health (Ryan & Francis, 2012; Wong-McDonald & Gorsuch, 2004). The results indicated that the awareness of God and the internal LOC were associated with better health. Whereas external LOC was associated with poorer health and those individuals who acted independently (external) from God were related to a lower sense of spiritual well-being. Compared to those individuals who were more intimate (internal) and who relied more on God had a higher sense of well-being (Ryan & Francis, 2012; Wong-McDonald & Gorsuch, 2004). For instance, internal LOC was found to intercede the relationship between the awareness of God and better mental health and external LOC was found to intercede the relationship between poor health and poor psychological health (Ryan & Francis, 2012). Furthermore, not one kind of variable can be attached to the LOC, and be able to predict specific health behaviors or perceptions; however, causal inferences can be made with different variables and the LOC. Both internal and external are equally important in being able to identify the individuals LOC.

The LOC is the extent to which an individual attributes previous experiences and variables which can be internal or external to the individual self (Wallston & Wallston, 1978, 1981). Wallston and Wallston (1978) found that the concept of internal and external locus of control can provide direction for health education programs, assessing,

and whether or not the programs are working or accomplishing their goals. Wallston and Wallston (1981) also found interesting results from relating the locus of control to health care situations. They found evidence demonstrating that the locus of control construct is impressive and relevant to the prediction of health behaviors and sick-role behaviors in patients (Wallston & Wallston, 1978). The importance of knowing an individual's LOC is to help better understand the relationships between spirituality to their health perceptions and their mental health status in kidney disease patients. SLT is the basis for the development of the LOC and its current research.

In sum, the LOC is a useful construct that can be used in research studies to seek expectancies for health-related behaviors. The evidence discussed above demonstrates the relationships between the locus of control and the generalized expectancies. The following section will discuss the health-related expectancies, individual health-related perceptions, and the health locus of control.

Health Locus of Control

Health locus of control (HLOC) was developed by Wallston, Wallston, Kaplan, and Maides in 1976. The HLOC was derived and developed from the necessity of predicting health behaviors from generalized expectancies that locus of control (LOC) could not provide. Health is an area of interest that has received a significant amount of attention regarding the locus of control (Strickland, 1978; Wallston & Wallston, 1978). The construct about behaviors has been applied to health and has become to be known as the health locus of control (HLOC). LOC is a useful construct that has been used in many studies to seek expectancies for health-related behaviors (Wallston & Wallston, 1982).

Increased interest of health researchers has measured the locus of control beliefs, in attempts to relate those expectancies to some health-related behaviors and situations (Wallston & Wallston, 1982). Links between the individual's responsibility for their health and internal locus of control beliefs have demonstrated compelling results (Wallston & Wallston, 1982). Strickland (1978) found that several internal and external instruments confirmed that beliefs about internal and external control could be related significantly to health-related behaviors. Wallston and other researchers have defined HLOC as an individual's belief in their health are controlled by either internal or external factors (Strickland, 1978; Wallston & Wallston, 1981). Within the health field, researchers found health specific measures of the construct and developed and adopted these practices (Sanders, 1982; Strickland, 1978).

Research studies have found positive correlations between the HLOC and the self-management behaviors of hemodialysis patients and the role of HLOC to evaluating depression and other comorbidities in patients with chronic pain (Fan, Kong, Shi, & Cheng, 2016; Wong & Anitescu, 2016). Fan et al. (2016) found evidence that a strong relationship exists between the HLOC and self-management of behaviors in HD patients. The results demonstrated that the patients who believed that others had more controlled over their health, did it themselves or by chance. Positive correlations found between HLOC, self-management behaviors and an internal and external health locus of control were significant to predictive behaviors. The results showed that patients who educate themselves on their health could significantly affect self-management behaviors to better self-manage. Likewise, Wong and Anitescu (2016) found that patients with an internal

locus of control (ILOC) are less depressed compared to those patients who leave their health to chance. The results showed that the HLOC is a significant factor in developing psychiatric comorbidities in patients with chronic pain. Furthermore, the study demonstrated that healthcare professional and nursing staff members could contribute to minimizing psychiatric comorbidities in chronic pain patients and influence in the patients' health locus of control. In sum, the relationships above between the individual accepting responsibility for his or her health and their internal locus of control beliefs are of great value. Further, research on the locus of control and the health-related phenomena is of great importance and significance to this study.

As several studies discussed above have researched the relationships between LOC and other health-related variables, HLOC has also been researched with other health-related variables and relationships. According to Bonetti et al., 2001, Park & Gaffey, 2007, and Theofilou, 2012, others examined the psychological factors, such as perceptions, attitudes, stress, and coping mechanism variables; compared to health behaviors, mental health, physical health and the HLOC of individuals who suffer from a chronic illness such as cancer and kidney disease, which have shown significant relationships. Park and Gaffey (2007) found the relationships between HLOC have positive associations between internal (HLOC) and behaviors such as healthy diets and activities. Furthermore, they found that internal HLOC can better help patients have more positive health behaviors that can be dependent on the patient's perceptions of behaviors, cancer recurrences, and related distress (Park & Gaffey, 2007). Likewise, Theofilou (2012) found the relationships between HLOC and different psychological and physical

health variables in kidney disease patients, with high self-esteem had a significant positive association with the individual's internal health locus of control. These findings provide evidence that a strong correlation exists between high self-esteem and HLOC of kidney dialysis patients (Theofilou, 2012). Theofilou (2012) found that the relationships between HLOC and the patient's satisfaction of themselves create a more personal control with their health, making the patients seek and evaluate more his or her quality of life.

Studies by both Park and Gaffey (2007) and Theofilou (2012) were also consistent with the results reported by Bonetti et al. (2001). They found that relationships between HLOC, mental health, and physical health of 106 healthy college students compared to 145 patients who had conditions such as arthritis, multiple sclerosis, and stroke history reported significant results. The results demonstrated that those who were internal with their HLOC were positively correlated with the active students, and those who reported chance health locus of control (CHLC) group were correlated with anxious/anxiety students (Bonetti et al., 2001). Correlations between internal HLOC and positive health behaviors can be made, and correlations between CHLC and mental distress can delay positive health behavior (Bonettiet al., 2001; Park & Gaffey, 2007; Theofilou, 2012).

Researchers have also found correlations between HLOC, religion, and spirituality (Dednam et al., 2012; Park, Sacco, & Edmondson, 2012). Park et al. (2012) found that internal HLOC dealt with active coping and patients in an organized religious group had higher internal HLOC and less depression than those patients who reported

were less internal HLOC. They also found associations with spirituality, HLOC, and health behaviors in African Americans and examined the role of spiritual health locus of control (SHLOC) beliefs in different types of diseases (Park et al., 2012). Likewise, Dednam et al. (2012) found that patients who were in daily spiritual routines were less depressed compared to those who were lower in internal HLOC. Dednam et al. (2012) found correlations with spiritual health locus of control beliefs, disease preventions, and health risk behaviors. The results from Park et al. (2012) were consistent with the results reported by Dednam et al. (2012). In sum, the above research findings indicated that dimensions of SHLOC beliefs can have positive relationships with health behaviors. The literature supported this study in being able to provide support on the relationships of spirituality on the mental health of kidney dialysis patients. The next section of this chapter will cover in detail the concept of spirituality.

Spirituality

Although the terms of spirituality can overlap with religion, both terms are defined and measured differently (Armstrong, 1995; Benner, 1989; Dollahite, 1998; Doyle, 1992; Hill et al., 2000; O'Collins & Farrugia, 1991; Paloutzian & Park, 2013; Peteet, 1994). The focus of this section will be spirituality. However, it is important to note, that religion is in part spiritual and spirituality can also be considered in part religious. Spirituality can be defined as the searching for the sacred (Hill et al., 2000). The term searching in spirituality refers to the concept of God or a higher power and any part of an individual's life, either positive or negative, can be endowed with a sacred status. The term sacred refers to the lifelong journey in which an individual can start to

discover something sacred that begins to build a relationship with the sacred and one's distinctive pathway that has little to no religious backing (Hill et al., 2000).

Psychologists have defined the terms of spirituality and religion in many different ways (Armstrong, 1995; Benner, 1989; Dollahite, 1998; Doyle, 1992; Hill et al., 2000; O'Collins & Farrugia, 1991; Paloutzian & Park, 2013; Peteet, 1994). Paloutzian and Park (2013) stated that the psychology of religiousness and spirituality had defined both terms in different ways throughout the past century. However, one constant concept of both these terms is that both terms are multidimensional. Additionally, religion has been throughout time a broader term of the two; however, spirituality has not explicitly differentiated from religion (Paloutzian & Park, 2013). O'Collins and Farrugia (1991) defined religion as the system of responses and beliefs to the divine, which can also include items such as holy bibles, rituals, and ethical practices of adherents. Likewise, Peteet (1994) defined religion as the individual's commitment to believe and practice of a specific tradition with particular characteristics. Dollahite (1998) defined religion as a covenant of faith that deals with teachings and narratives that seek and search for the sacred. Benner (1989) defined spirituality as the response of a human being to God's grace in having a relationship with himself. Likewise, Armstrong (1995) described spirituality as the presence of a connection with a higher power that can impact the individual's way of life and operation. The results of Benner (1989) and Armstrong's (1995) studies were consistent with results reported by Doyle (1992) that defined spirituality as the search for an existential meaning in life.

In sum, a variety of definitions have been found; however, no one definition is right or wrong, or has more meaning than the other, but the consensus of the definitions is similar and almost the same universally.

Some research studies have demonstrated the benefits of both religion and spirituality in health-related situations (Koeing, 2012; Powell, Shahabi, & Thoresen, 2003). Powell et al. (2003) found that in the United States 67% of Americans see religion as a vital part of their lives. Links between religion and spirituality have shown associations to physical health, as lifestyles from religious groups or spiritual groups have promoted healthier lifestyles (Powell et al., 2003). Koeing (2012) found that religion and spirituality have significant correlations with mental health as religion and spirituality consist of psychological, social, and behavioral aspects that are more related to mental health. With physical health, the effects of religion and spirituality would not be expected, only indirectly from psychosocial and behavioral patterns (Koeing, 2012). Powell et al. (2003) found that the impacts of religion and or spirituality can have protective effects on health, as it can prevent the development of diseases to those who are healthy. The results from Powell et al. (2003) and Koeing (2012) were consistent and concluded that religion and spirituality could be powerful enough for the individual to be able to cope better with the impacts of a disease. Additionally, they found little resistant from religion and spirituality providing viable psyc 1315

hological benefits; however, very little research has been focused on the area of kidney disease patients (Powell et al., 2003; Theofilou, 2011; Theofilou, 2012).

Additional researchers have also discussed and evaluated the relationship between religion and spirituality and health (Greenfield, Vaillant, & Marks, 2009; Park, 2007). Greenfield et al. (2009) found that religion and spirituality influence individuals in general to health and well-being throughout a person's life. Religion and spirituality were especially more powerful in those individuals who have acute or chronic illnesses and in those who were physically suffering (Park, 2007). Greenfield et al. (2009) found that increased levels of spiritual perceptions are associated with better psychological well-being and related with more frequent formal religious participation. Mental well-being was contingent on the dimension of who was being examined and their sociodemographic subgroup. Additionally, Park (2007) also pinpointed that individuals who are suffering from a serious illness draw upon religion or spirituality to be able to cope better with the condition (Park, 2007). The results from Greenfield et al. (2009) were consistent with the results reported by Park (2007) on religion and spirituality having a direct effect on mental health and increasing the positive emotional state of mind to help and eliminate any negative emotions. The researchers also found that religion and spirituality help individuals deal with adversity and internal adversity in their life (Greenfield et al., 2009; Park, 2007).

Research thus far has found that spirituality is a topic that can be very debatable, for example defining the word as not having one single meaning, as it has a broad scope. The benefits of spirituality can help improve mental health status, and well-being can have a physical effect that can lower disease risks and influence to better respond to treatments. As further research is conducted, studies need to establish sound impacts on

health-care perceptions and spiritual needs for the patients to have patient-centered treatment. The relationships between spirituality and health need increasing attention as a new term is calling it the new frontier in medicine (McBride, Arthur, Brooks, & Pilkington, 1998). In sum, there is a consensus that religion and spirituality can provide better psychological health and adjustment. The above findings were important to this study as they provided a platform for discovering and exploring the relationships of spirituality on the mental health of kidney disease patients around the world. Equally as important, as being able to provide more efficient mental health support to this population.

Spiritual Involvement and Beliefs Scale-Revised (SIBS-R)

The Spiritual Involvement and Beliefs Scale (SIBS), developed by Hatch, Burg, Naberhaus, and Hellmich (1998), was designed to include spirituality rather than religiosity specifically. As of 2006, a revision to the original scale was released, the Spiritual Involvement and Beliefs Scale-Revised (SIBS-R). The scale can assess actions as well as beliefs of an individual to focus on spirituality (Hatch, Spring, Ritz, & Burg, 2006). It intends to show that a person can be spiritual without being religious. It is also able to assess spirituality using terms that avoid cultural and religious inclinations. The scale can also evaluate both the participants' beliefs and the actions that come from those beliefs. It explicitly measures belief in an external power, the purpose of life, and spiritual practices including applications of spiritual values and prayer (Ying, 2009).

Over the last 25 years, spirituality has been receiving increased interest in the medical professional community, specifically in the field of mental health. When once

the primary focus was on general mental health disorders, the focus has shifted to the role of spirituality in mental health-related disorders and is now a growing force of literature base research (Pillay, Ramlall, & Burns, 2016). It is important to note that the role of spirituality specifically has limited research as most of the research has been based on religiosity. Researchers have found relevant links and positive health outcomes in spirituality as well (Meezenbrock et al., 2010; Pillay et al., 2016). Pillay et al. (2016) researched spirituality, depression, and the quality of life in medical students from KwaZulu-Natal, South Africa. According to their results, students who turn to spirituality or a higher power to seek their purpose in life, could associate to better quality of life. The SIBS-R results indicated that the higher the spirituality, the lower the depressive symptoms, and improved quality of life of the medical student. A higher degree of spirituality translates into a better quality of life.

Several researchers have also used the SIBS-R in several research studies to seek spirituality as it relates to well-being, illness, forgiveness, guilt, posttraumatic stress disorder, and spirituality and religion (Joshanloo, 2010; Kashdan & Nezlek, 2012; Langman, & Chung, 2013). Kashdan and Nezlek (2012) found that spirituality within an individual can vary and constantly change with life experiences every day. Spirituality was found to provide many important aspects of their lives, specifically relating to self-esteem, meaning of life, and positive effects that provide psychological benefits (Kashdan & Nezlek, 2012). Kashdan and Nezlek (2012) found that benefits in having greater spirituality help individuals to improve well-being and can have a high quality of spiritual experience on any specific day. Likewise, Langman and Nezlek (2012) found

impacts of spirituality to be connected with psychological well-being compared to guilty feelings that are related to poor health. The results of Kashdan and Nezlek (2012) and Langman and Chung's (2013) studies were consistent with results that spiritual practice demonstrates more efficient ways in helping individuals with distress and can assist in safeguarding against the development of psychological co-morbidity.

The results from the studies using the SIBS-R demonstrated that being spiritual can have positive associations with health and well-being. Spiritual practices and activities were found to help individuals with distress and against other psychological issues (Kashdan & Nezlek, 2012; Langman & Chung, 2013). Likewise, Joshanloo (2010) found that both spirituality and religiousness collectively can provide a broad range of well-being and positively can be related and associated with mental health within different cultural contexts. The results were consistent that both spirituality and religiousness could collectively have three well-beings: psychological well-being, social well-being, and affect balance well-being (Joshanloo, 2010; Kashdan &, Nezlek, 2012). Both spirituality and religiousness can collectively be significant predictors of life satisfaction (Joshanloo, 2010).

Additionally, researchers have studied relationships between spirituality and health behaviors of chronic kidney disease (CKD) patients (Bragazzi & Del Puente, 2013; Fradelos et al., 2015). Fradelos et al. (2015) found that many individuals see spirituality and religion as an essential element to their lives, their existence, a source of support, and well-being of the many difficulties to come. Likewise, Bragazzi, and Del Puente (2013) found that spirituality and religion can be associated with decreased levels

of depression and increased levels of positive health perceptions resulting in a higher quality of life. Fradelos et al. (2015) found that assessing and taking into account CKD, patients' spirituality and spiritual needs are necessary for having a positive outcome to their health that can help improve the patients' quality of life, mental health status, and life expectancy. The results of Fradelos et al. (2015) and Bragazzi and Del Puente (2013) were consistent with each other in reporting that spirituality could provide chronic kidney disease patients with positive health outcomes.

Summary

Kidney disease is an impairment of the kidneys resulting in the buildup of waste in the body. Dialysis is the immediate treatment for kidney disease and two types of dialysis exist, hemodialysis and peritoneal dialysis. The theoretical foundation of this study is SLT, known as the most influential theory of learning. SLT states that behavior can be learned from the environment through a process of observational learning. LOC is the individual's belief about his or her control over life events. HLOC is the individual's health beliefs that are controlled by either internal factors or external factors. Kidney dialysis patients who report more internal HLOC with the variable of spiritual beliefs focus more on their health behaviors and health outcomes. Individuals who report more external HLOC are likely to perceive health outcomes and are influenced by factors of chance, luck, fate, or powerful others.

Spirituality has been found to have positive effects on health outcomes, such as decreased depression and increased levels of positive perceptions of quality of life, and less spiritual outcomes can induce stress, anxiety, depression, and somatic symptoms.

The SIBS-R scale measures an individual's core spirituality (i.e., connection, meaning, faith, and experience) and assesses the actions as well as the beliefs of an individual to focus on spirituality and evaluates both the participants' beliefs and the actions that come from those beliefs. In sum, research on spirituality and religion found links to physical health and relationships to mental health as spirituality/religion consist of psychological, social, and behavioral aspects that are more related to mental health. Chapter 3 presents the methodology used for this study.

Chapter 3: Research Method

Introduction

Though the role of spirituality in the mental health of patients has received increased attention over the years, empirical evidence of the relationship between spirituality and the mental health is still nonexistent for kidney dialysis patients. Therefore, the purpose of this quantitative correlational study was to examine the relationship between spirituality and mental health in kidney dialysis patients with ESRD. The predictor variable was spirituality (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R. The criterion variable was the mental health status (somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression) of kidney dialysis patients with ESRD, as measured by the GHQ-28.

This chapter includes a discussion of the chosen research design, its appropriateness, the target population, sampling, and sampling procedures, the data collection procedures, operationalization of constructs, the data analysis plan and the threats to validity including ethical considerations are outlined.

Research Design and Rationale

The research design for this study was quantitative Bonetti et al., 2001; Park & Gaffey, 2007; Theofilou, 2012. The purpose of this study was to determine how the predictor variables related to the criterion variable, which made a quantitative methodology appropriate. Quantitative studies primarily involve the determination of relationships between variables through the use of surveys and experiments (Cooper &

Schindler, 2013). The use of surveys and experiments in quantitative research is for the collection and analysis of variables measured numerically (Barczak, 2015; Simon, 2011; Watson, 2015). In this study, the predictor variables were the spirituality dimensions of core spirituality: spiritual perspective/existential, personal application/humility, and acceptance/insight. The criterion variables based on mental health constructs were the somatic symptoms of anxiety/insomnia, social dysfunction, and severe depression. The spirituality dimensions and mental health constructs were measured using the SIBS-R and GHQ-28, respectively.

The research design of this study followed a correlational design because the objective of this study was to examine the relationship between spirituality and mental health in kidney dialysis patients with ESRD. A correlational design was used for the identification of the significance, behavior, and magnitude of relationships between and among variables, which enabled correlation and regression analysis to be conducted (Christensen, Johnson, & Turner, 2011). As such, this study adhered to a quantitative correlational research design.

Methodology

Population

The population for this study was patients diagnosed with ESRD who were undergoing dialysis at selected kidney dialysis centers in California. As of 2014, approximately 675,999 patients with ESRD were being treated with either hemodialysis or peritoneal dialysis in the United States (United States Renal Data System Annual Data Report, Volume 2; ESRD in the United States, 2016).

Sampling and Sampling Procedures

To determine the minimum required sample size a power analysis was conducted for the study. Four factors were considered by the power analysis: (a) level of significance, (b) effect size, (c) power of the test, and (d) statistical technique (Faul, Erdfelder, Buchner, & Lang, 2013). It is important to understand what is the Type I error. The Type I error is the possibility of rejecting a null hypothesis assuming it is true, and this is known as the level of significance (Haas, 2012). In the majority of quantitative studies, the level of significance is set at 95% (0.05) and is often represented with an alpha (Cooper & Schindler, 2013; Creswell, 2012). The estimated size of the extent of the correlation among the independent and dependent variables is referred to the effect size (Cohen, 1988). Outcome sizes in quantitative studies potentially are classified by small, medium, and large in which, the medium is typically used to represent a balance among stringent or small and too lenient or large (Berger, Bayarri, & Pericchi, 2013). As a result, to have a balance within the two extremes the study utilized a medium effect size. According to Haas (2012), the power of test is the possibility that the test properly discards a false null hypothesis and takes the alternative hypothesis. A power of test of 80% is typically used in the majority of quantitative studies (Creswell, 2012; Haas, 2012). Finally, the statistical technique was taken into account to compute the sample size. The minimum sample size is 128, which was determined with G*power version 3.1 with an alpha level of 0.05, an 80% power of test, and a medium effect size ($f^2 = 0.15$).

This study used convenience sampling. Convenience sampling is a sampling method that takes advantage of recruiting participants who are most conveniently

available in answering a survey but not necessarily known to the researcher (Creswell, 2012). The convenience sampling methodology was consistent with the sample frame of the study, which only considered patients undergoing kidney dialysis. Specifically, patients diagnosed with ESRD and undergoing kidney dialysis at a set of kidney dialysis centers in California were the main focus for this study. The inclusion criteria for this study were: (a) 18 years or older, (b) have been diagnosed with ESRD, and (c) currently undergoing kidney dialysis at selected large kidney dialysis centers in California. The exclusion criteria for this study were: (a) patients below 18 years old, (b) no diagnosis of ESRD, and (c) patients outside the selected kidney dialysis centers in California.

Procedures for Recruitment, Participation, and Data Collection

Institutional Review Board (IRB) approval from Walden University was secured first before any data collection activities commenced. Once the IRB approval was secured, I prepared the surveys for the potential participants at kidney dialysis centers in California. I secured permission from the administrator(s) or on-site supervisors(s) of the selected kidney dialysis centers to conduct data collection from potential participants for the study. The administrators of the selected kidney dialysis centers agreed to distribute the flyers, available in English and Spanish, to their staff. These flyers contained a brief background of the study, the tasks involving the participant, inclusion criteria for the participants, and the contact information of the researcher.

I provided potential participants an informed consent form to be read before the actual survey took place. If the potential participant signed the consent form, I provided a

copy of the form and the survey materials. All potential participants who did not sign the consent form did not participate in the study and they were thanked for their time.

The data collection was accomplished by administering the GHQ-28 and the SIBS-R in a paper and pencil form in the dialysis centers. Participation was completely voluntary, and participants were able to withdraw at any time.

Instrumentation and Operationalization of Constructs

The GHQ-28 was developed by Goldberg (1978) as a screening tool to detect those likely to have or to be at risk of developing psychiatric disorders. The questionnaire is a 28-item measure of emotional distress in medical settings. The survey is divided into four subscales: somatic symptoms (Items 1–7), anxiety/insomnia (Items 8–14), social dysfunction (Items 15–21), and severe depression (Items 22–28). Examples of some of the items include

- Have you found everything getting on top of you?
- Have you been getting scared or panicky for no good reason?
- Have you been getting edgy and bad tempered?

Each item is accompanied by a four-point Likert scale was used, with scores ranging from 0 (*not at all)* to 4 (*much more than the usual)*. The total possible score ranges from 0 to 84. A total score of 23/24 is the threshold for the presence of emotional distress (Sterling, 2011).

Numerous studies have investigated the reliability and validity of the GHQ-28 in various clinical populations. Robinson and Price (1982) reported the test-retest reliability to be high (0.78 - 0.90) using stroke patients. Failde and Ramos (2000) reported that the

interrater and intrarater reliabilities have both been shown to be excellent (Cronbach's alpha 0.90–0.95) when using patients with coronary artery disease. Robinson and Price (1982) conducted a confirmatory factor analysis to show the validity of the constructs, and it showed that the survey items of the instrument are valid to measure the constructs. Factor loading for each survey item was higher than 0.50 and the average variance extracted for each of constructs was above 0.80.

The SIBS-R developed by Hatch et al. (1998) was designed to measure spirituality rather than religiosity. It consists of 22 items to be measured using a seven-point Likert scale was used, with scores ranging from 1 (*strongly agree*) to 7 (*strongly disagree*), where higher scores indicate a higher endorsement of spiritual involvement. The tool assesses both the participants' beliefs and the actions that come from those beliefs on four aspects: core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight.

According to Hyland, Whalley, and Geragthy (2007), the instrument's reliability was tested and showed high internal consistency for the whole measure (Cronbach's alpha = 0.92) using university students as participants. Litwinczuk and Groh (2007) found strong test-retest reliability for the total score (r = .92) using HIV-positive patients. Also, alpha coefficients of .91 and .92 for the revised 22-item scale have been reported by Boscaglia, Clarke, Jobling, and Quinn (2005) using gynecological cancer patients, and test-retest reliability was reported to be high at .92 (Burkhardt, 2002). Test-retest reliability was determined by correlating the total scale scores on the survey at the initial and subsequent testing.

Data Analysis Plan

Both descriptive and inferential statistics were used for the study. Descriptive statistics such as frequency, percentage, mean, and standard deviations were used to characterize the data gathered. Inferential statistics were conducted to draw inferences and conclusions about the target population based on the sample statistics (Hoe & Hoare, 2012). Specifically, multiple linear regression analysis with backward elimination was conducted to address the hypotheses of this study. Multiple linear regression was chosen because it was used to explain the relationship between one continuous dependent variable from two or more independent variables such as in the case of this study. Backward elimination method was used for the analysis to ensure that all variables are considered as part of the regression model. Backward elimination removes insignificant predictor variables in the model (Hoe & Hoare, 2012). Backward elimination involved starting with all candidate variables, testing the deletion of each variable using a chosen model fit criterion, deleting the variable (if any) whose loss gives the most statistically insignificant deterioration of the model fit, and repeating this process until no further variables can be deleted without a statistically significant loss of fit (Hoe & Hoare, 2012).

The purpose was not only to know the impacts of the relationship, but also whether a predictive relationship between variables existed. Backward elimination method was selected for the study because this ensures that all variables are considered in the analyses. As opposed to an entered method, the backward elimination method only considered significant predictor variables in the regression equation. The backward elimination method ensured that variables not related to the criterion variable are not

included in the model. Thus, the results showed predictor variables that are related to the criterion variable in the regression model.

The following research question, and its four hypotheses, guided this study: To what extent is spirituality related to the mental health status of kidney dialysis patients?

$H_0$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to the somatic symptoms, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the somatic symptoms, as measured by the GHQ-28, of kidney dialysis patients.

$H_0$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to the anxiety/insomnia, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the anxiety/insomnia, as measured by the GHQ-28, of kidney dialysis patients.

$H_0$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the

SIBS-R, are not significantly related to the social dysfunctions, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the social dysfunctions, as measured by the GHQ-28, of kidney dialysis patients.

$H_0$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to the severe depression, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the severe depression, as measured by the GHQ-28, of kidney dialysis patients.

According to Nimon and Reio (2011) regression analysis has three purposes: (a) description, (b) control, and (c) prediction. The goal of this study was to analyze and predict any possible underlying relationship between spirituality dimensions and mental health constructs of kidney dialysis patients. Thus, it is appropriate to use multiple linear regression analysis as there were several independent variables that were considered and the purpose was to not only know the magnitude and direction of the relationship, but also whether a predictive relationship between variables existed (Cohen, Cohen, West, & Aiken, 2013).

Threats to Validity

Threats to validity, such as selection bias or selection threat were addressed through the manner in which participants were selected. Participants were selected using convenience sampling, which is consistent with the sample frame of the study that only considers patients undergoing kidney dialysis. The participants were screened by including a short series of questions (using eligibility criteria) before the survey questionnaires to avoid participation by participants who were not included in the target population.

Ethical Procedures

In the consent form, participants were informed that they could withdraw from the study at any time even if the survey was not finished. Participants' personal information were not collected, and a pseudo-coded number was used, such as P01, to refer to Participant 1 and so on. Data will be stored in a locked cabinet inside my office for five years and then destroyed. In the same way, all information published within the dissertation are presented in such a way that the identity of the participants are not revealed. The protection of all participants is critical; therefore, I adhered to all ethical principles when conducting research as outlined by Walden University's IRB. Once IRB permission was obtained (Approval No. 03-21-18 0312153), and only then, did collection of data commence.

Summary

The purpose of this quantitative correlational research was to understand and discover the relationships between spirituality and mental health of kidney dialysis

patients with ESRD. This study focused entirely on kidney dialysis patients with ESRD at selected dialysis centers in California. I recruited patients to collect data for testing the hypotheses that there is a correlation between mental health and spirituality. The spirituality domains were measured using SIBS-R while the mental health constructs were measured using GHQ-28. Both surveys were tested for reliability and validity in previous studies and were deemed to be appropriate to measure the variables of the study. Descriptive statistics and multiple regression analysis were conducted in IBM SPSS version 25 to test the research question and hypotheses. Ethical considerations were followed during all stages of research, from providing the informed consent form to the participants to the storage of data.

Furthermore, the results of the data collection process for collecting the data and the results of the multiple linear regression will be conducted to address the research questions of the study and hypothesizes. The results of the multiple linear regression will determine the significance of the combined influence of the four spirituality domains of core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight on each of the mental health constructs of somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression, and will be discussed in detail next in Chapter 4.

Chapter 4: Results

Introduction

The purpose of this quantitative correlational study was to determine the relationship between spirituality and mental health in kidney dialysis patients with ESRD. The predictor variable was spirituality (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), which was measured by the SIBS-R. The criterion variable was the mental health status (somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression), which was measured by the GHQ-28. Descriptive statistics analysis and multiple linear regression analysis were conducted to address the hypotheses.

This chapter covers the following topics: the data collected, and the samples' demographic characteristics, the results of the analysis including reliability analysis, descriptive statistics, assumption testing, and research question/hypothesis testing.

Data Collection

A convenience sample of patients diagnosed with ESRD who were undergoing dialysis were recruited from selected kidney dialysis centers in California, during the months of May through November, 2018. The minimum sample-size requirement, based on the G*power sample size computation, was 128. A total of 128 participants completed both the SIBS-R and GHQ-28. Thus, the sample size was sufficient to generate at least a power of 80% in the statistical analysis. There were no discrepancies in data collection from the plan presented in Chapter 3 as the sample size obtained was the same with the planned sample number of 128 participants. The sample was representative of the

population of interest since the minimum sample size was achieved and the samples followed the inclusion criteria of the study: (a) 18 years or older, (b) diagnosed with ESRD, and (c) currently undergoing kidney dialysis at selected large kidney dialysis centers in California.

Results

Reliability Analysis

Cronbach's alpha was used to test the reliability of the instruments in terms of internal consistency. Table 1 presents the reliability coefficients of the SIBS-R, which was used to measure the different domains of spirituality (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight). Only one of the four spirituality domains, core spirituality ($\alpha = 0.75$), had an acceptable reliability or internal consistency, since the Cronbach's alpha value was greater than the minimum acceptable value for Cronbach's alpha of 0.70. On the other hand, the two spirituality domains of spiritual perspective/existential ($\alpha = 0.16$) and personal application/humility ($\alpha = 0.39$) did not have acceptable reliability or internal consistency. The Cronbach's alpha value of the spirituality domain of acceptance/insight could not be computed because it had only one item. However, it should be noted that the total spirituality score, which included all 22 items of the SIBS-R, had an acceptable reliability or internal consistency, since the Cronbach's alpha value was greater than 0.70.

Table 1

Reliability Coefficients of SIBS-R

	Cronbach's alpha	No. of Items
Core spirituality	0.75	16
Spiritual perspective/existential	0.16	5
Personal application/humility	0.39	2
Total spirituality score	0.74	22

Descriptive Statistics Summaries of Study Variables

Scores for the variables of interest were computed and the descriptive statistics summaries were computed to summarize the data of spirituality and mental health status of the 128 samples of kidney dialysis patients with ESRD**.** Descriptive statistics summaries for the scores of mental health constructs are presented in Table 2. It should be noted that each of the mental health constructs are measured with total scores of seven items on the GHQ-28. The range of possible scores for each of the mental health constructs is 0–21with a total possible score for total emotional distress of 0–84.

The highest mean score among the four mental health constructs was social dysfunction (M = 6.80, SD = 3.82) while the lowest mean score among the four mental health constructs was severe depression (M = 1.63, SD = 2.88). This finding indicated that of the four mental health constructs, the kidney dialysis patients with ESRD reported the greatest degree of experiencing social dysfunction and least degree of experiencing severe depression. However, all mean scores of each of the mental health constructs of somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression were in

the low end of the 0–21 range of possible scores. This finding indicated overall that the kidney dialysis patients with ESRD report good mental health status.

The mean score for total emotional distress was 19.23 (*SD* = 10.21). It should be noted that a total score of 23/24 is the threshold for the presence of emotional distress (Sterling, 2011). Thus, the mean score of 19.23 indicated that the kidney dialysis patients with ESRD did not report emotional distress since the mean score was less than the threshold score of 23/24.

Table 2

*Descriptive Statistics Summaries of Scores for Mental Health Constructs (*N = *128)*

	Minimum	Maximum	Mean	Std. deviation
Somatic symptoms	0	15	5.54	3.45
Anxiety/insomnia	0	17	5.26	3.69
Social dysfunction	0	15	6.80	3.15
Severe depression	0	16	1.63	2.88
Total emotional distress score	1	48	19.23	10.21

Descriptive statistics summaries for the scores of spirituality domains are presented in Table 3. For the spiritual domain of core spirituality, the mean score of 83.55 (*SD* = 11.12) was in the upper end of the 15–105 range of possible scores on the SIBS-R. This finding indicated that the kidney dialysis patients with ESRD reported high levels of core spirituality. For the spiritual domain of spirituality perspective/existential, the mean score of 23.92 (*SD* = 3.66) was in the middle of the 5–35 range of possible scores. This finding indicated that the kidney dialysis patients with ESRD reported an average or moderate level of spirituality perspective/existential.

For the spiritual domain of personal application/humility, the mean score of 12.13 (*SD* = 1.88) was near the highest score of the 2–14 range of possible scores. This finding indicated that the kidney dialysis patients with ESRD reported very high levels of personal application/humility. For the spiritual domain of acceptance/insight, the mean score of 6.03 (*SD* = 1.02) was near the highest score of the 1–7 range of possible scores. This finding indicated that the kidney dialysis patients with ESRD are very high levels of acceptance/insight. Last, the mean score of the total spirituality score of 113.56 (*SD* = 12.81) was in the upper end of the 22–154 ranges of possible scores. This finding indicated that the kidney dialysis patients with ESRD reported a high endorsement of spiritual involvement.

Table 3

Descriptive Statistics Summaries of Scores for Spirituality Domains

	N	Minimum	Maximum	Mean	Std. deviation
Core spirituality	128	46	112	83.55	11.12
Spiritual perspective/existential	128	10	35	23.92	3.66
Personal application/humility	128	7	14	12.13	1.88
Acceptance/insight	128	1	7	6.03	1.02
Total spirituality score	128	74	154	113.56	12.81

Test of Required Assumptions of Parametric Statistical Analysis

This current study involved the use of the parametric statistical analyses of multiple linear regression analysis to address the research question. The required assumptions of these statistical analyses include linearity, normality of data of the criterion variable, and

homoscedasticity. Each of these assumptions was tested and the results are presented below.

Linearity. The first assumption tested was linearity, or that the relationship between the predictor variables and the criterion variables is linear. The assumption of linearity is best tested with scatterplots between the predictor variables versus criterion variable. These scatterplots are shown in Figures 1–4. In the different scatterplots, it can be observed that there were increasing patterns in the scatterplots of the scores of the four spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight) versus the scores of the four mental health constructs (somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression) of the kidney dialysis patient with ESRD. The increasing trend suggested that there were positive linear relationships observed among the different spirituality domains versus the mental health constructs. Thus, the assumption of linearity was satisfied based on the investigation of the scatterplots.

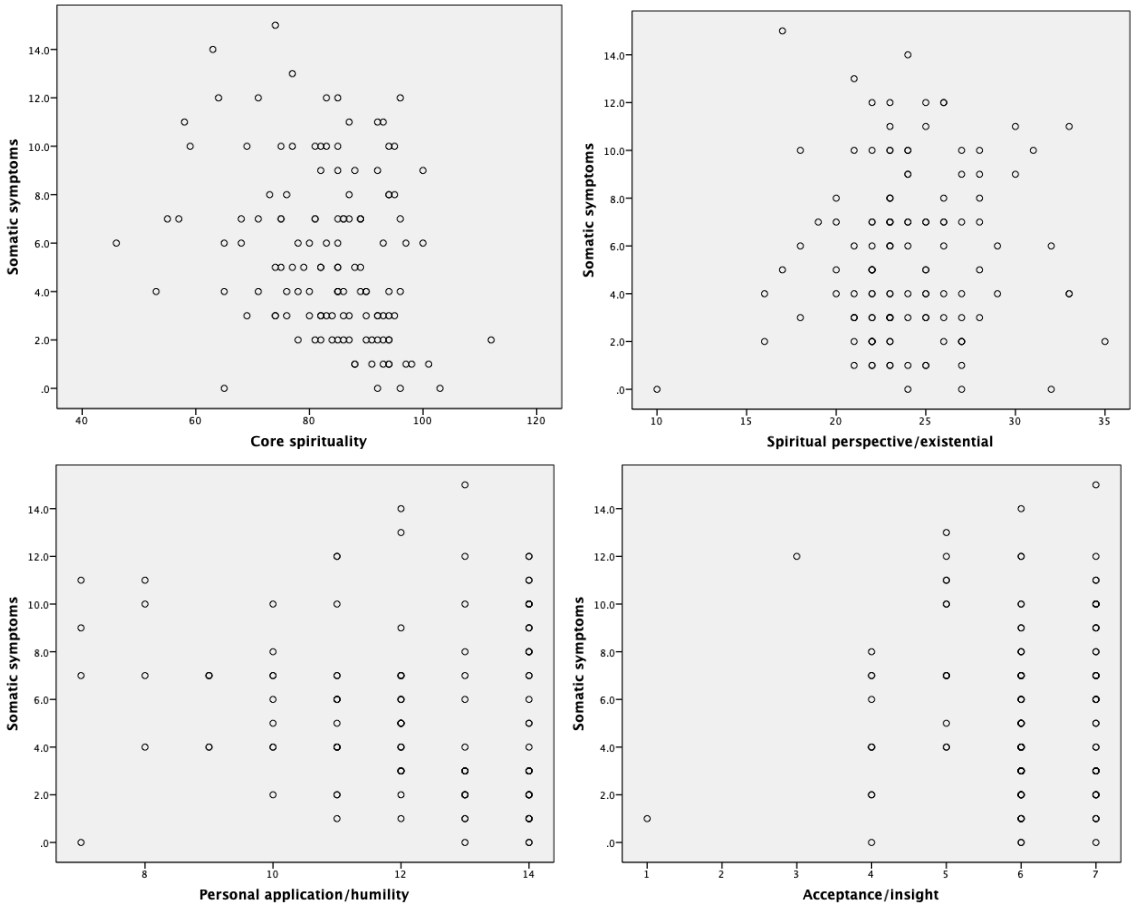

Figure 1. Linear plots of scores of spirituality domains versus somatic symptoms.

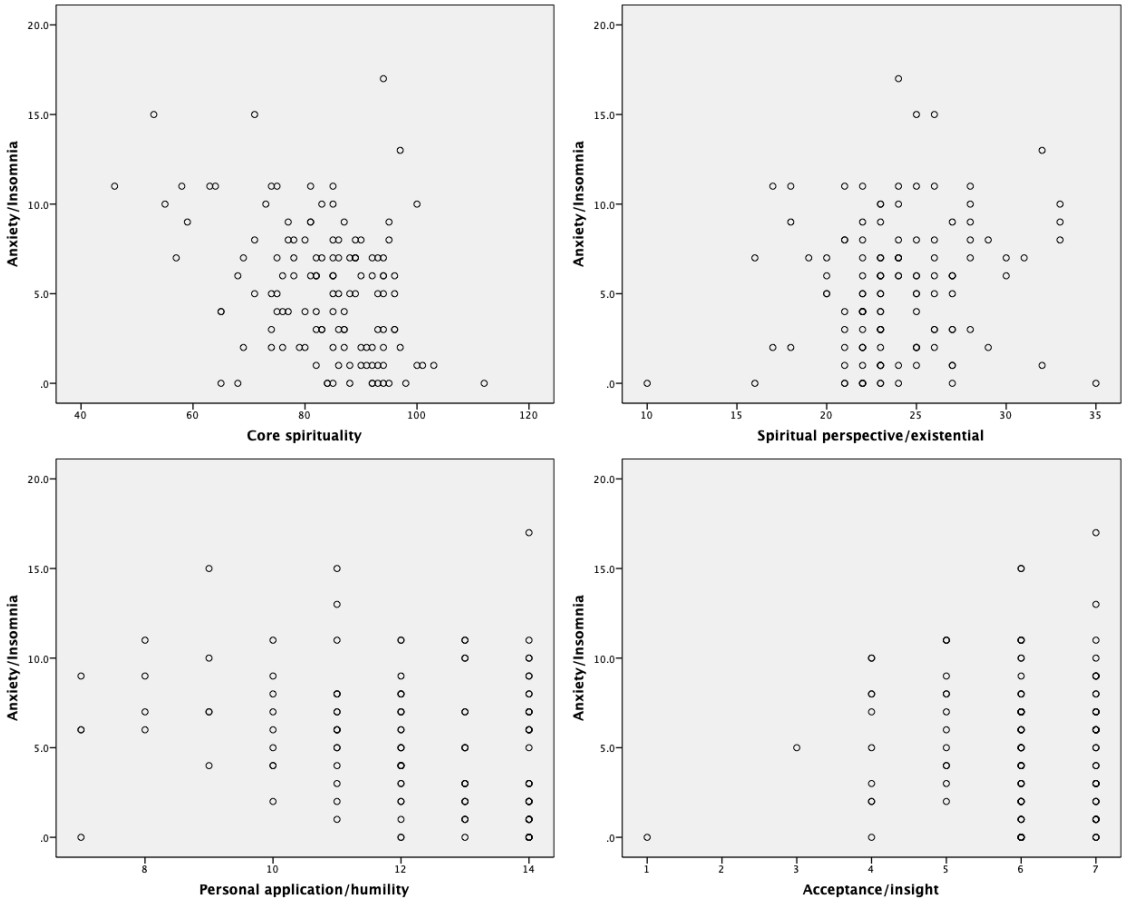

Figure 2. Linear plots of scores of spirituality domains versus anxiety/insomnia.

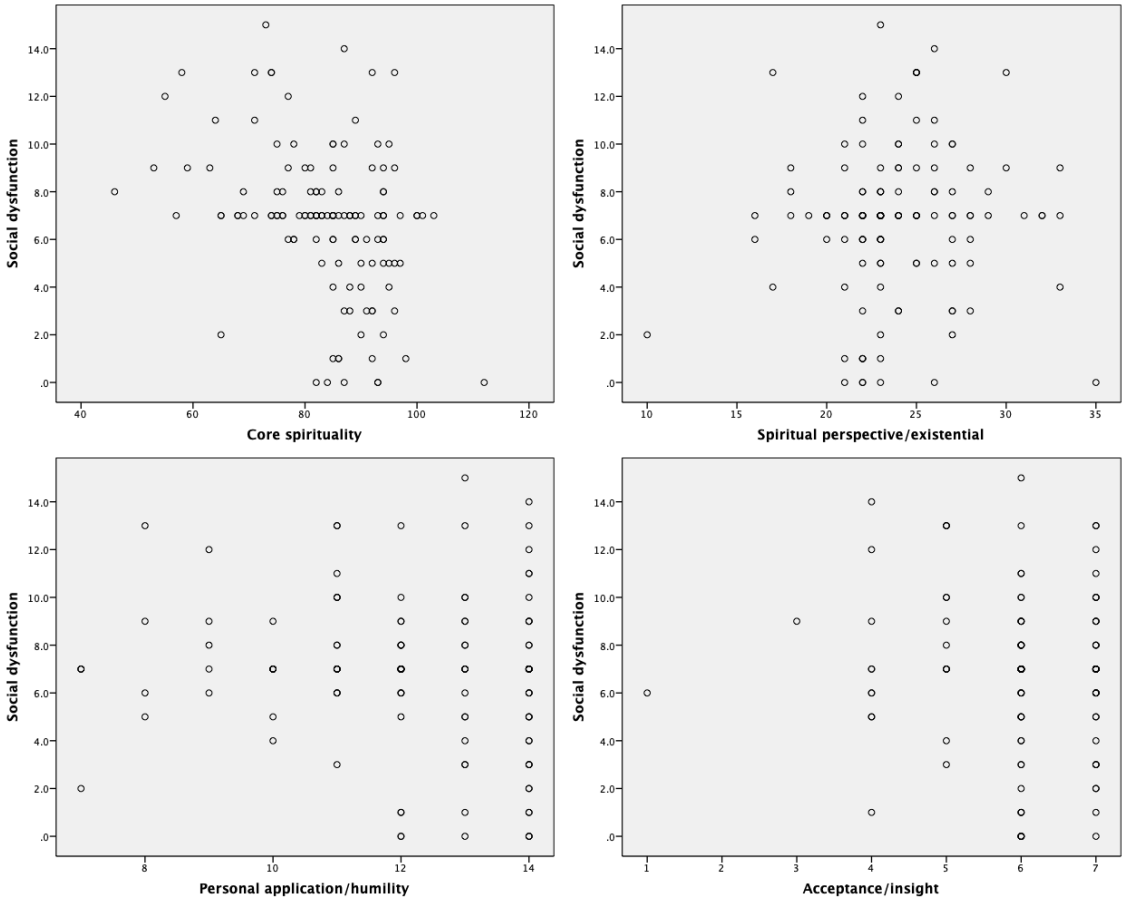

Figure 3. Linear plots of scores of spirituality domains versus social dysfunction.

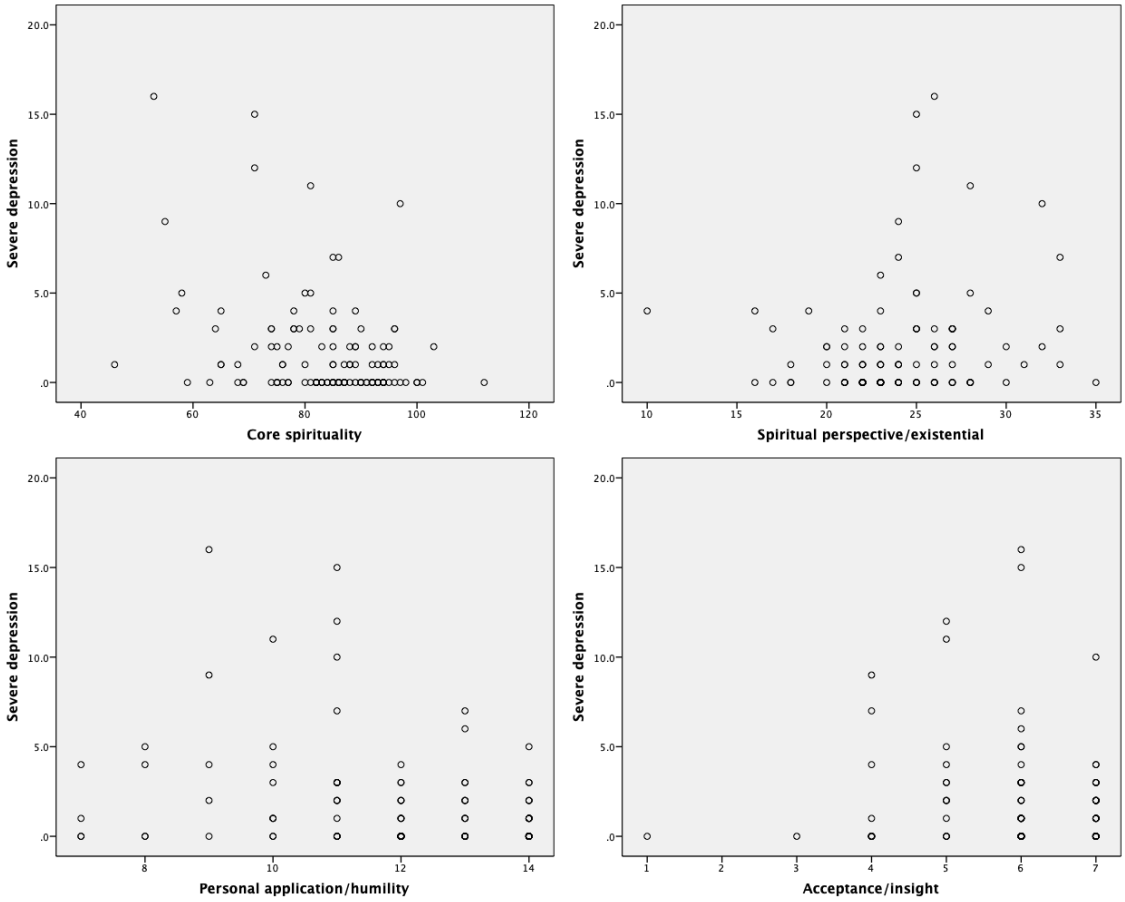

Figure 4. Linear plots of scores of spirituality domains versus severe depression.

Normality. The second assumption tested is normality of the data of the criterion variable. It is a required assumption of the regression analysis wherein the data of the criterion variable involved should exhibit normal distribution. To determine whether the data followed a normal distribution, skewness statistics greater than three indicate strong nonnormality and kurtosis statistics between 10 and 20 also indicate nonnormality (Kline, 2015). As can be seen in Table 4, the skewness (-0.11–2.87) and kurtosis (-0.49–9.49) statistic values of the different criterion variables of four mental health constructs (somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression) were

within the acceptable range enumerated by Kline (2015). In addition, histograms in Figure 5 showed that the distribution of the data of all four mental health constructs followed the bell-shaped curved of the normal distribution pattern when the four domains of spirituality were predictors in the regression model. Thus, all the data of the criterion variables of four mental health constructs exhibited normal distribution and satisfied the multivariate normality assumption.

Table 4

Skewness and Kurtosis Statistics of Scores for Mental Health Constructs

	N	Skewness	Kurtosis
Somatic symptoms	128	0.51	-0.49
Anxiety/insomnia	128	0.52	0.01
Social dysfunction	128	-0.11	0.37
Severe depression	128	2.87	9.49

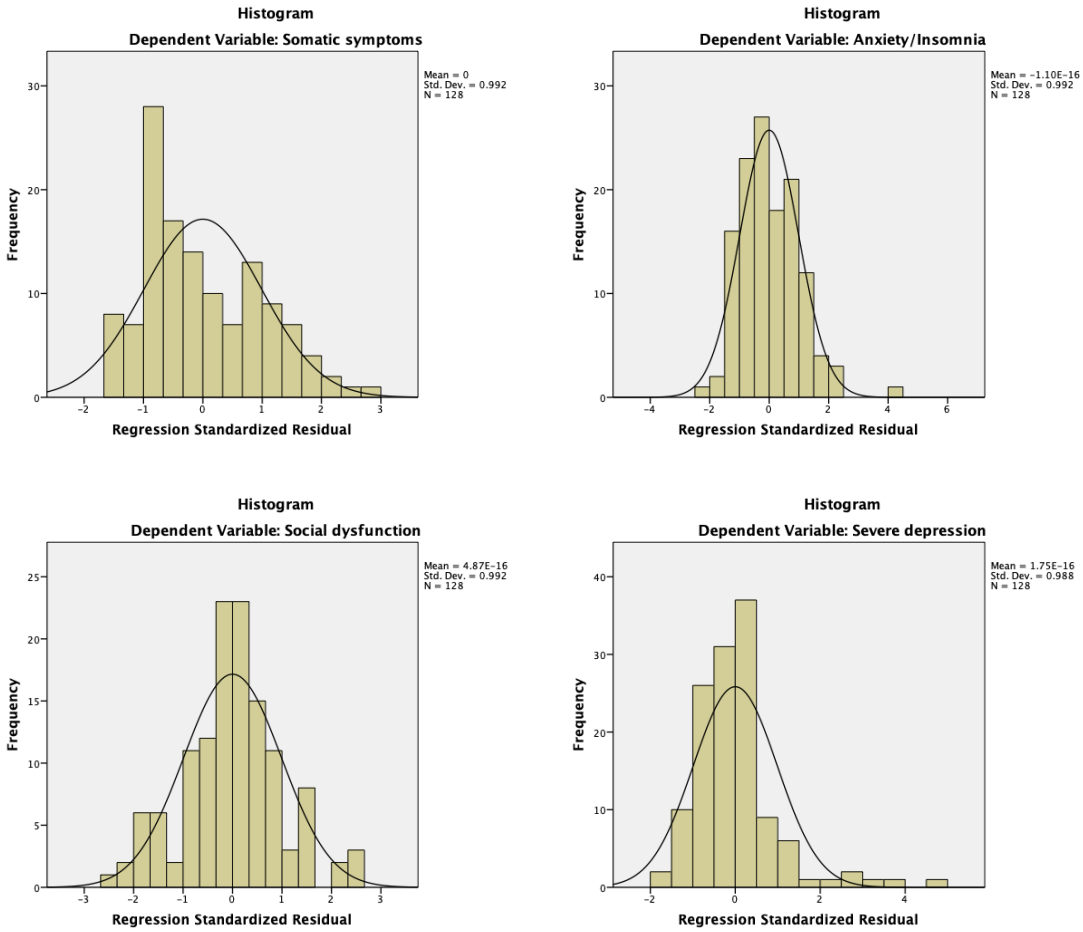

Figure 5. Histogram of four mental health constructs.

Homoscedasticity. The third assumption tested is that the data needs to show homoscedasticity, which means that the error variance should be constant. Tests of homoscedasticity were based on a visual inspection of the scatterplots of the error terms (residuals) and the predicted values of the criterion variable (mental health constructs). The plots of the standardized predicted values against the standardized residuals were shown in Figure 6. The scatterplot of standardized predicted values against residuals should be a random pattern centered around the line of zero standard residual value. The points should have the same dispersion about this line over the predicted value range.

Looking at Figure 6, each of the four plots for each of the four mental health constructs showed random scatter. Thus, the assumption of homoscedasticity was satisfied.

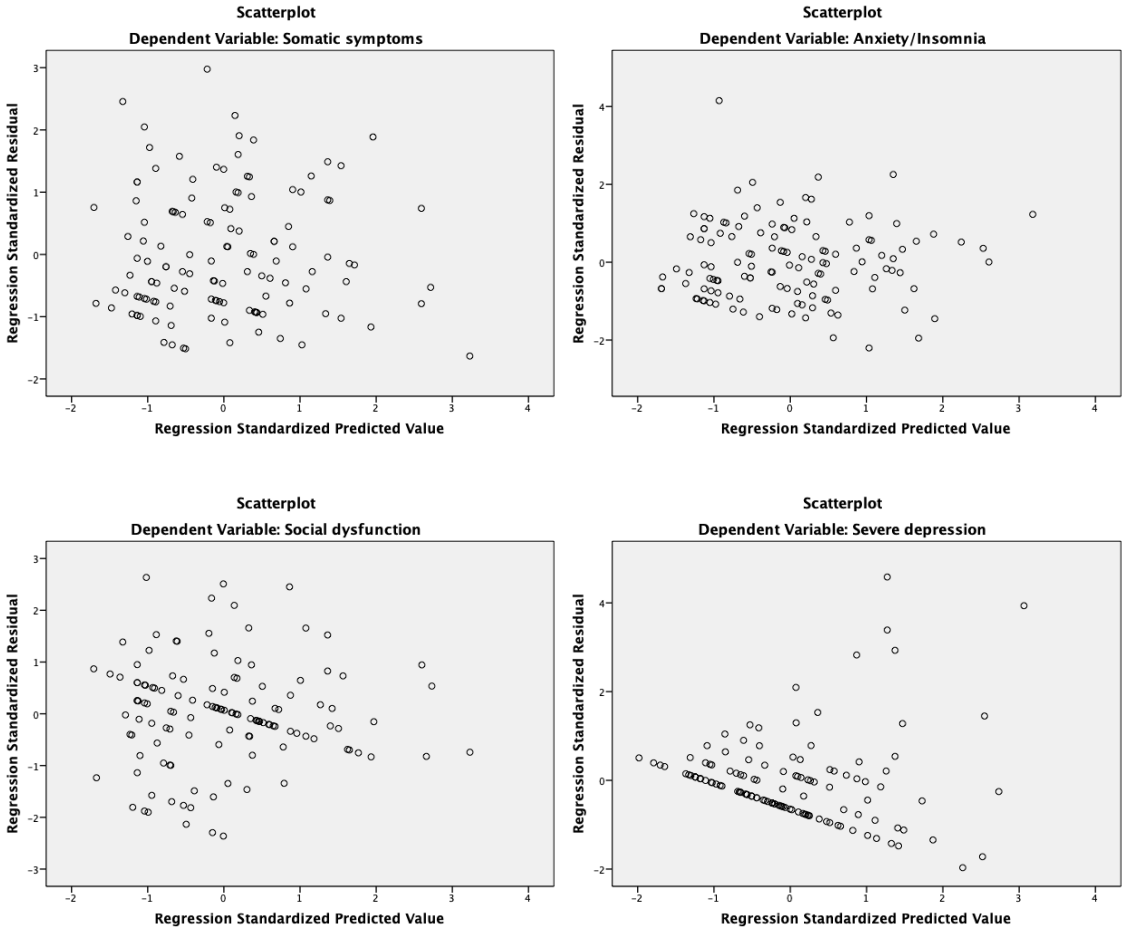

Figure 6. Scatterplot of standardized predicted values against the standardized residuals.

Research Question/Hypothesis Testing

Next, multiple linear regression was conducted to address the research question of the study: "To what extent is spirituality related to the mental health status of kidney dialysis patients?" Specifically, the results of the multiple linear regression determined the significance of the combined influence of the four spirituality domains of core spirituality, spiritual perspective/existential, personal application/humility, and

acceptance/insight on each of the mental health constructs of somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression. Four multiple regression models were created to determine which of the four spirituality domains are significantly related to each of the four mental health constructs. Backwards elimination multiple regressions were specifically used to determine which spirituality domain reliably predicts variation in mental health among kidney dialysis patients with ESRD. A level of significance of 0.05 was used in all the multiple linear regression analyses.

Hypothesis 1: Somatic symptoms.

$H_0$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to somatic symptoms, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to somatic symptoms, as measured by GHQ-28, of kidney dialysis patients.

The first regression model was created to determine the significance of the relationship between the four spirituality domains and the mental health construct of somatic symptoms. The results of these multiple linear regression are presented in Table 5. The final regression model in predicting somatic symptoms was created after three backwards elimination multiple regression models. The final regression model was statistically significant ($F(2, 125) = 8.21$, $p < 0.001$). This finding indicated that the

regression model with the four spirituality domains in predicting somatic symptoms had an acceptable model fit. This means that the combined influence of the four spirituality domains on somatic symptoms was significant. The R^2 value of the regression model was 0.12, which indicated a low effect size, meaning that the combined influence of the four spirituality domains explained only 12% in predicting somatic symptoms.

Investigation of the individual predictive relationships showed that only two out of the four spirituality domains, which were core spirituality ($t(127) = -3.97$, $p < 0.001$) and spiritual perspective/existential ($t(127) = 2.24$, $p = 0.03$), have significant predictive relationships with somatic symptoms. Moreover, examination of the standardized beta coefficient (β) showed that core spirituality (β = -0.11) had a significant negative predictive relationship with somatic symptoms. This finding means that the somatic symptoms of the kidney dialysis patients with ESRD were higher if they reported lower levels of core spirituality. When the core spirituality score increases by one standard deviation, somatic symptoms decreases by 0.11 standard deviations. On the other hand, spiritual perspective/existential (β = 0.19) had a significant positive predictive relationship with somatic symptoms. This finding means that the somatic symptoms of the kidney dialysis patients with ESRD were higher if they reported higher levels of spiritual perspective/existential. When the spiritual perspective/existential score increases by one standard deviation, somatic symptoms increases by 0.19 standard deviations. The equation for the regression model is as follows:

somatic symptoms = 10.27 - 0.11 core spirituality + 0.19 spiritual perspective/existential + e.

With this result, the $H_0$1was rejected.

In terms of postestimation diagnosis for multicollinearity, the collinearity statistic of variance inflation factor (VIF) was calculated to check for the presence of multicollinearity of the different predictors of four spirituality domains in predicting somatic symptoms. The VIF values of the two significant spirituality domains (1.16) were below 5 which indicate that none of the predictor variables were highly correlated or multicollinear in predicting the criterion variable of somatic symptoms. Thus, there was no presence of multicollinearity among predictor variables in predicting the criterion variable.

Table 5

Multiple Linear Regression Results of Relationship of Four Spirituality Domains and Somatic Symptoms

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	Beta			Toler-ance	VIF
1	(Constant)	9.33	2.96		3.15	0.00*		
	Core spirituality	-0.12	0.03	-0.38	-3.69	0.00*	0.66	1.51
	Spiritual perspective/existential	0.19	0.09	0.20	2.17	0.03*	0.85	1.18
	Personal application/humility	0.08	0.18	0.04	0.44	0.66	0.75	1.33
	Acceptance/insight	0.11	0.29	0.03	0.39	0.70	0.96	1.04
2	(Constant)	9.81	2.68		3.66	0.00*		
	Core spirituality	-0.12	0.03	-0.38	-3.69	0.00*	0.67	1.50
	Spiritual perspective/existential	0.19	0.09	0.21	2.26	0.03*	0.86	1.16
	Personal application/humility	0.08	0.18	0.05	0.47	0.64	0.75	1.33
3	(Constant)	10.27	2.49		4.12	0.00*		
	Core spirituality	-0.11	0.03	-0.36	-3.97	0.00*	0.87	1.16

Spiritual perspective/existential	0.19	0.09	0.20	2.24	0.03*	0.87	1.16

Note. Model 3: $F(2, 125) = 8.21$, $p < 0.001$; R Square (R^2) = 0.12; N =128
a. Criterion Variable: Somatic symptoms

b. Predictors: (Constant), Spiritual perspective/existential, Core spirituality
*Level of significance of 0.05

Hypothesis 2: Anxiety/insomnia.

$H_0$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to anxiety/insomnia, as measured by GHQ-28, of kidney dialysis patients.

$H_1$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the anxiety/insomnia, as measured by the GHQ-28, of kidney dialysis patients.

The second regression model created was to determine the significance of the relationship between the four spirituality domains and mental health construct of anxiety/insomnia. The results of these multiple linear regression are presented in Table 6. The final regression model created in predicting anxiety/insomnia was created after three backwards elimination multiple regression models. The final regression model was statistically significant ($F(2, 125) = 19.95$, $p < 0.001$). This indicated that the regression model with the four spirituality domains in predicting anxiety/insomnia had an acceptable model fit. This means that the combined influence of the four spirituality domains on anxiety/insomnia was significant. The R^2 value of the regression model was 0.24, which

indicated a low effect size, meaning that the combined influence of the four spirituality domains explained only 24% in predicting anxiety/insomnia.

Investigation of the individual predictive relationship showed that only two out of the four spirituality domains which were core spirituality ($t(127) = -5.92$, $p < 0.001$) and spiritual perspective/existential ($t(127) = 4.23$, $p < 0.001$) significantly influenced and have significant predictive relationships with anxiety/insomnia. Moreover, examination of the standardized beta coefficient (β) showed that core spirituality (β = -0.16) had a significant negative predictive relationship with anxiety/insomnia. This means that the anxiety/insomnia of the kidney dialysis patients with ESRD will be higher if they have lower levels of core spirituality. When the core spirituality score increases by one standard deviation, anxiety/insomnia decreases by 0.16 standard deviations. On the other hand, spiritual perspective/existential (β = 0.36) had a significant positive predictive relationship with anxiety/insomnia. This means that the anxiety/insomnia of the kidney dialysis patients with ESRD will be higher if they have higher levels of spiritual perspective/existential. When the spiritual perspective/existential score increases by one standard deviation, anxiety/insomnia increases by 0.36 standard deviations. The equation for the regression model is as follows:

anxiety/insomnia = 10.48 - 0.16 core spirituality + 0.36 spiritual perspective/existential + e.

With this result, the $H_0$2was rejected. The results of the multiple linear regression analysis supported the alternative hypothesis two that “The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and

acceptance/insight), as measured by the SIBS-R, are significantly related to the anxiety/insomnia, as measured by the GHQ-28, of kidney dialysis patients".

In terms of postestimation diagnosis for multicollinearity, the VIF values of the two significant spirituality domains (1.16) were below five which indicate that none of the predictor variables were highly correlated or multicollinear in predicting the criterion variable of anxiety/insomnia. Thus, there was no presence of multicollinearity among predictor variables in predicting the criterion variable.

Table 6

Multiple Linear Regression Results of Relationship of Four Spirituality Domains and Anxiety/Insomnia

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	Collinearity statistics	
		B	Std. error	Beta			Toler-ance	VIF
1	(Constant)	11.64	2.92		3.99	0.00*		
	Core spirituality	-0.14	0.03	-0.44	-4.56	0.00*	0.66	1.51
	Spiritual perspective/existential	0.35	0.09	0.35	4.10	0.00*	0.85	1.18
	Personal application/humility	-0.23	0.18	-0.12	-1.32	0.19	0.75	1.33
	Acceptance/insight	0.03	0.29	0.01	0.09	0.93	0.96	1.04
2	(Constant)	11.75	2.64		4.45	0.00*		
	Core spirituality	-0.14	0.03	-0.44	-4.57	0.00*	0.67	1.50
	Spiritual perspective/existential	0.35	0.08	0.35	4.17	0.00*	0.86	1.16
	Personal application/humility	-0.23	0.18	-0.12	-1.32	0.19	0.75	1.33
3	(Constant)	10.48	2.47		4.25	0.00*		
	Core spirituality	-0.16	0.03	-0.50	-5.92	0.00*	0.87	1.16
	Spiritual perspective/existential	0.36	0.08	0.35	4.23	0.00*	0.87	1.16

Note. Model 3: $F(2, 125) = 19.95$, $p < 0.001$; R Square (R^2) = 0.24; N =128

a. Criterion Variable: Anxiety/Insomnia

b. Predictors: (Constant), Spiritual perspective/existential, Core spirituality
*Level of significance of 0.05

Hypothesis 3: Social dysfunction.

$H_0$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to social dysfunctions as measured by GHQ-28, of kidney dialysis patients.

$H_1$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to social dysfunctions, as measured by the GHQ-28, of kidney dialysis patients.

The third regression model created was to determine the significance of the relationship between the four spirituality domains and mental health construct of social dysfunction. The results of these multiple linear regression are presented in Table 7. The final regression model created in predicting social dysfunction was created after three backwards elimination multiple regression models. The final regression model was statistically significant ($F(2, 125) = 13.85$, $p < 0.001$). This indicated that the regression model with the four spirituality domains in predicting social dysfunction had an acceptable model fit. This means that the combined influence of the four spirituality domains on social dysfunction was significant. The R^2 value of the regression model was 0.18, which indicated a low effect size, meaning that the combined influence of the four spirituality domains explained only 18% in predicting social dysfunction.

Investigation of the individual predictive relationship showed that only two out of the four spirituality domains which were core spirituality ($t(127) = -5.18$, $p < 0.001$) and spiritual perspective/existential ($t(127) = 2.78$, $p = 0.01$) significantly influenced and have significant predictive relationships with social dysfunction. Moreover, examination of the standardized beta coefficient (β) showed that core spirituality ($\beta = -0.13$) had a significant negative predictive relationship with social dysfunction. This means that that the social dysfunction of the kidney dialysis patients with ESRD will be higher if they have lower levels of core spirituality. When the core spirituality score increases by one standard deviation, social dysfunction decreases by 0.13 standard deviations. On the other hand, spiritual perspective/existential ($\beta = 0.21$) had a significant positive predictive relationship with social dysfunction. This means that the social dysfunction of the kidney dialysis patients with ESRD will be higher if they have higher levels of spiritual perspective/existential. When the spiritual perspective/existential score increases by one standard deviation, social dysfunction increases by 0.21 standard deviations. The equation for the regression model is as follows:

social dysfunction = 12.50 - 0.13 core spirituality + 0.21 spiritual perspective/existential + e.

With this result, the $H_0$3was rejected. The results of the multiple linear regression analysis supported the alternative hypothesis three, that the spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to social dysfunctions, as measured by the GHQ-28, of kidney dialysis patients.

In terms of postestimation diagnosis for multicollinearity, the VIF values of the two significant spirituality domains (1.16) were below five which indicate that none of the predictor variables were highly correlated or multicollinear in predicting the criterion variable of social dysfunction. Thus, there was no presence of multicollinearity among predictor variables in predicting the criterion variable.

Table 7

Multiple Linear Regression Results of Relationship of Four Spirituality Domains and Social Dysfunction

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
1	(Constant)	12.64	2.59		4.87	0.00*		
	Core spirituality	-0.14	0.03	-0.49	-4.93	0.00*	0.66	1.51
	Spiritual perspective/existential	0.22	0.08	0.26	2.90	0.00*	0.85	1.18
	Personal application/humility	0.15	0.16	0.09	0.94	0.35	0.75	1.33
	Acceptance/insight	-0.21	0.26	-0.07	-0.82	0.41	0.96	1.04
2	(Constant)	11.75	2.36		4.99	0.00*		
	Core spirituality	-0.14	0.03	-0.49	-4.96	0.00*	0.67	1.50
	Spiritual perspective/existential	0.21	0.08	0.25	2.82	0.01*	0.86	1.16
	Personal application/humility	0.14	0.16	0.08	0.88	0.38	0.75	1.33
3	(Constant)	12.50	2.19		5.71	0.00*		
	Core spirituality	-0.13	0.03	-0.45	-5.18	0.00*	0.87	1.16
	Spiritual perspective/existential	0.21	0.08	0.24	2.78	0.01*	0.87	1.16

Note. Model 3: $F(2, 125) = 13.85$, $p < 0.001$; R Square (R^2) = 0.18; N =128
a Criterion Variable: Social dysfunction
b. Predictors: (Constant), Spiritual perspective/existential, Core spirituality
*Level of significance of 0.05

Hypothesis 4: Severe depression.

$H_0$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

The fourth regression model created was to determine the significance of the relationship between the four spirituality domains and mental health construct of severe depression. The results of these multiple linear regression are presented in Table 8. The final regression model created in predicting severe depression was created after two backwards elimination multiple regression models. The final regression model was statistically significant ($F(3, 124) = 14.40$, $p < 0.001$). This indicated that the regression model with the four spirituality domains in predicting severe depression had an acceptable model fit. This means that the combined influence of the four spirituality domains on severe depression was significant. The R^2 value of the regression model was 0.26, which indicated a low effect size, meaning that the combined influence of the four spirituality domains explained only 26% in predicting severe depression.

Investigation of the individual predictive relationship showed that three out of the four spirituality domains which were core spirituality ($t(127) = -3.99$, $p < 0.001$), spiritual

perspective/existential ($t(127) = 4.29$, $p < 0.001$), and personal application/humility ($t(127) = -2.11$, $p = 0.04$) significantly influenced and have significant predictive relationships with severe depression. Moreover, examination of the standardized beta coefficient (β) showed that both core spirituality (β = -0.10) and personal application/humility (β = -0.29) have significant negative predictive relationships with severe depression. This means that the severe depression of the kidney dialysis patients with ESRD will be higher if they have lower levels of core spirituality and personal application/humility. When the core spirituality and personal application humility scores increases by one standard deviation, severe depression decreases by 0.10 and 0.29 standard deviations, respectively. On the other hand, spiritual perspective/existential (β = 0.28) had a significant positive predictive relationship with severe depression. This means that the severe depression of the kidney dialysis patients with ESRD will be higher if they have higher levels of spiritual perspective/existential. When the spiritual perspective/existential score increases by one standard deviation, severe depression increases by 0.28 standard deviations. The equation for the regression model is as follows:

severe depression = 6.62 - 0.10 core spirituality + 0.28 spiritual perspective/existential – 0.29 personal application/humility + e.

With this result, the null hypothesis four was rejected. The results of the multiple linear regression analysis supported the alternative hypothesis four, that the spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility,

and acceptance/insight), as measured by the SIBS-R, are significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

In terms of postestimation diagnosis for multicollinearity, the VIF values of the three significant spirituality domains (0.67–0.86) were below five which indicate that none of the predictor variables were highly correlated or multicollinear in predicting the criterion variable of severe depression. Thus, there was no presence of multicollinearity among predictor variables in predicting the criterion variable.

Table 8

Multiple Linear Regression Results of Relationship of Four Spirituality Domains and Severe Depression

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. error	Beta			Tolerance	VIF
1	(Constant)	7.87	2.26		3.49	0.00*		
	Core spirituality	-0.10	0.03	-0.38	-3.96	0.00*	0.66	1.51
	Spiritual perspective/existential	0.29	0.07	0.37	4.44	0.00*	0.85	1.18
	Personal application/humility	-0.28	0.14	-0.18	-2.01	0.05*	0.75	1.33
	Acceptance/insight	-0.30	0.22	-0.11	-1.33	0.19	0.96	1.04
2	(Constant)	6.62	2.06		3.22	0.00*		
	Core spirituality	-0.10	0.03	-0.38	-3.99	0.00*	0.67	1.50
	Spiritual perspective/existential	0.28	0.07	0.36	4.29	0.00*	0.86	1.16
	Personal application/humility	-0.29	0.14	-0.19	-2.11	0.04*	0.75	1.33

Note. Model 3: $F(3, 124) = 14.40$, $p < 0.001$; R Square (R^2) = 0.26; N =128

a Criterion Variable: Severe depression

b. Predictors: (Constant), Personal application/humility, Spiritual perspective/existential, Core spirituality

*Level of significance of 0.05

Summary

The purpose of this quantitative correlational study was to determine the relationship between spirituality and mental health among kidney dialysis patients with ESRD. The predictor variable was spirituality (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), which was measured by the SIBS-R. Results of the multiple linear regression analysis showed that the spirituality domain of core spirituality was significantly negatively related while spiritual perspective/existential was significantly positively related with the mental health status of somatic symptoms, anxiety/insomnia, and social dysfunction of kidney dialysis patients with ESRD. On the other hand, results of the multiple linear regression analysis showed that the spirituality domains of core spirituality and personal application/humility were both significantly negatively related while spiritual perspective/existential was significantly positively related with the mental health status of severe depression of kidney dialysis patients with ESRD.

Implications of the data analysis based on the information gleaned from the results will be discussed in Chapter 5. Suggestions on how the findings may be applied in an organizational setting and a summary of recommendations for future research are also discussed in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative correlational study was to determine the relationship between spirituality and mental health in kidney dialysis patients with ESRD. Kidney disease has implications for both the physical and psychological health of a patient. Patients with kidney disease need regular dialysis to remove water and waste build-up in the body. CKD and ESRD patients often develop mental health issues (Theofilou, 2011, 2012) such as depression, anxiety, suicide, and delirium (NIMH, 2014). Good mental health is important to any individual to function well and as such needs to be ensured at all times. Based on SLT, the theoretical framework that guided this study, and HLOC, the spirituality of an individual is considered as an internal factor and may be related to the behavior of kidney dialysis patients with ESRD.

The following research question guided this study: To what extent is spirituality related to the mental health status of kidney dialysis patients? Four hypotheses were developed from the research question. The results of the equation for the regression models developed to test the four hypotheses led to rejecting all four null hypotheses and accepting the alternative hypotheses. This means that there is a significant predictive relationship between the four domains of spirituality and the four mental health constructs as measured by the SIBS-R and GHQ-28 of kidney dialysis patients.

This chapter provides a summary of the research findings, a discussion of the strengths and limitations of the study, the implications for the treatment of end-stage renal patients, recommendations for future research, and a conclusion.

Interpretation of the Findings

In this study, a convenience sample of patients diagnosed with ESRD (N = 128) who were undergoing dialysis at a series of kidney dialysis centers in California, was selected. The results suggested that there is a significant predictive relationship between spirituality and mental health of these patients who receive kidney dialysis treatment. In particular, with regard to somatic symptoms such as anxiety/insomnia, and social dysfunction, the results of the multiple linear regression analysis showed a significant relationship with the spirituality domain of core spirituality. This domain was significantly negatively related, while the domain of spiritual perspective/existential was significantly positively related. With reference to severe depression, the results of the multiple linear regression analysis showed a significant negative relationship (a) with the spirituality domains of core spirituality and personal application/humility, which were significantly negatively related and (b) with the domain of spiritual perspective/existential, which was significantly positively related.

A regression model with the four spiritual domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight) indicated that they had an acceptable model fit in predicting somatic symptoms as the final regression model was statistically significant ($F(2, 125) = 8.21$, $p < 0.001$). This finding means that the combined influence of the four spirituality domains on somatic symptoms was significant, albeit low, at 12%.

This study explored the relationship between spirituality and mental health of patients with kidney failure who receive dialysis. The overall findings of this study

indicated that the sample was emotionally distressed, which is contrary to most research findings that mental health issues, including emotional distress, are linked with patients with ESRD (Jain et al., 2017; NIMH, 2014; Theofilou, 2012), and there are indications that the participants had a strong spiritual orientation. It is possible that the overall high level of spirituality influenced the mental health scores recorded in this study. This is consistent with Greenfield et al. (2009) who noted religion and spirituality work to improve an individual's health and well-being throughout the course of their life. Significant relationships were found among religion/spirituality and mental health as well as associations between religion/spirituality to physical health. Although various characteristics of patients receiving dialysis have received attention from scholars, the relationship between religion/spirituality and mental health of dialysis patients has not yet been fully explored empirically (Theofilou, 2012).

Among the four mental health constructs, the highest mean score (M = 6.80, SD = 3.82) was for social dysfunction and the lowest mean score (M = 1.63, SD = 2.88) was recorded for severe depression. The mean score recorded for emotional distress was 19.23 (SD = 10.21). This finding indicated that on average, the kidney dialysis participants with ESRD are not typically experiencing emotional distress.

The theoretical framework that guided this study was SLT, which postulates that people learn by means of observing others and as a result of reward and punishment for behavior (Rotter, 1982). Rotter (1954) used the SLT to develop the notion of LOC. In terms of healthcare, Wallston and Wallston (1981) found that LOC related to patient behavior. Wallston et al. (1976) combined SLT and LOC to develop the notion of HLOC,

which describes the degree of an individual's belief that a health related issue is a consequence of his or her behaviors. For the purposes of this study, spirituality was deemed an internal factor that may be related to the behavior of kidney dialysis patients with ESRD. As such, through the idea of HLOC, it was hypothesized that spirituality will have a role in the mental health among kidney dialysis patients with ESRD. Patients with ESRD may increase their level of spirituality in an effort to control their illness and the symptoms they experience.

The findings of this study aligned with prior research as the results suggest that there is a significant predictive relationship between spirituality and mental health of patients who receive kidney dialysis treatment. In particular, the combined influence of the four spirituality domains on mental health constructs of somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression was found to be significant. Similarly, prior research that explored the relationship between HLOC and religion or spirituality, found significant correlations. Dednam et al. (2012) found that internal HLOC dealt with active coping and found significant correlations with spiritual HLOC beliefs, disease preventions, and health risks behaviors. Park et al. (2012) concluded that patients who were in an organized religious group had higher internal HLOC and were less depressed than those patients who were not in a religious group. Correlations between spirituality and spiritual practices were found to assist individuals with distress and other psychological or mental health issues (Joshanloo 2010; Kashdan & Nezlek, 2012; Langman & Chung, 2013). Bragazzi and Del Puente (2013) and Fradelos et al. (2015) both reported that significant spirituality could provide chronic kidney disease

patients with positive health outcomes. The findings of this study suggest that patients with ESRD who have high levels of spirituality on the four spirituality domains and continue their involvement in spiritual activities, display less severe symptoms on mental health constructs of somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression.

The research question for this study was as follows: To what extent is spirituality related to the mental health status of kidney dialysis patients? The following sections detail the results of the hypotheses.

$H_1$1 Somatic Symptoms Results

$H_0$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to somatic symptoms, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$1: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to somatic symptoms, as measured by GHQ-28, of kidney dialysis patients.

The results of the study indicated a significant predictive correlation between the spirituality domains and somatic symptoms of kidney dialysis patients. This finding resulted in rejecting the null hypothesis in favor of the alternative hypothesis. The relationship between physical health (somatic) and spirituality received attention from different researchers. Powell et al. (2003) found that spiritual groups promoted healthier

lifestyles. Koenig (2012) asserted spirituality and mental health were significantly related. Spirituality was found to exert a powerful influence on the individual's ability to cope with disease (Koenig, 2012; Powell et al., 2012). Previous researchers did not focus on patients with ESRD or CKD and the findings of the current research indicating that spirituality significantly influences the mental health of kidney dialysis patients extend current literature.

$H_1$2 Anxiety/insomnia Results

$H_0$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to anxiety/insomnia, as measured by GHQ-28, of kidney dialysis patients.

$H_1$2: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to the anxiety/insomnia, as measured by the GHQ-28, of kidney dialysis patients.

The results of the study were indicative of a positive correlation between the four spirituality domains in predicting anxiety/insomnia. In the second test, ($H_0$2) was rejected and ($H_1$2) was supported. This means that the results of this study indicated that the four domains of spirituality are significantly related to anxiety/insomnia of kidney dialysis patients. Patients on kidney dialysis reported increased anxiety and insomnia (Theofilou, 2011; Theofilou, 2012) indicating a need to address this dimension. The results of Fradelos et al. (2015) and Bragazzi and Del Puente (2013) studies were consistent with

each other in reporting that significant spirituality could provide chronic kidney disease patients with positive health outcomes including mitigating anxiety. Many individuals see spirituality and religion as an essential element to their lives, their existence, a source of support, and well-being of the many difficulties to come (Fradelos et al., 2015). Although this view does not specifically isolate anxiety/insomnia it does reflect on overall well-being which may include anxiety/insomnia.

The results of this study confirmed previous research that spirituality has positive effects on health outcomes, such as decreased depression and increased levels of positive perceptions of quality of life, including anxiety (Fradelos et al., 2015). Kidney dialysis patients who exhibited more internal HLOC with the variable of spiritual beliefs focused more on their health behaviors and health outcomes which resulted in better coping with the illness (Bragazzi & Del Puente, 2013). Previous researchers did not specifically focus on anxiety/insomnia in relation to patients on kidney dialysis and how spirituality could influence this. The results of this study serve to extend current literature on the influence of spirituality in the anxiety/insomnia aspects of QoL of patients on kidney dialysis. The results of this study indicated that the four domains of spirituality are significantly related to anxiety/insomnia of kidney dialysis patients, which confirms the outcomes of the Fradelos et al. (2015) and Bragazzi and Del Puente (2013) studies.

$H_1$3 Social Dysfunctions Results

$H_0$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the

SIBS-R, are not significantly related to social dysfunctions as measured by GHQ-28, of kidney dialysis patients.

$H_1$3: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to social dysfunctions, as measured by the GHQ-28, of kidney dialysis patients.

The third regression model created was to determine the significance of the relationship between the four spirituality domains and mental health construct of social dysfunction, thus testing H3. As with the two previous sets of results, the $H_0$3 was rejected in favor of the alternative $H_1$3. This means that there is a significant predictive correlation between the four spirituality domains and the mental health construct of social dysfunction of the kidney dialysis patients with ESRD. Patients on kidney dialysis were found to experience severe impairments in quality of life (Anees et al., 2011; Keskin & Engin, 2011; Theofilou, 2011). ESRD affects patient's lives on all levels, including social, financial, psychological well-being, and overall quality of life (Theofilou, 2011). With the significant negative influence on quality of life, ESRD and CKD patients most likely withdraw from dialysis treatments (Anees et al., 2011). Withdrawal from treatment is not common in other chronic illnesses such as diabetes, cardiovascular failure, arthritis, and chronic lung disease in which patients were found to continue treatment (Anees et al., 2011). Severe depression and anxiety is common in patients on kidney dialysis, especially older patients, (Keskin & Engin, 2011). Therapeutic intervention is therefore imperative as suicide ideation is often reported in these patients (Theofilou, 2011).

Previous findings that ESRD severely influence patients' QoL (Anees et al., 2011; Keskin & Engin, 2011; Theofilou, 2011), adherence and benefit from treatment (Anees et al., 2011), calls for efficient ways to treat this situation. The findings of this and previous studies indicated that spirituality can enhance patients' coping with the effects of an illness, including ESRD and dialysis.

$H_1$4 Severe Depression Results

$H_0$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are not significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

$H_1$4: The spirituality domains (core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight), as measured by the SIBS-R, are significantly related to severe depression, as measured by the GHQ-28, of kidney dialysis patients.

The regression model analysis of the four spirituality domains in predicting severe depression also had an acceptable model fit. This finding led to rejecting the null hypothesis ($H_0$4) and accepting the alternative hypothesis ($H_1$4). In terms of hypothesis $H_1$4, it is important to note that depression, anxiety, suicide, and delirium are the most commonly diagnosed mental health issues in kidney dialysis patients (NIMH, 2014). Kellerman et al. (2010) asserted that depression is the main mental health problem in ESRD patients. This notion was confirmed by Keskin and Engin (2011) who found that depression was present in 67% dialysis patients. The presence of depression in kidney

dialysis patients could lead to the patients not responding well to treatment for kidney failure (American Kidney Fund, 2012). It is therefore imperative to ensure effective treatment for depression, and in effect mental health, in ESRD or CKD patients.

The results of this study suggest a predicative relationship between spirituality and severe depression in ESRD or CKD patients. This finding confirms that of Dednam et al. (2012) that internal HLOC dealt with active coping and that there were significant correlations with spiritual HLOC beliefs and health risk behavior. In addition, Park et al. (2012) also confirmed the role of spirituality in HLOC beliefs and coping with diseases. Martinez and Custodio (2014) asserted that spirituality provides support to HD patients who have to cope with the difficulties of life, which are further complicated by the dialysis. The role of spirituality in HLOC beliefs and coping with diseases is significant in the treatment of ESRD patients on dialysis as they would be more likely to follow the treatment regime and cope better with the mental health symptoms associated with ESRD (Martinez & Custodio, 2014).

Jain et al. (2017) reported cognitive impairment and depression in ESRD patients as a common occurrence. Depression significantly compromises and affects the disease outcome, morbidity, and mortality, making effectively dealing with depression in this group of patients essential. Understanding the pathophysiologic phenomena of renal impairment, and mental health occurrences in ESRD patients are critical in minimizing the risk of cognitive impairments. In HD patients, Jain et al. (2017), Sharif et al. (2012) and Martinez and Custodio (2014) found that living with a terminal illness has a negative impact on their mental health. Poor mental health, including depression, influence

patients' adherence and benefit from treatment, furthermore, low spiritual well-being has complications for care (Martinez & Custodio, 2014). The results of this study confirmed previous research on the association between spirituality and depression and serves to extend current knowledge of the influence of spirituality on the mental health of CKD or ESRD patients on dialysis.

Limitations of the Study

Only patients with ESRD who were undergoing kidney dialysis at the selected kidney dialysis centers across California were included in this study. The sample included patients from selected kidney dialysis centers only and did not represent the entire kidney dialysis population. Therefore, the results of the study may be limited to kidney dialysis patients in California, so researchers should use caution in generalizing the findings to other populations.

Validated instruments for participants' reporting on their mental health and spirituality were used. However, the self-reporting nature of these instruments might have led to inaccuracies in the results due to individuals' perceptions of their mental health or spirituality. Using validated instruments was deemed sufficient to account for possible inconsistencies and misinterpretation of questions. It is, however, possible that there were instances of misinterpretation and inadvertent misinformation in completing the survey.

It can be observed that only one of the four spirituality domains, which is core spirituality ($\alpha = 0.75$), had an acceptable reliability or internal consistency since the Cronbach's alpha value was greater than the minimum acceptable value for Cronbach's alpha of 0.70. Cronbach's alpha measures internal consistency, where a coefficient nearer

to 1 suggests higher reliability. Mitchell and Jolley (2013) suggested a Cronbach's alpha of least .70 for strong reliability to be considered internally consistent (Mitchell & Jolley, 2013). The two spirituality domains of spiritual perspective/existential ($\alpha = 0.16$) and personal application/humility ($\alpha = 0.395$) did not have acceptable reliability or internal consistency (see Table 1). This could be due to the sample chosen for this study. The Cronbach's alpha value of the spirituality domain of acceptance/insight could not be computed since it had only one item. It is not clear why core spirituality was the only spirituality domain having acceptable reliability or internal consistency. The poor internal consistency of the other three individual spirituality domains indicates that taken individually, the findings might not be reliable. Overall, these findings are consistent with other studies that have used this instrument such as Pillay et al (2016) who discovered students who sought their purpose through religion or spirituality were often found to have better quality of life However, the total spirituality score which included all 22 items SIBS-R had an acceptable reliability or internal consistency since the Cronbach's alpha value was greater than 0.70, which provides evidence of moderate internal consistency.

A correlational design does not indicate causality nor does it provide information on the direction and magnitude of the variables. However, this study did not aim to identify causes of the relationships but rather to determine the existence of relationships between the variables. This study represents an important step for further investigation into the variables.

Another limitation is the range restriction of the scores for all the study variables of scores of spirituality domains, emotional distress, and mental health constructs. Notably there was a design restriction in the current research as the sample (N = 128) included only kidney dialysis patients with ESRD. As correlation coefficients are linked with both the variables and population used in measuring, conclusions of the degree of influence of variables may be skewed due to range restrictions. It is therefore possible that the range restriction could suppress the Pearson correlation coefficient and that different results could be obtained with a larger and less restricted sample. The range restriction has a potential impact on the results of the correlation analysis.

Recommendations

This study contributed to the literature by finding significant correlations between the four spiritual domains of core spirituality, spiritual perspective / existential, personal application/humility, and acceptance/insight and the four indicators of mental health status, namely somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression of ESRD patients on dialysis. This study was limited to renal facilities in the state of California. Given the relatively small sample (N =128) and geographic confinements, the appropriateness of generalizations to other settings may be compromised. Further research that includes participants from other states should be undertaken to enable generalization to other CKD patients. I recommend doing an analogous study with a larger and geographically more diverse sample to yield more generalizable results, representative of the ESRD population in the United States.

According to Garson (2016), larger studies can possibly limit the effect of outliers or possible misinterpretations in self-reporting.

Spirituality is not linked to a specific religious denomination or practices. It is essential that hospital staff working at kidney dialysis units receive spirituality sensitivity training. This spirituality sensitivity training involves increasing thee hospital staffs' confidence and skills in dealing with spirituality issues of patients.

Therapeutic intervention designs or hospital support to kidney dialysis patients should link specific aspects of spirituality with elements of mental health. Keeping in mind the differences between denominations and individual spiritual preferences, dialysis centers should determine what kinds of spiritual experiences or activities patients on dialysis prefer. These interventions should be such that the core dialysis activities are not disturbed. However, reading material or posters with an encouraging message, spiritual music, Bible reading or discussions, may provide emotional and spiritual support to patients.

Conducting a qualitative case study could provide more insight into the experiences of kidney dialysis patients. Results from a qualitative study might bring more detailed information regarding specific elements of dialysis that could be linked to mental health. In addition, specific information could be elicited about the participants' spirituality and spiritual activities linked to their experience of dialysis and mental health. Such a study could bring more in-depth insights into the plight of dialysis patients and how spirituality could benefit their QoL.

Implications

The findings of this study contribute to increase the understanding of the role of spirituality in medical treatments and physical health. In tandem with previous research, the findings of this study are indicative of the links between spirituality and mental health of patients (Jain et al., 2017; Martinez & Custodio, 2014; Theofilou, 2012). Both Park (2007) and Greenfield et al. (2009) reported that religion and spirituality have a direct effect on mental health and increase the positive emotional state of mind to help and eliminate any negative emotions. Including spiritual experiences, such as music or uplifting messages, suggested in the recommendations of this study, may initiate positive social change. Recognizing patients' spirituality; can benefit patients with ESRD by decreasing their emotional stress and insomnia. Given the link between spirituality and mental health of ESRD patients found in this study, increasing the quality of life of kidney dialysis patients, by providing spiritual activities such as participating in religious activities (Bible readings, discussion groups) and/or listening to religious music throughout the course of treatment is important to explore. Psychotherapists and managers of dialysis units at hospitals could incorporate the aforementioned spiritual experiences or activities in the treatment of ESRD patients on dialysis. Including spirituality in the treatment of patients could be beneficial not only to ESRD patients on dialysis but possibly also to patients suffering from chronic diseases in general.

Implications for individuals and families

Individual patients and their family members should be encouraged to continue with spiritual activities. Providing information on the positive link between spirituality

and coping with chronic illness may prove to be beneficial to patients and their families. Family members should be encouraged to continue with their customary spiritual activities, as ESRD patients often suffer from mental health issues, such as depression, which may leave them unwilling to engage in activities (Jain et al., 2017).

Implications for the organization

The staff in clinical settings where kidney dialysis patients are treated, should take note of the findings of this study and possibly adjust their policies and practices to include spiritual experiences for the patients. Given the large variety of spiritual activities and personal gods individuals ascribe to, it may not be possible to provide uniquely personal experiences to each patient. The demographic information gathered from patients should include a section on spirituality that invites the patient not only to indicate which spiritual group and activities they subscribe to but also ask about specific activities, whenever practicable, they would like becoming involved in while on dialysis. Depending on the spiritual groupings—traditional, Christian, eastern, and the like—the organization may opt for arranging specific week days accommodating a specific spiritual group and make this known to its patients, employees and spiritual workers. This should allow for more specific spiritual experiences in the type of music played, posters or flyers made available, and activities such as meditation being offered.

Inclusion of spiritual workers and psychotherapists on the treatment team could be beneficial to the clinical staff and patients. Providing psychological intervention together with spiritual activities may improve the patients' QoL and ultimately their benefit from and adherence to treatment. Furthermore, with the assistance of these

workers, a training program for health workers could be designed to increase their spirituality awareness and equip them to deal with the spiritual needs of the patients.

Implications for practice

Initial exploration of patients' spirituality that could form part of the patient demographic profile would provide specific information on what patients regard as spiritually uplifting experiences. These could be included, as far as practically possible, in the dialysis setting. There are significant differences between individual's spirituality and their personal god. It is important that the spirituality sensitivity training include sufficient variations of spirituality, including for instance Christianity, thus recognizing the range of possibilities within patients.

Depending on the kidney dialysis unit facilities and overall regulations, posters with spiritual messages could be displayed on the walls. Spiritual music could be played in the dialysis units. The text message of the music could be selected to apply to a wide variety of spiritual beliefs so that some patients do not find the music offending or upsetting. Spiritual workers, not necessarily hospital staff, could be welcomed into the kidney dialysis units to speak to and comfort the patients. While this is not an exhaustive list of possibilities, these suggestions could provide a good starting point for inclusion of spirituality in the dialysis units.

Impactions for positive social change

Benefits of this study included the better understanding of how spirituality is related to the mental health of kidney dialysis patients, which can be used in developing programs or interventions to decrease symptoms of mental health issues among this

population. More so, the findings of this study can spur positive social change through providing ideas on how spirituality can benefit patients with ESRD. Religion and spirituality have a direct effect on mental health and increase the positive emotional state of mind to help and eliminate any negative emotions. Spiritual experiences, such as music or uplifting messages, suggested in the recommendations of this study, may initiate positive social change. Recognizing patients' spirituality, can benefit patients with ESRD by decreasing their emotional stress and insomnia. Spiritual explorations and activities provided comfort and a deeper meaning to life which improved the patients' QoL and can result in increased benefits from medical treatments and positive social changes within the ESRD community globally.

Conclusion

The purpose of this quantitative correlational study is to determine the relationship between spirituality and mental health among kidney dialysis patients with ESRD. Literature on the relationship between spirituality and mental health of ESRD patients is fairly scarce. This study explored the spirituality and mental health of 128 kidney dialysis patients with ESRD in California. Patients who cope with chronic illness such as renal disease, often report diminished QoL. Researchers have found that depression, including suicide ideation and suicide, is a major mental health issue associated with ESRD and/or CKD patients. Patients with mental health issues, especially severe depression, are less likely to adhere to the treatment regime and often do not react positively on treatment.

The findings of this study confirmed prior research on the association between spirituality and illness, especially chronic diseases. The findings indicated that there is a significant predictive correlation between the four spirituality domains of core spirituality, spiritual perspective/existential, personal application/humility, and acceptance/insight and the mental health constructs of somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression of the kidney dialysis patients with ESRD. Seeing that there is a dearth of literature on the association between the four domains of spirituality and mental health in ESRD patients, the findings of this study extended current literature on the topic. Humans more often than not embrace an idea of a higher being or personal god. Spiritual explorations and activities provide comfort and a deeper meaning to life which improves the patients' QoL and can result in increased benefit from medical treatment.

Prior researchers found that religion and spirituality can provide better psychological health and adjustment. The findings of this study are in consensus with previous studies, indicating a significant relationship between spirituality and mental health of patients with ESRD who are on kidney dialysis. The indications are that providing efficient mental health support to this group of patients should take the patients' spirituality in consideration. Care of ESRD patients should include the spiritual aspect of their lives. This study opens new frontiers for service delivery to patients with ESRD who are on kidney dialysis.

References

American Kidney Fund. (2012). 2012 Kidney disease statistics. Retrieved from http://www.kidneyfund.org

American Kidney Fund. (2015). 2015 Kidney diseases statistics. Retrieved from http://www.kidneyfund.org

Anees, M., Hameed, F., Mumtaz, A., Ibrahim, M., & Saeed Khan, M. N. (2011). Dialysis-related factors affecting quality of life in patients on hemodialysis. *Iranian journal of kidney diseases, 5*(1), 9-14.

April, K. A., Dharani, B., & Peters, K. (2012). Impact of locus of control expectancy on level of well-being. *Review of european studies*, *4*(2), 124–137. doi.org/10.5539/res.v4n2p124

April, K. A., & Smit, E. (2010). *Managing cultural diversity in Asia a research companion*. Northampton, MA: Edward Elgar Press.

Armstrong, T. D. (1995). *Exploring spirituality: The development of the Armstrong measure of spirituality*. Armonk, NY: M.E. Sharpe.

Bandura, A. (1971). *Social learning theory*. New York: General learning press. NY, NY Library of Congress Catalog

Bansel, P., & Corley, K. (2012). Publishing in AMJ-Part 7: What's different about qualitative research? *Academy of management journal, 55,* 509-513. Retrieved from http://www.aom.org

Barczak, G. (2015). Publishing qualitative versus quantitative research. *Journal of product innovation management*, *32*(5), 658-658. doi:10.1111/jpim.12277

Benner, D. G. (1989). Toward a psychology of spirituality for personality and psychotherapy. *Journal of psychology and christianity*, *8*(1), 19-30.

Berger, J., Bayarri, M. J., & Pericchi, L. R. (2013). The effective sample size. *Econometric reviews*, *33*(1-4), 197-217.

Bland, J. M., & Altman, D. G. (2011). Correlation in restricted ranges of data. *British medical journal*, *342*, d556. doi: https://doi.org/10.1136/bmj.d556

Bonetti, D., Johnston, M., Rodriguez-Marin, J., Pastor, M., Martin-Aragon, M., Doherty, E., & Sheehan, K. (2001). Dimensions of perceived control- A factor analysis of three measures and an examination of their relation to activity level and mood in a student and cross-cultural patient sample. *Psychology and health*, *16*, 655-674

Boscaglia, N., Clarke, D. M., Jobling, T. W., & Quinn, M. A. (2005). The contribution of spirituality and spiritual coping to anxiety and depression in women with a recent diagnosis of gynecological cancer. *International journal of gynecological Cancer*, *15*(5), 755-761. doi:10.1111/j.1525-1438.2005.00248.x

Bragazzi, N. L., & Puente, G. Del. (2013). Chronic kidney disease, spirituality and religiosity: A systematic overview with the list of eligible studies. *Health psychology research*, *1*(2). doi.org/10.4081/hpr.2013.e26

Burkhardt, M. (2002). *Spirituality: living our connectedness*. New York, NY: Delimar Publishing.

Burns, N., & Grove, S. (2009). *The practice of nursing research*, Saint Louis, Missouri: Saunders Incorporated.

Center for disease control and prevention. (2014). Diabetes home. Retrieved from https://www.cdc.gov/diabetes/programs/initiatives/kidney.html

Centers for disease control and prevention. (2014). National chronic kidney disease fact sheet. CKD surveillance project, 1–4. Retrieved from https://www.cdc.gov/diabetes/programs/initiatives/ckd-fact-sheet.html

Christensen, L. B., Johnson, B., & Turner, L. A. (2011). *Research methods, design, and analysis*. Boston, MA: Allyn and Bacon.

Christensen, a J., Turner, C. W., Smith, T. W., Holman, J. M., & Gregory, M. C. (1991). Health locus of control and depression in end-stage renal disease. *Journal of consulting and clinical psychology*, *59*(3), 419–424. doi.org/10.1037//0022-006X.59.3.419

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.), New York, NY: Academic Press.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge; Milton Park, Abingdon.

Cooper, D., & Schindler, P. (2013). *Business research methods* (12th ed.). New York, NY: McGraw-Hill Higher Education.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed). Boston, MA: Pearson.

Creswell, J. W. (2014). Research design: Qualitative, quantitative and mixed methods approaches (4th ed.). Boston, MA: Pearson.

D'Agostino, R. (2014). *Multivariable methods*. Boston, MA: Boston University School of Public Health.

DaVita, Inc. (2017). What are my dialysis choices? Retrieved from http://www.davita.com/treatment-options/choosing-the-right-treatment/what-are-my-dialysis-choices?/t/5415

Debnam, K., Holt, C. L., Clark, E. M., Roth, D. L., Foushee, H. R., Crowther, M., & Penny, L. (2013). *NIH public access*, *36*(3), 360–372. doi.org/10.5993/AJHB-.36.3.7.Spiritual

De Sousa, A. (2008). Psychiatric issues in renal failure and dialysis. *Indian journal of nephrology*, *18*(2), 47–50.

Devins, G. M., Binik, Y. M., Hollomby, D. J., Barre, P. E., & Guttmann, R. D. (1981). Helplessness and depression in end-stage renal disease. *Journal of abnormal psychology*, *90*(6), 531–545. doi.org/10.1037/0021-843X.90.6.53

Dollahite, D. C., (1998). Fathering, faith, and spirituality. *The journal of men's studies, 7*(4), 3-15.

Doyle, D. (1992). Have we looked beyond the physical and psychosocial? *Journal of pain and symptoms management, 7*(5), 302-311.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual reviews psychology*, 53, 109-132.

Failde, I., & Ramos, I. (2000). Validity and reliability of the SF-36 Health survey questionnaire in patients with coronary artery disease. *Journal of clinical epidemiology*, *53*(4), 359–365. doi.org/S0895-4356(99)00175-4

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2013). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior research methods, 41*(4), 1149-1160.

Fradelos, E., Tzavella, F., Koukia, E., Papathanasiou, I., Alikari, V., Stathoulis, J., & Zyga, S. (2015). Integrating chronic kidney disease patient's spirituality in their care. *Health benefits and research perspectives, 27*(5), 354. doi.org/10.5455/msm.2015.27.354-358

Garson, G. D. (2016). Partial least squares: Regression and structural equation models. *Asheboro, NC: Statistical Associates Publishers.*

Goertz, G., & Mahoney, J. (2012). *A tale of two cultures: Qualitative and quantitative research in the social sciences*. Princeton, NJ: Princeton University Press.

Greenfield, E. a, Vaillant, G. E., & Marks, N. F. (2009). Do formal religious participation and spiritual perceptions have independent linkages with diverse dimensions of psychological well-being? *Journal of health and social behavior*, *50*(2), 196–212. doi.org/10.1177/002214650905000206

Haas, J.P. (2012). Sample size and power. *American journal of infection control*, *40*(8), 766–767.

Hatch, R. L., Burg, M. A., Naberhaus, D. S., & Hellmich, L. K. (1998). The spiritual involvement and beliefs scale: Development and testing of a new instrument. *Journal of family practice*, *46*(6), 476–486.

Hatch, R. L., Spring, H., Ritz, L., & Burg. M.A. (2007). The relationship between spirituality, well-being in HIV-positive persons. *Journal of the associations of nurses in AIDS care*. *18*(3), 13-22. doi:10.1016/j.jana.2007.033.004

Hill, P. C., Pargament, K. I. I., Hood, J. R. W., McCullough, M. E., Swyers, J. P., Larson, D. B., & Zinnbauer, B. J. (2000). Conceptualizing religion and spirituality: Points of commonality, points of departure. *Journal for the theory of social behaviour*, *30*(1), 51. doi.org/10.1111/1468-5914.00119

Hyland, M. E., Whalley, B., & Geraghty, A. W. A. (2007). Dispositional predictors of placebo responding: A motivational interpretation of flower essence and gratitude therapy. *Journal of psychosomatic research, 62*(3), 331-340.

Ibanez-Gonzalez, D. L., Mendenhall, E., & Norris, S. (2014). A mixed methods exploration of patterns of healthcare utilization of urban women with non-communication disease in South Africa. *BMC health services research, 14*, 658-673. doi:10.1186/s12913-014-0528-y

Jain, A., Acharya, S., & Shukla, S. (2017). Study of cognitive impairment and depression in end stage renal disease (Esrd). *International journal of medical science and clinical inventions, 4*(3), 2774-2778. doi:10.18535/ijmsci/v4i3.9

Jason, C. H. (2012). Reconciling rigor and range: Observations, experiments, and quasi-experiments in field primatology. *International journal of primatology*, *33*(3), 520-541. doi:10.1007/s10764-011-9550-7

Joshanloo, M. (2011). Investigation of the contribution of spirituality and religiousness to hedonic and eudemonic well-being in Iranian young Adults. *Journal of Happiness Studies*, *12*(6), 915–930. doi.org/10.1007/s10902-010-9236-4

Kahan, S., & Ashar, B. H. (2008). *In a page medicine*. Baltimore, MD: Lippincott Williams & Wilkins.

Kashdan, T. B., & Nezlek, J. B. (2012). Whether, when, and how is spirituality related to well-being? Moving beyond single occasion questionnaires to understanding daily process. *Personality and social psychology bulletin*, *38*(11), 1523–1535. doi.org/10.1177/0146167212454549

Keller, Q. D., Christensen, A. J., Baldwin, A. B., &Lawton, W. J. (2010). Association between Depressive symptoms and mortality risk in chronic kidney disease. *Health psychology*, *29*(6), 594-600. doi: 10.1037/a0021235

Keskin, G., &Engin, E. (2011). The evaluation of depression, suicidal ideation and coping strategies in haemodialysis patients with renal failure. *Journal of clinical nursing*, *20*(19-20), 2721-2732. doi: 10.1111/j.1365-2702.2010.03669.x

Kline, R. B. (2015). Principles and practice of structural equation modeling. Guilford publications, NY, NY.

Koenig, H. G. (2012). Religion, spirituality, and health: The research and clinical implications. *International Scholarly Research Network Psychiatry*, 1–33. doi.org/10.5402/2012/278730

Langman, L., & Chung, M. C. (2013). The relationship between forgiveness, spirituality, traumatic guilt and posttraumatic stress disorder (PTSD) among people with

addiction. *Psychiatric quarterly*, *84*(1), 11–26. doi.org/10.1007/s11126-012-9223-5

Leedy, P. D., & Ormrod, J. E. (2010). *Practical research* (9th ed.). New York, NY: Pearson.

Levey, A. S., & Coresh, J. (2012). Chronic kidney disease. *The lancet*, *379*(9811), 165–180. doi.org/10.1016/S0140-6736 (11)60178-5

Litwinczuk, K. M., & Groh, C. J. (2007). The relationship between spirituality, purpose in life, and well-being in HIV-positive persons. *Journal of the association of nurses in AIDS care*, *18*(3), 13-22. doi:10.1016/j.jana.2007.03.004

López-Larrosa, S. (2013). Quality of life, treatment adherence, and locus of control: Multiple family groups for chronic medical illnesses. *Family process, 52*(4), 685–696. http://doi.org/10.1111/famp.12034

Lum, V. M., & Bond, M. H. (2013). Examining the relation of religion and spirituality to subjective well-being across national cultures. *Psychology of religion and spirituality, 5*(4), 304-315. doi:10.1037/a00333641

McBride, J. L, Arthur, G., Brooks, R., & Pilkington, L. (1998). The relationship between a patient's spirituality and health experiences. *Family medicine journal, 30*: 122-126.

McDade-Montez, E. A., Christensen, A. J., Cvengros J. A., &Lawton, W. J. (2006). The role of depression symptoms in dialysis withdrawal. *Health psychology, 25* (2), 198-204. doi: 10.1037/0278-6133.25.2.198

Mearns, J. (2009). Social learning theory. In H. Reis & S. Sprecher (Eds.), *Encyclopedia of human relationships3*, 1537-1540. Thousand Oaks, CA: Sage.

Meezenbroek, E. J., Garssen, B., Van Den Berg, M., Van Dierendonck, D., Visser, A., & Schaufeli, W. B. (2012). Measuring spirituality as a universal human experience: A review of spirituality questionnaires. *Journal of religion and health, 51*(2), 336–354. doi.org/10.1007/s10943-010-9376-1

Mitchell, M., & Jolley, J. (2013). *Research design explained* (8th Edition). Belmont, CA: Wadsworth Cengage Learning.

National institute of Diabetes and Digestive and Kidney Disease. (2012). Understanding GFR. Retrieved from http://www.niddk.nih.gov

National Institutes of Health and Nutrition Examination Survey (1988-1994) as cited in Centers for Disease Control and Prevention. (2012). Kidney disease statistics for the United States., 16. Retrieved from http://kidney.niddk.nih.gov/kudiseases/pubs/kustats/KU_Diseases_Stats_508.pdf

National Institute of Mental Health, (2014), Mental health. Retrieved from http://www.nimh.nih.gov

National Kidney Foundation. (October, 2015). Fast Facts. Retrieved from https://www.kidney.org/news/newsroom.factsheet/FastFacts

Nimon, K., & Reio, T. G. (2011). Measurement Invariance: A foundational principle for quantitative theory building. *Human resource development review*, *10*, 198–214. doi.org/10.1177/1534484311399731

O'Collins, G., & Farrugia, E. G. (1991). *A concise dictionary of theology*. New York, Paulist Press. pp. 203.

Paloutzian, R.F., & Park, C.L. (2013). *Handbook of the psychology of religion and spirituality.* NY: The Guilford Press.

Park, C. L. (2007). Religiousness/spirituality and health: a meaning systems perspective. *Journal of behavioral medicine, 30*(4), 319–328. doi.org/10.1007/s10865-007-9111-x

Park, C. L., & Gaffey, A. E. (2007). Relationships between psychosocial factors and health behavior change in cancer survivors: an integrative review. Annals of Behavioral Medicine: *A publication of the society of behavioral medicine, 34*(2), 115–134. doi.org/10.1080/08836610701564089

Park, C. L., Sacco, S. J., & Edmondson, D. (2012). Expanding coping goodness-of-fit: religious coping, health locus of control, and depressed affect in heart failure patients. *Anxiety, stress, and coping, 25*(2), pp. 137–153.

Peteet, J.R., (1994). Approaching spiritual problems in psychotherapy: A conceptual framework. *Journal of psychotherapy practices & research, 3*(3), pp. 237-245.

Pillay, N., Ramlall, S., & Burns, J. K. (2016). Spirituality, depression and quality of life in medical students in KwaZulu-Natal. *South African journal of psychiatry, 22*(1), 1–6. doi.org/10.4102/sajpsychiatry.v22i1.731

Powell, L. H., Shahabi, L., & Thoresen, C. E. (2003). Religion and spirituality. *American psychologist, 58*(1), 36-52. doi:10.1037/0003-66X.58.1.36

Robinson, R. G., & Price, T. R. (1982). Post-stroke depressive disorders: a follow-up

study of 103 patients. *Stroke, 13*(5), 635–641. doi.org/10.1161/01.STR.13.5.635

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health education quarterly, 15*(2), 175-183. doi:CCC 0195-8402/88/020175-09

Rotter, J. B. (1954). The role of the psychological situation in determining the direction of human behavior. In M. R. Jones (Ed.), *Nebraska symposium on motivation.* Lincoln, NE: University Nebraska Press, 1955. pp. 245-269

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied*, 80(1), 1-28.

Rotter, J. B. (1989). Internal versus external control of reinforcement: A case history of a variable. *American psychologist, 45*, 489-493 doi:10.1037//00003-066X.45.4.489

Ryan, M. E., & Francis, A. J. P. (2012). Locus of control beliefs mediate the relationship between religious functioning and psychological health. *Journal of religion and health, 51*(3), 774–785. doi.org/10.1007/s10943-010-9386-z

Schlehofer, M. M., Omoto, A. M., Adelman, J. R., Omoto, A. M., & Adelman, R. (2016). How do “Religion” and “Spirituality” differ? Lay definitions among older adults, 47(3), 411–425.

Sharif Nia, S. H., Hijjati, H., Nazari, R., Qorbani, M., & Akhoondzade, G. (2012). The effect of prayer on mental health of hemodialysis patients referring to Imam Reza Hospital in Amol City. *Iranian journal of critical care nursing*, *5*(1), 29-34

Simon, M. K. (2011). *Dissertation and scholarly research: Recipes for success*(2011). Seattle, WA: Dissertation Success. Retrieved from http://www.dissertationrecipes.com

Spinale, J., Cohen, S. D., Khetpal, P., Peterson, R. A., Clougherty, B., Puchalski, C. M., Patel, S. S., & Kimmel, P.L. (2008). Spirituality, social support, and survival I Hemodialysis Patients. *Clinical journal of social nephrology, 3*(6) 1620-1627. doi: 10.2215/CJN.01790408

Strickland, B. R. (1978). Internal-external expectancies and health-related behaviors. *Journal of consulting and clinical psychology, 46*(6), 1192–1211. doi.org/10.1037/0022-006X.46.6.1192

Theofilou, P. (2011). Quality of life in patients undergoing hemodialysis or peritoneal dialysis treatment. *Elmer Press*, *3*(3), 132-138. doi: 10/4021/jocmr552w

Theofilou, P. (2012). The relationship between Religion/Spirituality and mental health in patients on maintenance dialysis. *Journal of women's health care*. S2:001 doi: 10.4172/2167-0420 s2-001

Theofilou, P. (2012). Self-Reported functional status: An important predictor of mental health outcomes among chronic dialysis patients. *European journal of psychological assessment, 29*(4), 276-282. doi:10.1027/1015-5759/a00015

Torun, E., & April, K. (2006). Rethinking individual control: Implications for business managers. *Journal for convergence*, *7*(1), 36-39.

U. S. Department of Health and Human Services- National Institutes of Health. (June, 2012). Kidney Disease Statistics. Retrieved from

http://www.kidney.niddk.nih.gov

United States Renal Data System (2016) USRDS annual data report: epidemiology of kidney disease in the United States. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; (2016). The data reported here have been supplied by the United States Renal Data System (USRDS). The interpretation and reporting of these data are the responsibility of the author(s) and in no way should be seen as an official policy or interpretation of the U.S. government.

Wallston, B., & Wallston, K. (1978). Locus of control and health: a review of the literature. *Health education monographs,* 6, 107–117. Retrieved from http://heb.sagepub.com/content/6/1/107.short

Wallston, K. A., & Wallston, B. S. (1981). Health locus of control theory in diabetes: a worthwhile approach in managing diabetic foot ulcers? *Research with the locus of control construct, 19*(6), 189–243. doi.org/10.1007/s12529-011-9185-2

Wallston, K. A., & Wallston, B. S. (1981).*Who is responsible for your health: The construct of health locus of control* In: Sanders, G. and Suls, J. (eds). *Social psychology of health and illness.* Hillsdale, MI: Lawrence Erlbaum & Associates, pp. 65-95.

Watson, R. (2015). Quantitative research. *Nursing standard, 29*(31), 44-48.

Williams, C. (2007). Research methods. *Journal of business & economic Research, 5*(3).

Wong-McDonald, A., & Gorsuch, R., (2004). A multivariate theory of god concept, religious motivation, locus of control, coping, and spiritual well-being. *Journal of psychology and theology, 32*(4), 318-334.

Ying, Y.W. (2009). Religiosity, spirituality, mindfulness, and mental health in social work students. *Critical social work, 10*(1), 235-257.

Zampieri, M., & Pedroso de Souza, E. A. (2011). Locus of control, depression, and quality of life in Parkinson's disease. *Journal of health psychology, 16*(6), 980–987. doi.org/10.1177/1359105310397220