2020

Relationship of Complementary Modes of Agency in the Self-Management of Diabetes

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Walden University
2020

Abstract

Relationship of Complementary Modes of Agency in the Self-Management of Diabetes

by

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Nursing

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Abstract

Effective control of type-2 diabetes mellitus (DM2) is essential for minimizing the likelihood of developing comorbidities that result from poor glycemic control. Extensive self-management considerations are required of people with DM because they must actively participate in their own care and engage with other socially-based sources of self-management support. The purposes of this quantitative study were to determine if there is an association between (a) the extent that the individual mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year and (b) the extent that the proxy mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year and (c) the extent that the individual mode and proxy mode of agency are employed in diabetes self-management, among adults diagnosed with DM2 for at least one year, and the quality of diabetes control, as measured by individuals' HbA1c. The study sample consisted of 41 non-newly diagnosed adults with DM2 and was drawn from a large tertiary medical center. Simple and multiple logistic regression analyses showed no statistically significant associations between individual and proxy agency, and the quality of DM2 self-management. Findings from this study could provide nurses and other healthcare professionals with information to effectively focus their efforts in terms of supporting patients' diabetes self-management and, in turn, promote higher quality DM2 self-management which will effect positive social change. Future research should explore the complementary nature of individual and proxy agency in terms of self-management of DM2.

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Dedication

I dedicate this dissertation to my wife, Nichole, and my boys, Graham and Everett. I am so very grateful for Nichole's unwavering support throughout my studies. Without a life partner as understanding and encouraging as she has been, my success in this program would not have been realized. Nichole, Graham, and Everett have sacrificed so much over the years in order to accommodate my progress through this dissertation process and all of the coursework that has led up to it. I am truly blessed to have had such an amazing and wonderful family by my side every step of the way. I love and appreciate you more than words can express.

I also dedicate this work to my Mom, Helen, and Dad, Lars. Thank you both so much for believing in me and supporting me in all of my academic endeavors over the years. Despite your disappointment in my dropping out of high school at 16 years of age, and having to look on as I personally struggled in many aspects of life into early adulthood, you continued to have faith in me. I am eternally thankful for all of the love and support you provided over the years. It is because of both of you that I am now living in a dream.

Acknowledgement

Integral to the successful completion of this dissertation were each member of my dissertation committee. I am sincerely grateful for the support, guidance, and patience of my committee's chairperson, Dr. Leslie Hussey. Thank you, Dr. Hussey, for all you have done to make my successful completion of this study a reality. I am also extremely grateful for the amazing support and guidance provided by my second committee member, Dr. Janice Long. You two formed what I truly believe to be a dream team. The knowledge and expertise you both provided has without-a-doubt been invaluable throughout the final leg of this fascinating journey. Dr. Hussey and Dr. Long, you were the first to congratulate me with the achievement of each significant milestone, you were the first to call me "Dr. Romo", and you will be the first ones that come to my mind as I reflect on this awesome experience tomorrow and beyond.

I would also like to thank Dr. Mary Martin for the support she provided me and my committee as the University Research Review member. Additionally, I wish to thank Dr. Zin Htway for his statistics and methodological support and guidance throughout my research study. Your enthusiasm for teaching and learning is truly contagious. I also wish to thank and extend my deep appreciation for Walden University and its many wonderful student resources, especially its library staff. Walden library staff are absolutely top notch and the wealth of support they provided has also been key to my success.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Diabetes mellitus (DM) is a disorder of the metabolism which inhibits the body's ability to properly control glucose in the blood, either due to absence of insulin—a hormone produced by the pancreas for regulating the blood glucose—or an inability of the body to properly use it. As a result, DM causes those afflicted with it to have high blood glucose levels, also known as hyperglycemia (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2016). The term DM comprises two forms of the condition: type 1 and type 2. Type 1 diabetes (DM1) is characterized by a loss of function with insulin-producing cells in the pancreas, resulting in significant reduction or complete absence of insulin in the blood. With type-2 diabetes (DM2), the pancreas continues to produce insulin; however, the body becomes resistant to it (NIDDK, 2016). While both types of DM require the person with diabetes to closely monitor blood glucose levels, follow diabetes-specific dietary guidelines, and self-administer insulin or other medications, DM2 represents the most prevalent form of diabetes (NIDDK, 2016). People with DM2 account for approximately 90% of all diabetes diagnoses (Chahardah-Cherik, Gheibizadeh, Jahani, & Cheraghian, 2018). The quality of health outcomes and disease control among people with DM is dependent on their own willingness and ability to self-manage their condition (The MacColl Center, 2016). The self-management process involves skill-building, self-efficacy, and emotional management. It is also an interactive process between the patient and others involved in their care—individual and proxy agency, respectively—that influences outcomes related to chronic conditions (Bandura, 2001; Moore et al., 2016).

According to Bandura (2001), there are three modes of human agency: individual (i.e., personal), proxy, and collective. These modes comprise all human agency. Individual agency represents any influential behaviors and actions an individual applies to courses of action through their own power. Proxy agency refers to influential behaviors and actions performed on behalf of another individual to influence a course of action for that individual. Collective agency refers to the collective efforts of multiple individuals aimed at achieving a shared desirable outcome. Thus, human agency encompasses all actions that one performs on behalf of themselves and others (Bandura, 2001). While individuals are generally expected to primarily use their own individual agency in terms of influencing courses of action in their daily lives, some use of proxy agency is healthy and even necessary to successfully achieve desired outcomes (Bandura, 2001). Thus, these two modes of agency are complementary in terms of peoples' efforts to meet goals and realize favorable results from their actions.

The role of each of the three modes of agency is important in chronic illness self-management processes, and problems can arise because of an improper balance in their use (Kennedy et al., 2014). Thus, incorporating modes of agency disproportionately with self-management efforts can be detrimental to achieving desirable health outcomes (Bandura, 2001). For example, some individuals with increased needs for self-managed chronic care may be reluctant to allow for others to provide a supportive role in their care, no matter how small the role may be. Conversely, other people with chronic diseases may be overly dependent on others to carry out disease management needs, thereby relinquishing too much control of their condition to others. Both examples may represent less-than-ideal behaviors in the context of self-managed care. Thus, not only are individual and proxy agency significant in supporting health-promoting behaviors, but also there is a delicate balance in terms of the degree to which each is incorporated into self-management regimens to maximize the quality of health outcomes.

Information pertaining to this research project comprises the entirety of Chapter 1. First, in the introduction and background sections, literature is discussed pertaining to DM, its prevalence in society, implications for the health and quality of life of people living with the condition, and positive social change through improved understanding of complex and dynamic processes, among people living with DM2 and individuals in supportive roles, involved with its management. Additionally, the background section will include identification of the gap in knowledge pertaining to relationships between individual and proxy modes of human agency in the context of DM2 self-management. The problem statement will include a description of the social issue this study aims to address. Next, the purpose of the study will be identified, followed by a section presenting the research questions and respective hypotheses. The theoretical framework will be described, followed by identification of assumptions that underlie the theory. The nature of the study, definitions, limitations, and scope and delimitations are then addressed. Finally, the study’s significance and implications for social change are explained.

Background

In recent years, there has been a significant shift from a healthcare system that has focused primarily on acute care-related patterns of disease to one that increasingly values the chronic care aspect of disease management processes. Advances in healthcare treatments for a variety of health conditions have allowed individuals to live longer, which has resulted in more individuals living in a state of chronic illness. Because most people with chronic health conditions such as DM reside in their homes and in the community at large, it is recognized that the bulk of disease management efforts also take place in this setting (Richard & Shea, 2011; Tol et al., 2015). No longer is it realistic to assume that maximizing quality in health outcomes is achievable with a system that has historically treated patients as passive recipients of healthcare services, largely beholden to the best intentions of healthcare providers. Instead, it has become necessary for the patient with chronic-disease health needs to be responsible for a much greater proportion of disease-related management burden, within their home and their community.

According to the Centers for Disease Control and Prevention (CDC, 2017a), approximately 30.3 million U.S. citizens—nearly one in ten people—are currently afflicted with DM, making this health condition a prominent social issue. DM is a chronic and progressive disease that imposes a substantial burden on the individuals it afflicts, the healthcare system that treats them, and, by extension, society at large. There is a relationship between quality of diabetes self-management and clinical benefits, as well as economic benefits. Regular monitoring of blood glucose is known to be an integral component of DM self-management for optimizing health outcomes (NIDDK, 2016). However, according to the CDC (2017b), approximately 63% of people with DM perform the recommended daily glucose monitoring. In addition to blood glucose monitoring, proper DM self-management practices entail adherence to healthy dietary choices, self-administration of medications and treatments, regular physical activity, and other lifestyle considerations. Additionally, because DM self-management can be perceived as a daunting challenge to people living with the condition, coping issues are also often experienced, which may lead to added complications of stress and depression (NIDDK, 2016). As a result of the extensive self-management considerations that are required of them, people with DM must not only actively participate in their own care but also engage with socially-based sources of self-management support (Bandura, 2001; Stern, 2019).

No studies have been identified that have explored DM2 self-management practices of adults who have been diagnosed at least 1 year in terms of modes of human agency. This study used a descriptive correlational approach to explore diabetes self-management by analyzing the dynamic relationship between individual agency and proxy agency, and how that relationship affects glycemic control. The objective of this study was to determine if there is an association between socially and individually-mediated disease self-management factors and the quality of glycemic control among non-newly diagnosed adults with DM2 using a quantitative research design. Exploring the relationship between the independent variables of individual agency and proxy agency and the dependent variable quality of diabetes control among non-newly diagnosed adults with DM2 served to generate new knowledge for informing the practice of nurses and other healthcare professionals and thereby enhance the quality of self-management support provided to patients.

Problem Statement

Health-promoting behaviors such as self-monitoring and self-treatment of people who live with diabetes represent key factors in determining the quality of DM self-management practices and disease control (Chahardah-Cherik et al., 2018). In 2014, approximately 452,000 people were hospitalized due to hyperglycemia or hypoglycemia (CDC, 2018a). The percentage of people with diabetes who performed the recommended daily self-monitoring of blood glucose was consistently low in the years 2011 through 2015: 64.2%, 63.5%, 64.1%, 63.5%, and 63.0%, respectively (CDC, 2017b).

Studies focused on individual aspects of agency that are characteristic of each of the three modes of human agency have shown they have an impact on the quality of health-promoting behaviors in the setting of DM self-management efforts (Kennedy et al., 2014; Koponen, Simonsen, & Suominen, 2017). Research findings have informed the body of knowledge and helped to improve practices among health providers aimed at addressing home and community-based health care needs of people with DM (Kennedy et al., 2014; Koponen, Simonsen, & Suominen, 2017). However, there is a paucity of scientific knowledge pertaining to the influence of these agentic-focused behaviors on the self-management efforts of people with DM. The literature review conducted for this study suggested an absence of information exploring the complementary nature of modes of human agency, features that characterize an optimal balance between them for maximizing quality of self-management efforts and health outcomes, and factors that influence the degree to which each mode is used. Gaining an understanding of the relationship between individual agency and proxy agency, the influential factors involved in shaping the distribution and extent to which each of these two modes of human agency are used, as well as identifying characteristics of a healthy balance between them in terms of DM self-management efforts will help inform best practice approaches for healthcare professionals in supporting health-promoting behaviors among their patients.

Purpose of the Study

The purposes of this quantitative study were to determine (a) if there is a relationship between the individual mode of human agency and the quality of diabetes control among adults who have been diagnosed with DM2 for at least 1 year and (b) if there is a relationship between proxy mode of human agency and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year. A descriptive correlational design was used to describe individual and proxy modes of agency, assess relationships between them, and accordingly assess the quality of diabetes control among adults who are non-newly diagnosed with DM2.

Research Questions and Hypotheses

RQ1: What is the relationship between the individual mode of agency in diabetes self-management among adults diagnosed with DM2 for at least 1 year and quality of diabetes control as measured by their glycated hemoglobin (HbA1c)?

Ho1: There is no relationship between the individual mode of agency in diabetes self-management among adults diagnosed with DM2 for at least 1 year and quality of diabetes control as measured by their HbA1c.

Ha1: There is a relationship between the individual mode of agency in diabetes self-management among adults diagnosed with DM2 for at least 1 year and quality of diabetes control as measured by their HbA1c.

RQ2: What is the relationship between the proxy mode of agency in diabetes self-management among adults diagnosed with DM2 for at least 1 year and quality of diabetes control as measured by their HbA1c?

Ho2: There is no relationship between the proxy mode of agency in diabetes self-management among adults diagnosed with DM2 for at least 1 year and quality of diabetes control as measured by their HbA1c.

Ha2: There is a relationship between the proxy mode of agency in diabetes self-management among adults diagnosed with DM2 for at least 1 year and quality of diabetes control, as measured by their HbA1c.

Measurement of Variables

The dependent variable for this study was quality of DM2 self-management as measured by participants' most recent HbA1c lab results. HbA1c is a measure of the average amount of glucose that has been attached to hemoglobin over the 3-month period preceding the collection of the blood sample, indicative of the quality of glycemic control among people with DM. Whereas high levels of HbA1c indicate the presence of DM, low levels of HbA1c indicate well-controlled or absent DM (National Institutes of Health [NIH], 2018). According to the NIH (2018), HbA1c values below 5.7% are desirable and considered to be normal, while values between 5.7% and 6.4% fall into the pre-diabetes category and 6.5% or greater indicates the presence of DM. According to the American

Diabetes Association, as cited by the NIH (2018), HbA1c levels below 7% in the presence of a DM diagnosis are considered desirable. Therefore, this study used this threshold in determining quality of participants' diabetes self-management efforts.

The independent variables were individual agency and proxy agency, which were measured using the Chronic Illness Resources Survey (CIRS) instrument. According to Glasgow, Strycker, Toobert, and Eakin (2000), the CIRS instrument is designed to measure eight important aspects of self-managed care in the presence of chronic illness: healthcare provider and team, friends and family, personal, neighborhood, community, health-related policy and media, community organizations, and employment. Each of these categories are measured with six to ten items using a Likert-type scale from 1 (not at all) to 5 (a great deal; Glasgow et al., 2000). The strength of these categories, according to participants' ranking of their respective items, indicated the degree to which individual and proxy modes of agency were represented in their DM2 self-management regimens, whereas higher scores and greater values meant more significant roles in terms of DM2 self-management efforts.

Theoretical Framework

The theoretical framework for this study was the theory of diabetes self-care management (TDSCM). The TDSCM integrates key concepts and constructs of Dorothea Orem's nursing theory of self-care (TS-C) and Bandura's theory of self-efficacy (TS-E) into one cohesive diabetes-focused nursing theory, making the TDSCM a favorable framework for analyzing relationships between modes of individual agency and proxy agency among self-managed adults with diabetes. Orem's key theoretical assumption is that self-care agency corresponds with and likely influences the degree to which patients comply with recommended self-care needs. In turn, the quality of patients' self-care behaviors is strongly associated with health outcomes. Individual and social factors influence the quality of individuals' behaviors and subsequent wellbeing and health-related outcomes. More detailed information regarding the TDSCM can be found in Chapter 2.

Nature of the Study

The nature of this study was descriptive and quantitative. Quantitative research involves understanding the relationship between two or more variables. In line with quantitative methodology, the CIRS instrument was used to collect data using a series of Likert-type items with numerical scoring. Quality of DM2 self-management was analyzed using numerical values for participants' HbA1c, which measures glycemic control over the most recent 2 to 3-month timeframe. I planned to explore this relationship quantitatively using Pearson's *r* and multiple regression to generate a deeper understanding of the complementary nature of individual and proxy agency, as well as provide further insight into dynamic and complex processes regarding self-managed care for chronic conditions.

Definitions

Blood Glucose: The most prominent form of sugar in the blood which serves as a primary energy source for the body (American Diabetes Association [ADA], 2019).

Diabetes mellitus (DM): A chronic health condition of the metabolic system that is characterized by the body's inability to maintain optimal blood glucose levels (World Health Organization [WHO], 2019).

Diabetes self-management: Ongoing personal efforts to manage one's own diabetes, which involves regular monitoring of blood glucose, medication regimen adherence and regulation, and strict dietary and lifestyle choices aimed toward achieving optimal blood glucose control (ADA, 2019).

Diagnosis: The determination of presence of a health condition by a healthcare provider, based on signs and symptoms that are observed and experienced (ADA, 2019).

Glycated hemoglobin (HbA1c): A measure of the average amount of glucose that has been attached to hemoglobin over a period of up to 3 months prior to collection of the blood sample, which provides an indication of the quality of glycemic control among people with DM (NIH, 2018).

Human agency: All human-generated actions aimed at influencing human functioning and courses of action on behalf of oneself and others (Bandura, 2001).

Hyperglycemia: Elevated levels of glucose in the blood (ADA, 2019).

Hypoglycemia: Deficient levels of glucose in the blood (ADA, 2019).

Individual agency: A personally mediated mode of human agency involving intentional efforts and actions that are produced by an individual to influence their own functioning and courses of events (Bandura, 2001).

Insulin: A hormone used by the body to regulate blood glucose and convert glucose to energy (ADA, 2019).

Proxy agency: A socially mediated mode of human agency wherein other individuals exercise influence on another person's functioning and courses of events in order to achieve desirable outcomes for them (Bandura, 2001).

Type-2 diabetes mellitus (DM2): A type of diabetes characterized by elevated levels of blood glucose that result from a shortage of insulin in the body or an impairment in the body's ability to properly use insulin (ADA, 2019).

Assumptions

In this study, an assumption was made that participants with DM2 possess a desire to control their blood glucose. It was also assumed that study participants provided truthful and accurate responses to all items in the survey. Lastly, regarding the survey instrument itself, it was assumed that the study's independent variables were accurately represented and measured.

Scope and Delimitations

For this study, I used a quantitative methodology and therefore did not explore rationales for why participants behave in a given way. The state of participants' self-management behaviors was explored focusing only on mode of agency and specific diabetes treatment regimens (e.g., insulin injection, oral diabetic agent, dietary practices, physical activity) were not included in analyses. The scope of this study included participants diagnosed with DM2 as adults and did not include any other form of diabetes, such as DM1 or gestational, due to the uniqueness of conditions under which each type of diabetes develops. DM1 is most often diagnosed in children and requires very strict and rigorous management efforts for individuals to stay alive, while gestational diabetes is usually temporary and develops as a result of pregnancy in women (NIDDK, 2016). Therefore, each type of diabetes tends to be distinct. All participants in this study were drawn from the patient database of a large Midwestern tertiary medical center that has a nationwide and international patient base. Study participants were adults 18 years of age and older who have been diagnosed with DM2 for a minimum of 1 year. Individuals who were diagnosed with prediabetes, DM1, or gestational diabetes, had a primary language other than English, and possessed cognitive impairments were excluded.

The TDSCM was used for the theoretical framework for this study; however, other theoretical frameworks that were considered for this study were Bandura's social cognitive theory (SCT) and Orem's self-care deficit theory of nursing (SCDTN). From a perspective of human agency, a human agent intentionally wields influence or otherwise takes action over courses of events in their lives and their own functioning. The SCT is grounded in the notion of reciprocal causation, where human functioning results from intrapersonal forces, behavioral characteristics, and environmental influences (Bandura, 2012). Functional capacity is the product of mutual interactions between personal, behavioral, and environmental factors (Bandura, 2001). The SCDNT involves synthesizing knowledge about self-care, self-care agency, self-care demand, self-care deficit, and nursing agency and explains the relationship between action capabilities of patients and self-care demands. When self-care demands are greater than the capabilities possessed by the patient, a deficit is present, and nursing practice represents a response to the deficit (Orem, 1991). While the SCT was deemed useful for informing conceptual elements of this study, specifically pertaining to the modes of human agency, the SCDTN would have been useful in terms of delineating the concepts of self-management and human agency within the context of nursing practice and additional guidance for practical application of study findings. However, the TDSCM used for this study is also a nursing and diabetes-focused theory, while incorporating constructs and concepts related to human agency through SCT, making it more suitable for this study than SCT or SCDNT by themselves.

Pearson’s *r* and multiple regression were the planned methods of data analysis for this study, however, analysis of covariance (ANCOVA) was also considered. ANCOVA is a method used for assessing whether mean outcome scores vary across distinct groups while statistically adjusting for certain participant characteristics within each group (Warner, 2013). According to Warner (2013), ANCOVA is most suitable for experimental and quasi-experimental research designs. No research existed involving these two fundamental modes of human agency (i.e., individual and proxy) and associations between their roles in diabetes self-management and quality of glycemic control. Thus, the scope of this study entailed a focus exclusively on three variables—the two independent variables of individual agency and proxy agency, and the dependent variable of glycemic control—and adjusting for other nuanced characteristics was deemed to be premature in this context of being the first study exploring the quality of DM2 self-care management according to modes of human agency. Because the population from which this study was drawn includes any adult individuals who have been diagnosed with diabetes for at least 1 year, those 18 years and older were allowed to participate.

Limitations

Some limitations with this study were identified. First, the participant sample was drawn from a single setting. Although the setting from which participants were recruited is a very large tertiary medical center, drawing a large number of patients nationwide and internationally, the majority of its patients reside in the Midwestern region of the United States, which likely limited the generalizability of results across all diverse regions of the country.

Methodological limitations inherent to Pearson's *r* and multiple regression were also identified. Pearson's *r*, often used for evaluating strengths of linear relationships between two measurable variables, requires large sample sizes. This is because the strength of the effect generated from Pearson's *r* data calculation is vulnerable in the presence of extreme outliers when the sample is small, especially if $N < 100$ (Warner, 2013). A limitation of multiple regression occurs when two independent variables are highly correlated with each other, also known as multicollinearity. The presence of multicollinearity makes it difficult for the regression model to separate unique predictive capabilities of both independent variables. Additionally, in a similar way to Pearson's *r*, statistical value using multiple regression can be limited with smaller sample sizes. Lastly, the value of regression model output can be limited by a narrower range of scores. To promote a sufficient range in scores, it was important to draw a participant sample with a wide range of inclusion characteristics.

Significance

According to Lenzen, Daniëls, van Bokhoven, van der Weijden, and Beurskens (2015), there is a need for more research aimed at improving understanding of effective skills and assessments aimed at guiding patient care among health care providers for goal setting processes in self-managed care. Dwarswaard and van de Bovenkamp (2015) stated that further research is needed that focuses on the patient side of the professional-patient relationship, especially when it comes to ethical dilemmas presented in situations where patients are conflicted with the need for more autonomy (i.e., individual agency) while having health care providers impose disease treatments and monitoring with a primary intent to maximize health outcomes (i.e., proxy agency). While it is understood that the performance of health-promoting behaviors among people with DM, such as self-monitoring and self-treatment, play a crucial role in determining the quality of DM self-management practices and health outcomes, little can be found in the literature concerning the factors that influence these behaviors. Based on the literature review performed for this study, no literature exists exploring the complementary nature of the primary modes of human agency. For health professionals to be able to maximize the effectiveness of care provided to patients with diabetes, it is necessary to possess an understanding of what constitutes a healthful balance between individual and proxy modes of agency for individual patients. Social change will be positively supported by guiding social processes among the population of people with DM2 and supportive individuals in their lives, related to DM2 self-management and support in a manner that more effectively controls the condition, thereby reducing negative health consequences and burden on health care resources resulting from poor control of DM2. Generating new knowledge related to this critical aspect of health-promoting behavior will lead to positive social change by informing best practices among health care providers, thereby enhancing practice-related approaches with which health care providers promote high quality self-management efforts among their patients with DM, further enhancing efficiency and effectiveness of patient care. Additionally, the resource burden on the healthcare system could further be relieved as a result of reduced demand on services used for dealing with this complex and resource-taxing condition, which can also lead to positive social change.

Summary

DM is a disorder of the metabolism which inhibits the body's ability to properly control glucose in the blood, either due to absence of insulin or an inability of the body to effectively convert it to energy. Therefore, people with DM are required to closely monitor blood glucose levels, carefully follow diabetes-specific dietary guidelines, and self-administer insulin or other medications to control blood glucose levels, as uncontrolled blood glucose can lead to a number of serious comorbidities (NIDDK, 2016). The quality of health outcomes and disease control among people with DM depends extensively on their own willingness and ability to self-manage their condition (The MacColl Center, 2016). Self-management of DM involves interactive processes between the patient and others involved in their care. Individual agency and proxy agency are two of the three modes of human agency, and incorporating modes of agency disproportionately into self-management efforts can prevent desirable health outcomes.

Therefore, it is important for nurses, providers, and other healthcare professionals and stakeholders who offer a supportive role in DM self-management to enhance their understanding of this aspect of DM self-management processes. Using the TDSCM as the theoretical framework, this study was designed to explore behaviors and perceptions related to self-management of DM2 according to the modes of individual and proxy agency among adult individuals who have been diagnosed with DM2 for at least 1 year. Participants' HbA1c was used to evaluate quality of DM2 self-management efforts.

No studies have been identified that have explored DM2 self-management practices of adults who have been diagnosed at least 1 year in terms of modes of human agency. This study helped to fill this gap in knowledge by deepening health practitioner understanding of the relationship between individual and proxy agency, the influential factors involved in shaping the distribution and extent to which each of the modes of human agency are used, and identifying characteristics of a healthy balance in terms of DM self-management efforts, which will help inform best practice approaches for healthcare professionals with supporting health-promoting behaviors among their patients.

In Chapter 2, I will include a review of literature relevant to this study. A description of the literature search strategy is provided, followed by a description and explanation of the theoretical framework that was chosen to support this study. Additionally, study variables and key concepts are described based on literature.

Chapter 2: Literature Review

Introduction

Over 30 million U.S. citizens are currently living with DM (CDC, 2017a). In 2014, approximately 452,000 people with diabetes were hospitalized due to hyperglycemia or hypoglycemia (CDC, 2018a). As of 2015, 63% of U.S. adults with DM perform recommended daily self-monitoring of blood glucose, which along with other important lifestyle factors such as diet and physical activity, has been identified as a critical activity for optimizing DM self-management outcomes.

The purposes of this quantitative study were to determine (a) if there is a relationship between the extent that the individual mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least 1 year and (b) if there is a relationship between the extent that the proxy mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year. Findings generated from this study can be used to inform practices of nurses and other health care professionals in terms of promoting and supporting optimal DM self-management efforts of their patients. This chapter will include literature regarding this topic as well as the theoretical framework.

Literature Search Strategy

The literature review was largely informed by peer-reviewed journal articles. Some secondary sources were also used to support a more comprehensive understanding of the topic. The Walden University Library facilitated using the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, PsycINFO, and SocINDEX. The PsycTESTS database was searched in order to locate appropriate instruments for measuring the independent variables. Seminal works by Bandura were used to describe key study concepts and constructs. Google Scholar was used for carrying out the citation chaining approach, which involved identifying additional useful sources of literature by exploring cited work within sources already obtained, which improved efficiency and accuracy in locating valuable and relevant sources of information. The web sites of governmental agencies were also searched, including the CDC, NIH, NIDDK, and United States Census Bureau (USCB). Additionally, reference lists also served as a means of identifying scholarly works.

A variety of keywords and terms were used to focus the search for literature relevant to the study topic: *diabetes*, *chronic*, *illness*, *disease*, *self-manage*, *self-care*, *complementary*, *complementary nature*, *balance*, *human agency*, *proxy agency*, *personal agency*, *individual agency*, *Bandura*, *autonomous*, *family support*, *social*, *social support*, *community support*, and *provider support*. In all, 72 articles were identified as potentially useful. The majority of literature was published between 2014 and 2019. However, some older literature was deemed valuable to inform and guide research efforts and enhance my understanding of key concepts.

Theoretical Framework

The TDSCM served as the theoretical framework for this study. Originally developed by Sousa and Zauszniewski, the TDSCM integrates key concepts and constructs of Orem’s TS-C and Bandura’s TS-E. Figure 1 shows relationships between key concepts of TS-C and TS-E supporting the framework for the TDSCM.

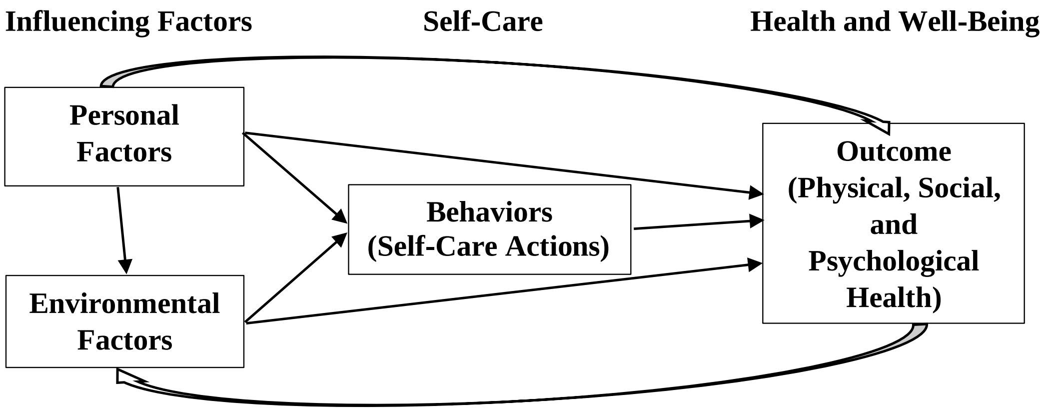

Figure 1. Conceptual framework of the theory of diabetes self-care management; a synthesis of the theory of self-care and self-efficacy theory. From “Toward a Theory of Diabetes Self-Care Management,” by V. D. Sousa and J. A. Zauszniewski, 2005, *The Journal of Theory Construction and Testing, 9*(2), p. 62. Copyright 2005 by Tucker Publications, Inc. Adapted with permission.

Integral to the TS-C is the notion that people perform learned actions according the context of a given unique point in time, social surrounding, and physical location, meaning circumstances for patients are fluid rather than static (Orem, 1991). According to Orem (1991), people perform such actions to control factors involved with regulation of personal function and growth in the interest of promoting and supporting life, health, and wellbeing. This process also includes individuals’ performance of actions on the behalf of other people, for the same purposes (Orem, 1991). There are four important theoretical assumptions of the TS-C.

Individuals have the capability to deliberately perform therapeutic actions of self-care under varying life circumstances, a process called self-care agency, and thereby achieve desirable outcomes related to maintenance of health and wellbeing (Orem, 1991; Sousa & Zauszniewski, 2005). Self-care agency corresponds with and likely influences the degree to which patients comply with recommended self-care needs (Sousa &

Zauszniewski, 2005). Similar to individual agency, self-care agency refers to the person's ability to carry out actions of self-care on behalf of oneself, in an effort to produce desirable outcomes. Additionally, the quality of an individual's self-care behaviors is positively associated with health outcomes (Sousa & Zauszniewski, 2005).

According to Orem (1991), people possess the ability to develop skills and maintain motivation necessary for optimal self-care practices. According to Orem, as cited in Sousa and Zauszniewski (2005), motivation is among the key personal capacities required for optimal self-care performance. Individuals' motivation to enhance behaviors in terms of their efforts to achieve desirable outcomes is positively or negatively impacted by environmental factors, which include socially mediated modes of support (Sousa & Zauszniewski, 2005). Requisites for optimal self-care performance as well as the value placed on self-care also vary in extent according to one's cultural group, family, and personal belief system (Denyes, Orem, & Bekel, 2001). People are capable of identification and appraisal of self-care needs for themselves and others, and the development of strategies for the purpose of meeting needs that they identify and developing health-promoting habits (Orem, 1991).

TS-E

Self-efficacy refers to the confidence or belief one has in their ability to be successful in terms of performing activities of daily living in a manner that allows them to achieve desirable outcomes and avoid outcomes that are deemed undesirable (Sousa & Zauszniewski, 2005). All guiding factors and motivating behaviors are based on the central belief that one is capable of influencing courses of actions (Bandura, 2001).

Individuals' self-efficacy and outcome expectations are closely associated with the quality of self-care performance and the ability to modify behaviors (Sousa & Zauszniewski, 2005). The TS-E serves as a framework for research that is aimed at improving understanding of self-directed thought processes regarding human motivation and action. Additionally, the TS-E identifies unique conditions that affect the long-term influence of self-efficacy on an individual's quality of functional performance.

TDSCM

The TDSCM integrates important variables from the TS-C and TS-E, including self-care agency, social support, diabetes knowledge, and diabetes self-management; and self-efficacy, social support, diabetes self-management, and blood glucose control, respectively (Bandura, 1986). As a diabetes-focused nursing theory, the TDSCM presents a suitable framework for analyzing relationships between the modes of individual agency and proxy agency, and the quality of diabetes control among people who self-manage their DM (Gurmu et al., 2018; Sousa & Zauszniewski, 2005). According to Bandura (2001), the concept of human agency—driven via individual, proxy, and collective modality—is described as a product of mutual interaction between individual, behavioral, and environmental factors. The TDSCM research framework (see Figure 2) is designed to describe testable relationships for the purpose of ascertaining the value of individual and environmental factors in the setting of primarily self-managed DM, and in the context of supportive nursing care (Sousa & Zauszniewski, 2005). Personal and environmental factors influence the quality of individuals' behaviors, subsequent well-being, and health-related outcomes (Gurmu et al., 2018). The personal factors refer to a variety of demographical characteristics such as highest level of education, age, gender, self-efficacy, knowledge of diabetes, marital status. Aspects of social support primarily comprise the environmental factors (Gurmu et al., 2018).

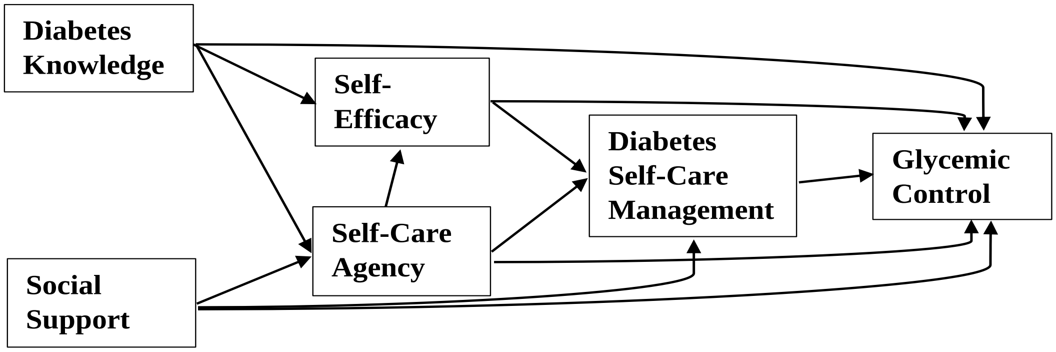

Figure 2. Research model for application to diabetes self-care management, based on the theory of diabetes self-care management. From "Toward a Theory of Diabetes Self-Care Management," by V. D. Sousa and J. A. Zauszniewski, 2005, *The Journal of Theory Construction and Testing, 9*(2), p. 62. Copyright 2005 by Tucker Publications, Inc. Adapted with permission.

Application of TDSCM In Previous Research

Gurmu et al. (2018) reported on a study that was performed using the TDCSM-based framework, which aimed to explore a variety of factors that were shown to have an influence on hospitalized patients with diabetes and how those factors may be associated with the quality of self-care behaviors. According to Gurmu et al. (2018), the TDSCM was selected as a framework for the study due to its cultural applicability and the facilitation it afforded for analyzing relationships between variables based on the aforementioned personal and environmental factors. Additionally, the TDSCM is designed to provide framework that offers applicability of findings to practices of health care providers in supportive roles for patients self-managing their DM (Sousa & Zauszniewski, 2005). Using multiple regression analysis, results of the study showed a variety of important factors served as statistically significant predictors (CI = 95%, $p < 0.05$) of higher quality diabetes self-care efforts, including: holding increased diabetes-related knowledge, self-efficacy, social support, secondary school education, and length of time living with diabetes (Gurmu et al., 2018).

Human Agency

Human agency is conceptualized as the deliberate influence people generate toward life processes, trajectories, and functions (Bandura, 2001). The term agent has a Latin root that means to act, conduct, guide, govern, and drive (George, 2016). According to Bandura (2001), human agency entails the understanding that people "are contributors to their life circumstances, not just products of them" (p. 164). The concept of human agency represents all that humans do to influence life circumstances on behalf of themselves and others. Bandura's social cognitive theory (SCT) categorizes human agency into three distinct forms, or modes, of agency: individual, proxy, and collective. Optimal personal functioning requires a combination of all three modes (Bandura, 2001).

Individual Agency

According to Bandura (2006), individual agency is the mode of agency that is performed on an individual basis where a person directly influences their own functioning, as well as the courses of events in their lives. A fundamental component to individual agency is self-efficacy. Self-efficacy is the belief a person has in their own ability to carry out any actions deemed necessary for achieving desirable outcomes. If a person does not believe they have the capability to affect change in life events, they will lack incentive to carry out needed actions and to be persistent with their efforts as challenges are confronted (Bandura, 2004). However, in many instances people do not possess immediate control over conditions and events that have a direct impact on their lives. Nor do humans have the capability or time to optimally manage every aspect of their lives on their own. Therefore, people turn to the use of a socially mediated mode of agency that is proxy agency (Bandura, 2006).

Proxy Agency

Proxy agency refers to the delegation of actions to other individuals that are deemed to be better equipped or otherwise more appropriate to execute in the pursuit of desired outcomes. The proxy mode of human agency acknowledges that people lack full control over all environmental elements, such as established institutional practices and any number of other social circumstances. Therefore, in these situations, proxy agency is used to achieve their sense of security, well-being, and desired outcomes. That is, people pursue desired outcomes through resources, expertise, influence, and power held by another individual. The proxy mode of agency acknowledges that, oftentimes, to successfully function, it is necessary to incorporate some degree of proxy agency in order to free up needed time and energy for the management of other happenings in one’s life (Bandura, 2001). According to Bandura (2004), the quality of health among a nation’s population is a social matter, requiring socially-based efforts, as well as a matter of individual responsibility.

Collective Agency

Collective agency refers to the mode of agency that involves the collective strength of multiple people for achieving a shared desirable outcome. Through collective agency, goals are accomplished from the sharing of knowledge, purpose, and abilities held by individual group members. Collective agency is driven by a synergy among members that requires active participation and interaction (Bandura, 2001).

Self-Care, Self-Care Agency, and Self-Management

According to Denyes, Orem, and Bekel (2001), self-care can be defined as a function of human-generated control over one's own life processes. Self-care is considered to be a learned behavior that is performed purposefully with result-seeking motivation; a behavior that is processed with a focus on the needs of oneself. Self-care behavior is known to be a crucial component of proper management of chronic health conditions such a DM2 (Riegel, Jaarsma, & Strömberg, 2012). Self-care agency refers more specifically to the capability individuals possess to meet self-care demands or achieve goals thereof (Richard & Shea, 2011). Richard and Shea (2011) observed a theme in their review which indicated a conceptualization of the term of self-management as representing a subset of self-care, rather than being interchangeable with it. While self-care can be defined more broadly as referring to lifestyle behaviors generally directed toward functional and developmental aspects of the lived experience, self-management is more limited in scope by focusing on activities and behaviors in which people engage for the purpose of controlling disease processes. Self-management entails the efforts made by individuals, along with the support of their family, healthcare providers, and community resources to manage disease symptoms, coordinate treatments, and make positive lifestyle adjustments; all while considering cultural, psychosocial, and spiritual needs (Richard & Shea, 2011). Similarly, the chronic care model defines self-management as involving decisions and behaviors that patients with chronic health conditions carry out that affect the quality of their health (Group Health Research institute, 2019).

Rationale for Chosen Theoretical Framework

I selected the TDSCM as the framework for this study because of its suitability for analyzing associations between individual and proxy agency, and how these two variables relate to the outcome variable, which was a measure of the quality of DM2 self-management using HbA1c lab values. Descriptive data, which were based on the factors identified within the TDSCM framework, supported a deeper understanding of the complex inter-relationships among study variables. Additionally, definitions of key concepts in this study, including those that are constituents of this study's research questions, were based on the previous work of Bandura pertaining to SCT—the concepts of individual agency and proxy agency—which were complementary of informative aspects of his TS-E that are integral to the TDSCM. Finally, the TDSCM being informed by major concepts and constructs identified within the TS-C, a nursing-focused theory, promoted the relevance and applicability of study findings to nursing practice.

Literature Review Related to Key Variables and/or Concepts

There are several key concepts involved with this study that required definition and clarification in order to understand constructs and components thereof, including: DM, diabetes control, proxy agency, and individual agency.

DM

A chronic health condition of the metabolic system, DM is characterized by an inability of the body to maintain optimal blood glucose levels and use glucose for energy (ADA, 2019; WHO, 2019). The term DM comprises two forms of the condition: type-1 and type-2. DM1 is characterized by a loss of function with insulin-producing cells in the pancreas, resulting in significant reduction or complete absence of insulin in the blood. With DM2, the pancreas continues to produce insulin; however, the body becomes resistant to it (NIDDK, 2016).

Diabetes Control

The concept of diabetes control refers to the consistency with which people with diabetes maintain normal blood glucose levels. The ADA recommends a pre-prandial blood glucose target range of 80 to 130 mg/dl and a one to two-hour post-prandial blood glucose below 180 mg/dl (CDC, 2019). While these numbers represent desirable glucose values for any given point in time, the HbA1c lab value is a long-term indication of the quality of diabetes control. Specifically, the HbA1c is a measure of the average amount of glucose that has been attached to hemoglobin over a period of up to three months prior to collection of the blood sample. Elevated levels of HbA1c indicate the presence of diabetes (NIH, 2018). According to the NIH (2018), HbA1c values below 5.7% are favorable and considered to be normal, while values between 5.7% and 6.4% are indicative of pre-diabetes, and values of 6.5% or greater indicate the presence of diabetes. However, in the presence of a diabetes diagnosis, HbA1c levels below 7% are considered desirable (NIH, 2018).

Proxy Agency

Encompassing the socially-mediated component of chronic disease self-management efforts, proxy agency is a vital contributor to the quality of disease outcomes (Bandura, 2001). The modes of proxy agency and individual agency are complementary of each other in peoples' pursuit of desirable health outcomes (Bandura, 2004). Proxy agency comprises all actions performed by individuals, and groups of individuals, on behalf of someone else for the purpose of supporting that individual in their management of diabetes and achievement of desirable outcomes (Bandura, 2001).

Research has shown the value of the proxy mode of human agency and identified many factors which contribute to the extent to which proxy agency is utilized in peoples' DM2 self-management efforts. Bech, Jacobsen, Mathiesen, and Thomsen (2019) found that people of low socioeconomic status (SES) with DM2 place less value on informal support network resources (e.g., family, friends, etc.) and an increased emphasis of importance on self-management support sought and received from formal sources such as healthcare providers. People with DM2 and low SES are inclined to avoid DM2 management support from informal networks most often due to a scarcity in such networks, as well as an inadequate quality of support offered through the networks that are available. Instead, people with DM2 deemed the more formal social networks served by healthcare professionals to be most favorable for providing the desired stability and continuity in care (Bech et al., 2019). Findings from a study which used a mixed methods approach reinforced the aforementioned findings, qualitatively showing that participants with chronic health conditions such as diabetes reported perceiving a valuable role held by primary care providers in optimization of their self-management efforts; this being the case, even though participants reported primary care providers constituting only 15.5% of their overall socially-mediated self-management support (Rogers, Vassilev, Brooks, Kennedy, & Blickem, 2016). However, Bouldin et al. (2017) found adults with poorly controlled diabetes that reported involvement of informal caregiver support from friends or family members (OR = 1.93, 95% CI = 1.07-3.49, p = 0.028) and social support in general (OR = 1.22, 95% CI = 1.03-1.45, p = 0.023) were significantly more likely to closely adhere to medication regimens. Among people with poorly controlled diabetes (HbA1c > 7.5%), informal out-of-home self-management support was significantly associated with perfect medication regimen adherence (AOR = 1.19, p = 0.029) (Mayberry, Piette, Lee, & Aikens, 2019). Additionally, people who reported only having out-of-home support, thus lacking in-home sources of support, also had worse glycemic control (β = -0.45, p = 0.005) (Mayberry et al., 2019). Goa et al. (2013) found that social support had an indirect effect on the quality of glycemic control by directly effecting diabetes self-management behaviors (β = 0.17, p = 0.009) which, in turn, directly impacted the quality of glycemic control (β = -0.21, p = 0.007). Findings from another study showed that social support, along with self-efficacy and self-management attitude, accounted for 39.5% of the total self-management behavior variance, with social support being the most significant predictor of the behaviors ($\beta = 0.87$) (Karimy, Koohestani, & Araban, 2018). Sürücü, Besen, and Erbil (2018) also found social support to be a significant predictor among people with DM2 for four essential components of optimal diabetes self-management, including: blood glucose monitoring ($\beta = 0.16$, $p = 0.011$), diet ($\beta = 0.24$, $p < 0.001$), exercise ($\beta = 0.26$, $p < 0.001$), and proper foot care ($\beta = 0.19$, $p = 0.003$).

Certain demographic factors have been shown to impact the extent to which people with diabetes incorporate proxy agency in their self-management regimens. A phenomenological study by Kristianingrum, Wiarsih, and Nursasi (2018) found that physical and financial limitations among older people with diabetes—60-years-old and older—required substantial assistance from family in order to maintain an optimal level of independence. Another study that used a qualitative phenomenological approach identified the following themes among ethnically diverse participants with diabetes: relationship with primary care providers (PCP) is highly valued; culturally-relevant diabetes self-management information lacking among primary care providers; experience of traditional consultation styles are prohibitive of shared decision-making; and consultation styles that involve participation in decision-making processes are facilitative of self-management efforts (Rose & Harris, 2015).

Individual Agency

A fundamental characteristic and function within the lived experience is the capabilities people possess to affect events and trajectories in their daily lives. The influence that individuals generate and deliberately self-direct toward courses of action in order to produce a desired outcome represents a phenomenon referred to as individual agency (Bandura, 2001). The concept of individual agency entails the notion that "people are contributors to their life circumstances, not just products of them" (Bandura, 2006, p. 164). Individual agency, along with proxy agency, must be applied in tandem as complementary modes of human-generated influence for optimal diabetes self-management outcomes (Bandura, 2001).

A substantial amount of research has improved researchers', health professionals', and patients' understanding of a variety of aspects of disease self-management that are representative of individual agency, wherein such valuable insights have revealed the significant contribution of this mode of agency and its relationship with the socially-mediated mode of proxy agency. The concept of autonomy is one such aspect. Autonomy support can be defined as a socially-mediated influence applied via the mode of proxy agency in support of ones' individual mode of agency (Lee, Piette, Heisler, & Rosland, 2018). Health professionals have adopted a practice accepting of minimal involvement in patient decision-making, only providing just enough information and support to allow the patient to independently make decisions regarding their care (Craigie, 2015). According to Craigie (2015), in the present-day context, the extent to which patients should be supported in making treatment decisions is debatable and deserves further scrutiny for identifying an optimal approach to serving the needs of patients, especially when patients' mental capacity is questionable. Too much decision-making burden has been placed on the patient as healthcare professionals have adopted a more hands-off approach in order to allow for maximal patient autonomy (Craigie, 2015).

Regardless of the moral and ethical implications involved, patient autonomy represents an integral component of individual agency. Lee et al. (2018) showed that autonomy support from primary health care providers served to mitigate the effects of diabetes distress, thereby improving glycemic control. Another study by Miežienė, Šinkariova, and Adomavičiūtė (2015) revealed a statistically significant association between perceived autonomy support and autonomy motivation (i.e. the desire one possesses to engage in behaviors aimed at achieving wanted outcomes) in glycemic control efforts ($\beta = 0.265$, $p = 0.004$), as well as diet ($\beta = 0.363$, $p = 0.001$) and physical activity regimens ($\beta = 0.312$, $p = 0.004$), among people with diabetes.

According to Bandura (2001), the primary mechanism of individual agency is the belief one has in his or her capability to successfully exert a controlling influence on some event or course of events. This belief in oneself to successfully influence an outcome is known as self-efficacy. Efficacy-related beliefs represent a fundamental component of the broader concept of human agency, as people must possess confidence in their ability to produce desired results in order to acquire motivation and perseverance as challenges are confronted along the way (Bandura, 2001). A significant amount of the variance in self-efficacy (31.3%) and self-care behavior (20.6%) can be explained by the factors of age, length of time with diabetes, medication compliance, HbA1c, and diabetes being perceived as a hindrance to normal activities of daily living (D’Souza et al., 2017). Those factors were found to be significantly associated ($p = 0.05$) with important diabetes self-management characteristics of diet, physical activity, blood glucose monitoring, medication compliance, and foot care (D’Souza et al., 2017). Karimy et al. (2018) found

39.5% of the total variance of self-management behaviors could be explained by the factors of social support, self-efficacy, and attitude toward self-care; factors that were also found to be the foremost predictors of behaviors related to self-management (β = 0.87, β = 0.52, & β = 0.42, respectively). With social support as a component of the socially-mediated mode of human agency, known as proxy agency, and self-efficacy and attitude being components of the individual mode of agency, a significant proportion of diabetes self-management efforts and outcomes are shown to be largely dependent on these factors of individual and proxy agency (Bandura, 2001; Karimy et al., 2018).

Luciani et al. (2019) found that self-management of diabetes was significantly influenced by certain value systems possessed by individuals with diabetes. Individuals who strongly identified with the values of openness to change in combination with self-transcendence showed significantly more favorable self-care maintenance (p = 0.024) and self-care monitoring (p = 0.031) scores than individuals who most strongly valued openness to change in combination with self-enhancement. Individuals who most strongly valued conservation in combination with self-transcendence also scored more favorably with self-care monitoring (p = 0.008) and self-care management (p = 0.018) than individuals who most strongly valued openness to change in combination with self-enhancement. Individuals who most strongly value conservation along with self-enhancement also scored more favorably than individuals who most strongly valued openness to change in combination with self-enhancement in the category of self-care monitoring (p = 0.027) (Luciani et al., 2019). Thus, findings from this study reinforce Bandura’s (2004) description of individual agency stating that when an individual’s personal goals are rooted in a value system, the goals serve as additional guidance and personal incentive to drive positive health behaviors.

Summary

In this chapter, results of a literature review were synthesized and shared. Definitions of important concepts and variables, including human agency, proxy agency, individual agency, self-management, DM and DM control, were provided. The study's theoretical framework was described. According to Bandura (2001), both individual agency and proxy agency are integral to individuals' ability to achieve desirable health outcomes, with each mode serving in complementary and mutually important roles in the self-management of chronic health conditions. However, no studies have been identified that have explored DM2 self-management practices of adults, according to the modes of human agency and the tandem roles they play in achieving optimal self-management outcomes (e.g., glycemic control) among adults diagnosed with DM2. Chapter 3 includes an extensive description of this study's design, including methodology, participant selection and sample size considerations, and approaches to data analysis.

Chapter 3: Research Method

Introduction

The purposes of this quantitative study were to determine (a) if there is a relationship between the extent that the individual mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year and (b) if there is a relationship between the extent that the proxy mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year. In this chapter, a thorough description of the study design is presented, including methodology, participant selection and sample size considerations, ethical considerations, data collection, and approaches to data analysis. Threats to validity are also addressed.

Research Design and Rationale

For this study, I conducted a quantitative descriptive correlational research design. The independent variables were individual agency and proxy agency according to participants’ self-reported perceptions and behaviors. The dependent variable was glycemic control among the same study participants. Survey instrumentation was used to measure independent variables, while the dependent variable was measured using participants’ serum HbA1c laboratory information. Scores from the CIRS survey instrument were used to report participants’ individual agency and proxy agency as well as level of favorability they assign to each mode of agency in terms of their diabetes self-management efforts. Ascertaining these values allowed for analysis of associations. I collected additional demographic data, including age, race, sex, level of education, years with DM2 diagnosis, annual household income, employment status, health insurance status, marital status, proximity in miles to nearest healthcare facilities, and number of friends and family members perceived as sources of support for self-managing diabetes.

Quantitative research entails identifying variables and then measuring them in a way that is valid and reliable. Quantitative research approaches are performed in a controlled fashion which allows the researcher to exclude extraneous effects on their findings. With quantitative research, statistical analyses are carried out in a way that maximizes the confidence of researchers in study results and excludes potential for random error (Houser, 2015).

Descriptive research involves describing in detail a certain process or outcome. Descriptive studies are commonly exploratory in nature and often used in situations where little is understood about a given phenomenon of interest (Houser, 2015). The purpose of correlational research is to quantify and identify the strength of a relationship between two variables (Houser, 2015). Thus, the descriptive correlational design was used to examine relationships between variables.

Methodology

The target population for this study was non-newly diagnosed adults with DM2 who were diagnosed with DM2 for at least 1 year. According to the CDC (2017a), approximately 23 million adults in the U.S. are diagnosed with diabetes. DM2 accounts for up to 95% of total diabetes cases, which would suggest approximately 21.8 million U.S. adults are currently diagnosed with DM2 (CDC, 2017a). The CDC (2017a) indicated approximately 1.5 million new cases of DM each year. Because this study sample did not include adults with newly diagnosed DM2 the estimated target population size for this study is 20.5 million.

In order to maximize generalizability with study samples for quantitative research, random selection of participants using probability sampling is most effective. Probability (i.e., random) sampling is a sampling process that gives each member of the available population equal probability of being selected (Houser, 2015). However, because participants for this study had to be recruited from the patient population of a single site, convenience sampling was used. Convenience sampling refers to a process of recruiting study participants that are readily accessible to the researcher. This sampling method is logistically favorable and cost-effective; however, it is inherently more susceptible to bias in terms of participant selection than probability sampling methods (Houser, 2015).

The sampling frame for this study was delineated by the following criteria. All participants were adults 18 years of age and older who had been diagnosed with DM2 for a minimum of one year. Reasons for exclusion included diagnoses of prediabetes, DM1, gestational diabetes, a primary language other than English, and the presence of cognitive impairments.

Power analyses were conducted using G*Power software, version 3.1.9.4 (Faul, Erdfelder, Buchner, & Lang, 2009). To determine the *N* for this study's initially-planned multiple regression analysis, the following parameters were set in G*Power: test family = F tests; statistical test = linear multiple regression, as fixed model and R^2 deviation from zero; effect size = 0.15 (i.e., medium effect size); alpha = 0.05; power = 0.80; number of predictors (i.e., independent variables) = 2. Using these parameters, G*Power determined that a minimum of 68 participants should be included for initially-planned multiple regression portion of this study's data analyses. To determine *N* for the initially-planned Pearson's *r* correlation coefficient-related analysis for this study, the following parameters were set in the G*Power software: test family = exact; statistical test = correlation; tail(s) = 2; effect size = 0.3 (i.e., medium effect size); alpha = 0.05; power = 0.80; testing against the H_0 of zero correlation. Using these parameters, G*Power determined that a minimum of 84 participants should be included for the initially-planned Pearson's *r* correlation coefficient portion.

Effect size (ES) refers to a measure of the degree to which a phenomenon is expected to exist in a given population (Grove, Burns, & Gray, 2013). When smaller effects are expected, larger samples are required in order to detect them. Conversely, a greater expected effect would require smaller sample sizes (Houser, 2015). According to Grove et al. (2013), the most favorable approach to determining the appropriate ES for a given study is by referencing previous relevant studies. Karimy et al. (2018) said 39.5% of the total variance in self-management behaviors could be explained by social support, self-efficacy, and attitude toward self-care. These factors were also found to be the greatest predictors for self-management behaviors ($\beta = 0.87$, $\beta = 0.52$, & $\beta = 0.42$, respectively; Karimy et al., 2018). Because the sample for this study was drawn from a large tertiary care medical center located in the upper Midwest of the U.S., which attracts a diverse patient population, a larger sample would help to ensure certain groups are not under or overrepresented. Therefore, rather than selecting a larger effect size, the medium effect sizes of 0.15 and 0.30 were set for the initially-planned multiple regression and Pearson's *r* data analyses, respectively. The level of significance selected for both power analyses that were performed ($\alpha = 0.05$) is considered a standard threshold for statistical significance in nursing studies. Lastly, the power level of 0.80 was chosen for power analysis calculations because it is the most commonly recommended minimum value.

Procedures for Recruitment, Participation, and Data Collection

After receiving Institutional Review Board (IRB) approval from Walden University (IRB number 04-10-20-0293946) and the tertiary medical center (IRB number 20-001258) within which participants were ultimately recruited, patients among the target population for this study had an internet-based link made available to them that provided access to screening questions that were based on the study's inclusion criteria. Patients that met the study criteria and agreed to participate were prompted to proceed to the informed consent form. Upon agreeing to participate in the study and indicating consent, the survey instruments were presented for completion by the participant. As the principle investigator with this study, my contact information was included with study materials provided to participants, so participants were given the opportunity to seek clarification on the informed consent form or survey instruments.

Data collection involved the sociodemographic data form, the CIRS instrument and the most recent HbA1c were obtained through the organization's electronic medical record. Data were planned to be collected until the minimum recommended *N* (i.e., 84), based on the initially-planned Pearson's *r* and multiple linear regression models, was achieved. Included with study materials provided to participants was additional information explaining that their active participation in the study would conclude upon returning study documents and that all data they provide will be destroyed upon conclusion of the study.

I created the sociodemographic data form used in this study. Permission was sought and subsequently granted (see Appendix B) to use the CIRS instrument for collecting data regarding this study's independent variables of individual agency and proxy agency. Upon creation of the CIRS, developers tested the instrument for validity and reliability using Cronbach's α and Pearson's correlation coefficients.

Sociodemographic Data Form

Descriptive data were collected via the sociodemographic data form (see Appendix A) I created in order to provide additional context to the aforementioned data that were collected, including: age, race, sex, level of education, years diagnosed with DM2, annual household income, employment status, health insurance status, marital status, proximity in miles to nearest healthcare facilities, and number of friends and family members that can be confidently relied upon as sources of support for self-managing DM. For race, participants were asked to choose between the options of white, black, Hispanic or Latino, which represent the three most prominent racial groups in the U.S. (USCB, 2018). An "other race" option was included to identify a race other than the three aforementioned options. Marital status included two options: married and not married/separated/widowed/ divorced. It was assumed that participants provided valid and reliable responses.

Instrumentation and Operationalization of Constructs

CIRS. The CIRS instrument, developed by Glasgow, Strycker, Toobert, and Eakin is used for assessing multiple levels of support and resources used by individuals in the self-management of their chronic health conditions. The CIRS instrument was designed to measure eight important individual and social aspects of self-managed care in the presence of chronic illness, including: health care provider and team, friends and family, personal, neighborhood, community, health-related policy and media, community organizations, and employment. These categories were ranked by participants using a Likert-type numeric scale. Scores for each CIRS item range from a numerical value of 1, corresponding with responses identifying the item as unimportant, to a numerical value of 5 which corresponds with the item being identified as having great importance. Scores indicated the importance of and degree to which individual and proxy modes of agency were represented in their DM2 self-management regimens; whereas the higher the score, the greater the perceived value, the more significant of a role the corresponding category had in participants' DM2 self-management efforts.

The CIRS instrument was shown to be valid and reliable for the evaluation of support and resources related to the self-management of a variety of chronic health conditions, including DM. Age was the only demographic characteristic that showed a statistically significant relationship ($r = 0.35$, $p < 0.001$) with the total CIRS score and all but two of the subscales (i.e., media/policy support, workplace support). After testing for 21 subscale inter-correlations, 14 were shown to be significant ($p < 0.01$). Correlations were identified between the personal support subscale and the subscales for family and friends, neighborhood/community, and health care provider and team ($r = 0.52$, 0.49, and 0.34, respectively). Rankings of subscale item importance were all significantly correlated ($p < 0.001$) with the summary scores of the pertinent subscales. With a significance of $p < 0.01$, the total CIRS score indicated internal consistency ($\alpha = 0.90$) and acceptable test-retest stability ($r = 0.83$) using a one-month interval. Subscale reliability was also deemed acceptable, although less reliable than the total score due the smaller number of items, ranging from $\alpha = 0.71$ to $\alpha = 0.91$ ($p < 0.01$). Subscale correlations ranged from $r = 0.60$ to 0.91 and $r = 0.42$ to 0.74 for the one-month and four-month test-retest, respectively ($p < .001$).

Construct validity was verified by analyzing correlations between the CIRS subscale scores and other comparable established measures with a statistical significance of $p < 0.01$, including: physician and health care team subscale ($r = 0.75$); personal subscale, correlated with two different established scales ($r = 0.43$ & 0.42); family and friends subscale ($r = 0.42$); neighborhood/community subscale ($r = 0.36$); and workplace subscale ($r = 0.60$). Predictive validity of the CIRS instrument was verified using partial correlation analysis to control for the only demographic variable shown to correlate with the instrument's subscales (i.e., age). The CIRS total score and other subscale scores showed modest predictive capability regarding self-management behaviors and quality of life. The CIRS total score and subscales of personal, family and friends, and neighborhood/community showed a statistically significant ($p < 0.01$) correlation with mental health that was measured by an established mental health scale, after controlling for the demographic variable of age (partial $r = 0.37$, 0.36, 0.32, and 0.26, respectively). Regarding prospective correlations between the baseline CIRS scores and four-month outcomes, the CIRS total score and the subscale of physician and health care team were significant predictors chronic health condition self-management at the four-month time point (partial $r = 0.30$ for both, $p = 0.01$). The baseline CIRS total score predicted mental health—measured using an established mental health scale—at the four-month time point, after controlling for the demographic variable of age (partial $r = 0.28$, $p < 0.01$) (Glasgow et al., 2000).

Threats to Validity

Validity in research refers to the extent to which a concept is measured according to how it is intended to be measured. To be considered to possess acceptable validity, the measure of a given concept of interest must be shown to adequately reflect the true meaning of the concept. Validity considerations can be divided into two main types: external and internal (Houser, 2015). According to Houser (2015), external validity refers to the generalizability and applicability of study findings to different populations and conditions, and the practical value they offer. Internal validity refers to the level of confidence held regarding study outcomes and in determining that alternative explanations for a given outcome can be ruled out.

With this study, the goal for obtaining a minimum initially-recommended *N* of 84 was deemed to be a primary consideration regarding existent threats to external validity. The relatively small number of participants presented a notable limitation with the generalization of findings to a variety of unique population characteristics among U.S.

adults diagnosed with DM2. I addressed this threat to external validity through the collection and reporting of extensive descriptive data in a manner which allows for objective evaluation (Houser, 2015).

Internal validity in this study might have been jeopardized by instrumentation-related effects. Surveys offer a particularly useful approach for describing characteristics found within a sizable population. Surveys are of value in a research design when flexibility is desirable and a large number of individuals are needed in order to enhance descriptive analyses. Additionally, the use of surveys, such as those to be used in this study, ensure that all participants are uniformly presented with the exact same textual content and report responses based on identical survey items. While surveys represent a highly reliable instrument for data collection, they are inherently weaker regarding considerations of validity (Babbie, 2017). This threat to validity was addressed by using a survey with established validity. The CIRS instrument used for measuring the two independent variables in this study was a valid survey instrument in the evaluation of support and resources related to the self-management of wide variety of chronic health conditions, such as DM2 (Glasgow et al., 2000).

Ethical Considerations

It was imperative to adhere to accepted standards for proper conduct of scientific inquiry for the protection of human subjects. These standards are based on three key principles used by researchers for guiding ethical practices in conducting research involving human subjects: respect for persons, beneficence, and justice. Respect for persons means that peoples’ participation in research must be entirely voluntary with their full understanding of what their involvement would entail. Observing beneficence means to do no harm and, instead, promote benefit through research participation. Justice refers to crucial efforts aimed at sharing any benefits gained through the conduction of research in a fair manner throughout society. Ethical practices for this study were followed using a variety of established procedures and protocols designed to promote and ensure standard ethical practices are followed such as informed consent.

Informed consent is a formalized approach to following the ethical norms of voluntary participation in research and to do no harm. The voluntary participation of research subjects must be based on a complete understanding of any risks they may be vulnerable to as a result of their participation (Babbie, 2017). Prior to collecting any data for this study, an informed consent was provided to each participant. With the informed consent document, prospective research participants can be fully informed regarding what their participation in the study would entail. The informed consent for this study stated that participation is entirely voluntary and that participants may freely discontinue their participation at any point in time and without any recourse. They were also informed of measures that were taken to maintain confidentiality of responses and values obtained that indicated the quality of their glycemic control. Confidentiality was guaranteed by explaining that no person other than me would be afforded the ability to link any data provided for the study to them, and that it would only be necessary for me to do so in order to correspond their respective glycemic control measure with their responses (Babbie, 2017).

Ethics-related oversight for this study involved review and approval of the study's design by two separate IRBs; one of which is supported by Walden University and the other by the large tertiary medical center serving as the setting for this study. Because this study involved human participants, the role of the IRBs was to safeguard participants' rights and needs. A primary function of each IRB was to make sure that any risks posed to individuals participating in this study were as minimal as possible. Any risks identified by the IRB and determined to be unpreventable were clearly described for participants in the informed consent.

This study was also conducted in a manner that conforms to Federal law, under HIPAA. HIPAA was designed specifically for the purpose of protecting the privacy of peoples' personal health information (PHI). The overall HIPAA law is enforced with the HIPAA Privacy Rule and the HIPAA Security rule; both of which apply to health care providers, including the medical center supporting this study. Standards of conduct under the Privacy Rule allow for important uses of PHI while safeguarding the privacy of health care consumers. The Security Rule, implemented to address a subset of information that is addressed under the Privacy Rule, is designed to protect all individually identifiable health information that is created, received, kept, or transferred using electronic modality.

Summary

In Chapter 3, this study's design and the rationale for it were described. Methodological elements such as participant recruitment and data collection procedures were also discussed. Lastly, threats to validity and ethical considerations were shared. In Chapter 4, information regarding data analysis and study results is discussed.

Chapter 4: Results

Introduction

The purposes of this quantitative study were to determine (a) if there is a relationship between the extent that the individual mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year and (b) if there is a relationship between the extent that the proxy mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year and (c) if there is a relationship between the individual mode and proxy modes of agency in diabetes self-management, among adults diagnosed with DM2 for at least one year, and the quality of diabetes control, as measured by individuals' HbA1c. In this chapter, I present information including collection time frame, data collection-related discrepancies, study sample characteristics and demographic data, sample representativeness of the broader population, and results of univariate analyses. Findings from data analyses using simple binary and multiple logistic regression models are presented, along with results of post-hoc data analyses.

Data Collection

While Pearson's *r* and multiple linear regression approaches to data analyses were originally planned with this study, it was later determined that logistic regression would better align with the research questions. Thus, simple binary and multiple logistic analyses were performed. The purpose of regression-based research is to determine the strength of a relationship between a dependent variable and one or more independent variables (Warner, 2013). A third research question was added. Methodological limitations were also identified. With a binary outcome variable that has only two possible values, it is important for the number of study participants in each group to be as near to even as possible.

Power analysis for the logistic regression approach was also conducted using G*Power version 3.1.9.4. To determine the *N* for this study's logistic regression analysis, the following parameters were set in the G*Power software: test family = z tests; statistical test = logistic regression; two-tailed; effect size = 3.47 (i.e., medium effect size); alpha = 0.05; and power = 0.80. Using these parameters, G*Power determined that a minimum of 44 participants should be included for the multiple regression portion of this study's data analyses. For many types of data analyses, Cohen's *d* is used to indicate effect size: *d* = 0.2 (small effect), *d* = 0.5 (medium effect), and *d* = 0.8 (large effect). For logistic regression, the odds ratio serves to inform the effect size for power analyses (Chen, Cohen, & Chen, 2010). According to Chen et al. (2010), odds ratios of 1.68, 3.47, and 6.71 equate to small, medium, and large effects, respectively.

Data collection took place over a period of 77 days, from April 5 to June 20, 2020. Subjects were recruited exclusively via email, using personal email addresses available within their medical records. A total of 2,110 subjects were identified as having a diagnosis of DM2 and subsequently were extended invitations to participate in this study. According to revised power analyses that were conducted prior to commencing recruitment, based on the logistic regression method of analysis, a minimum of *N* = 44 was required to achieve a power of .80. Upon conclusion of data collection efforts, a total of 41 completed surveys and signed informed consent forms were obtained, for a final response rate of approximately 2%. One of the screening questions that participants were prompted to complete prior to agreeing to participate in the study involved confirming an HbA1c laboratory test as having been processed within a 2-month timeframe preceding completion of the surveys. However, for eight of the participants who completed surveys, HbA1c tests were processed beyond the 2-month timeframe; two participants with HbA1c results dating just over 6 months prior to survey completion, two participants with results approximately 5.5 months prior to survey completion, two participants with results approximately 4 months prior to survey completion, and two participants with results a week beyond the 2-month timeframe. Post-hoc analyses for the statistical test used in this study were also conducted. Using the same parameters that were used for the *a priori* power calculation, a power of 0.76 was identified based on the actual sample size $N = 41$.

The software used for data analyses with this study was IBM Statistical Product and Service Solutions (SPSS) Statistics Version 25. Descriptive and demographic characteristics of the study sample are shown in Table 1. Participant ages ranged from 46 to 88 years ($\mu = 69.63$, $\sigma = 9.08$). This sample characteristic closely reflects the general population; 35.2% of U.S. adults who are 45 and older have a diagnosis of DM, and 3% of adults under the age of 45 have the same diagnosis (CDC, 2020). The sample consisted of a greater number of male subjects ($N = 23$) than female ($N = 18$). Eleven per cent of U.S. men and 9.5% of women are diagnosed with DM (CDC, 2020). Regarding race and ethnicity, most respondents identified themselves as White, with just one individual identifying as Black and one identifying as Hispanic or Latino. This sample is not representative of the actual distribution of race among individuals diagnosed with DM in the U.S. According to the CDC (2020), racial and ethnic minorities are diagnosed with DM at a higher rate than whites. Respondents' HbA1c and reported number of years diagnosed with DM2 indicated a wide range in values; 5.4-14 and 1-50, respectively. The ratio of respondents with well-controlled (HbA1c $< 7\%$) and poorly-controlled (HbA1c $\geq 7\%$) DM2 was nearly 50:50, with 20 respondents reporting well-controlled DM2 and 21 respondents reporting poorly controlled DM2. An estimated 50% of adults diagnosed with DM in the U.S. possess an HbA1c $\geq 7\%$ (CDC, 2020).

SES is a significant determinant associated with risk for developing DM, with level of education and income being important indicators of SES (Assari, Lankarani, Piette, & Aikens, 2017). According to the CDC (2020), among U.S. adults without a full high school education, 12.7% were diagnosed with DM, while among those with more than a high school education, 8.3% were diagnosed with DM. In this study, zero respondents reported less than a high school education, while 85% reported having an education beyond a high school diploma or GED. Furthermore, 24 respondents (59%) reported an annual income of $50,000 or greater, while 12 respondents (29%) reported an annual income of less than $50,000; five respondents (12%) preferred not to provide a response to the survey item. Broad ranges in values indicating proximity to nearest healthcare facility—from one to 85 miles ($\mu = 8.65$, $\sigma = 14.72$) as well as number of friends and family members who could be relied upon as sources of support for self-managing DM2—from 0 to 25 friends and family members ($\mu = 3.68$, $\sigma = 4.53$)—were also identified.

Table 1

Descriptive and Demographic Sample Characteristics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	41	46	88	69.63	9.08
Gender	41	-	-	-	-
Male	23	-	-	-	-
Female	18	-	-	-	-
Race/Ethnicity	41	-	-	-	-
					-
White	39	-	-	-	-
Black	1	-	-	-	-
Hispanic/Latino	1	-	-	-	
HbA1c	41	5.4	14	7.31	1.48
Years Diagnosed with DM2	41	1	50	15.91	11.29
Annual Income	41	-	-	-	-
<$10,000	2	-	-	-	-
$10,000 - $24,999	3	-	-	-	-
$25,000 - $49,999	7	-	-	-	-
$50,000 - $75,000	6	-	-	-	-
>$75,000	18	-	-	-	-
Prefer not to answer	5	-	-	-	-
Level of Education	41	-	-	-	-
Some or no HS	0	-	-	-	-
HS diploma/GED	6	-	-	-	-
Some College	6	-	-	-	-
Associate Degree	4	-	-	-	-
Bachelor Degree	14	-	-	-	-
Master Degree	7	-	-	-	-
Doctoral Degree	4	-	-	-	-
Employment Status	41	-	-	-	-
Full-time	5	-	-	-	-
Part-time	5	-	-	-	-
Retired	27	-	-	-	-
Health Insurance Status	40	-	-	-	-
Some Coverage	40	-	-	-	-
No Insurance	0	-	-	-	-
Marital Status	41	-	-	-	-
Married	31	-	-	-	-

(table continues)

Not Married/ Separated/ Widowed/Divorced	10	-	-	-	-
Distance in Miles to Nearest Health Care Facility	40	1	85	8.65	14.72
Number of Family/Friend Sources of Support	41	0	25	3.68	4.53

Results

Descriptive and demographic characteristics of the study sample, according to well-controlled (i.e., HbA1c < 7.0) and poorly-controlled (HbA1c ≥ 7.0) DM2, are shown in Table 2. Comparing the two groups of participants according to quality of DM2 control, several variables involved equal or nearly equal proportions of group membership. For example, 50% of participants less than the mean sample age of 69.6 years-old showed well-controlled DM2 and 50% showed poorly-controlled DM2, while 52% of participants 69.6 years and older showed well-controlled DM2 and 48% showed poorly controlled DM2. The other variables that showed equal or nearly equal group participation according to well-controlled and poorly-controlled DM2 control, included: identifying as white (*N* = 8, 8; 50%, 50%, respectively), earning less than $10,000 annually (*N* = 1, 1; 50%, 50%, respectively), having a high school diploma or GED (N = 3, 3; 50%, 50%, respectively), having an Associate's degree (*N* = 3, 3; 50%, 50%, respectively), having a Bachelor's degree (*N* = 2, 2; 50%, 50%, respectively), retired (*N* = 14, 13; 51.9%, 48.1%, respectively), unemployed (*N* = 1, 1; 50%, 50%, respectively), possessing some health insurance (*N* = 21, 19; 52.5%, 47.5%, respectively), married (*N* =

15, 16; 48.4%, 51.6%, respectively), living less than the mean sample distance (i.e., 8.7 miles) to the nearest health care facilities (*N* = 15, 15; 50%, 50%, respectively) and greater than or equal to the mean distance (*N* = 5, 5; 50%, 50%, respectively), having less than the mean number of DM2-supportive family and friends (i.e., 4 friends or family members) (*N* = 14, 14; 50%, 50%, respectively) and greater than or equal to the mean number of family and friends (*N* = 7, 6; 53.8%, 46.2%, respectively). Some larger differences were also noted in the descriptive data. For example, 43.5% of males (*N* = 10) in the sample were in the well-controlled category, while just 61.1% of females (*N* = 11) were in the same category. In addition, 57.1% (*N* = 12) of participants identified themselves as having been diagnosed with DM2 for less years than the sample mean (µ = 15.9 years) showed well-controlled DM2, while just 45.0% (*N* = 9) of those diagnosed for greater than the mean years had well-controlled DM2.

Table 2

Descriptive Data Based on HbA1c

	HbA1c < 7.0 *N* (%)	HbA1c ≥ 7.0 *N* (%)
Age		
< 69.6 years old	8 (50)	8 (50)
≥ 69.6 years old	13 (52)	12 (48)
Gender		
Male	10 (43.5)	13 (56.5)
Female	11 (61.1)	7 (38.9)
Race/Ethnicity		
White	20 (51.3)	19 (48.7)
Black	1 (100)	0 (0.0)
Hispanic/Latino	0 (0.0)	1(100)
Years Diagnosed with DM2		
< 15.9 years	12 (57.1)	9 (42.9)
≥ 15.9 years	9 (45)	11 (55)

(table continues)

Annual Income		
<$10,000	1 (50)	1 (50)
$10,000 - $24,999	2 (66.7)	1 (33.3)
$25,000 - $49,999	2 (28.6)	5 (71.4)
$50,000 - $75,000	2 (33.3)	4 (66.7)
>$75,000	10 (55.6)	8 (44.4)
Prefer not to answer	4 (80)	1 (20)
Level of Education		
Some or no HS	0 (0.0)	0 (0.0)
HS diploma/GED	3 (50)	3 (50)
Some College		
Associate Degree	3 (50)	3 (50)
Bachelor Degree	2 (50)	2 (50)
Master Degree	8 (57.1)	6 (42.9)
Doctoral Degree	4 (57.1)	3 (42.9)
	1 (25)	3 (75)
Employment Status		
Full-time	2 (40)	3 (60)
Part-time	3 (60)	2 (40)
Retired	14 (51.9)	13 (48.1)
Unemployed	1 (50)	1 (50)
Prefer not to answer	1 (50)	1 (50)
Health Insurance Status		
Some Coverage	21 (52.5)	19 (47.5)
No Insurance	0 (0.0)	0 (0.0)
Marital Status		
Married	15 (48.4)	16 (51.6)
Not Married/ Separated/ Widowed/Divorced	6 (60)	4 (40)
Distance in Miles to Nearest Health Care Facility		
< 8.7 miles	15 (50)	15 (50)
≥ 8.7 miles	5 (50)	5 (50)
Number of Family/Friend Sources of Support		
< 4 Family/Friends	14 (50)	14 (50)
≥ 4 Family/Friends	7 (53.8)	6 (46.2)

Logistic regression analyses performed for this study involved several assumptions. In line with one of the assumptions stating that the dependent variable be dichotomous, this study's dependent variable of HbA1c is divided into two groups: < 7.0

(i.e., well-controlled DM2) and ≥ 7.0 (i.e., poorly-controlled DM2) (Warner, 2013). Another assumption that the categories of the outcome variable are exhaustive and mutually independent of one another has been satisfied with this study by ensuring that no statistical input from any one participant can be found in both groups of the dependent variable (Warner, 2013). A third assumption is that all relevant predictors, and no irrelevant predictors, should be included in the statistical model (Warner, 2013). This assumption was satisfied by carefully evaluating each of the 8 subscales of the CIRS instrument in determining relevance. For example, items from the *Work* subscale of the CIRS instrument sought to measure the extent to which respondents gauged things such as the flexibility of their work schedule in meeting their needs of daily living, the extent to which their employers offer wellness programs or fitness facilities, the existence of workplace rules and policies geared toward supporting personal illness management. Because items like these do not clearly measure the extent to which participants utilize or value the modes of individual agency or proxy agency, the *Work* subscale was not included in this study's statistical models. By contrast, using the subscale of *Family and Friends* as an example, participant ratings were sought for items such as the extent that family and friends have partnered with the respondent in physical activities, the extent that family and friends have been receptive when the respondent shares illness-related concerns with them, and the extent to which family and friends provided encouragement supportive of illness-related activities and needs. Items within this subscale indicate a more relevant measure of features descriptive of the mode of proxy agency, as according to Bandura (2001), proxy agency represents efforts and activities performed by one individual on behalf of another individual, in the interest assisting the latter in achieving a desirable outcome.

A simple logistic regression was conducted to investigate if there was an association between the extent that the individual mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year. The predictor variable, individual agency, was tested a priori to verify there was no violation of the assumption of the linearity of the logit. The predictor variable, individual agency, in the logistic regression analysis was found to be not significant in contributing to the model. The unstandardized Beta weight for the Constant: $B = -1.887$, $SE = 1.805$, $Wald = 1.093$, $p > 0.05$. The unstandardized Beta weight for the predictor variable: $B = 0.075$, $SE = 0.069$, $Wald = 1.184$, $p > 0.05$.

A second simple logistic regression was conducted to investigate if there was an association between the extent that the proxy mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year. The predictor variable, proxy agency, was tested a priori to verify there was no violation of the assumption of the linearity of the logit. The predictor variable, proxy agency, in the logistic regression analysis was also found to be not significant in contributing to the model. The unstandardized Beta weight for the Constant: $B = -1.736$, $SE = 1.919$, $Wald = 0.818$, $p > 0.05$. The unstandardized Beta weight for the predictor variable: $B = 0.034$, $SE = 0.036$, $Wald = 0.893$, $p > 0.05$.

A multiple logistic regression was performed to explore if individual agency and proxy agency are factors that predict the quality of DM2 self-management efforts among adults with non-newly diagnosed DM2. The outcome of interest was quality of DM2 control according to participants most recent HbA1c laboratory values. Potential predictor variables included in the model were individual agency and proxy agency. The Hosmer-Lemeshow goodness-of-fit test was not significant ($p > 0.05$) which indicated the model was properly fitted. Additionally, the -2 Log Likelihood was 55.304 and the Nagelkerke R-squared was 0.048. Results of the model showed the independent variables of individual agency and proxy agency to be not significant ($p > 0.05$). For the independent variable of individual agency, the unstandardized $B = 0.057$, S.E. = 0.078, and $Wald = 0.545$, with $p > 0.05$. Output for the independent variable of proxy agency showed an unstandardized $B = 0.020$, S.E. = 0.040, and $Wald = 0.265$, and $p > 0.05$.

Summary

Simple logistic regression analyses were conducted to determine if there was an association between individual and proxy mode of human agency and quality of diabetes control among adults who have been diagnosed with DM2 for at least 1 year. Statistical tests indicated that both individual agency and proxy agency were not significant predictors ($p > 0.05$) for quality of DM2 self-management efforts, according to individuals' HbA1c. Additionally, multiple logistic regression analysis was conducted to determine if there was an association between individual and proxy mode of agency in diabetes self-management, among adults diagnosed with DM2 for at least one year and the quality of diabetes control. Including both individual agency and proxy agency concurrently in the model was not a statistically significant predictor ($p > 0.05$) for quality of DM2 self-management efforts, according to individuals' HbA1c.

In Chapter 5, these findings are interpreted based on the theoretical framework. Limitations that may have influenced the generalizability, trustworthiness, validity, and reliability of findings are discussed. Recommendation for further research based on this study’s outcomes are shared, as well as social and practice-related implications.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to determine if there is a relationship between individual and proxy modes of human agency and quality of diabetes control among adults who have been diagnosed with DM2 for at least 1 year. Data were collected via the CIRS survey instrument and electronic medical record review. Simple and multiple logistic regression was the method of data analysis. Findings from this study indicated no statistically significant relationship exists between individual and proxy modes of human agency and quality of DM2 self-management.

Interpretation of Findings

The literature review in Chapter 2 identified multiple studies that generated findings that demonstrated a significant association between aspects of the individual and proxy modes of human agency and measures indicative of the quality of DM2 self-management. Bouldin et al. (2017) and Mayberry et al. (2019) found that individuals with poorly-controlled DM, according to participants' HbA1c, who received self-management support from family, friends, and other informal socially-based sources were more likely to report improved medication regimen adherence. Goa et al. (2013) found that social support factors (e.g., levels of social interaction, sense of support, support-seeking behaviors) influenced DM self-management behaviors that were shown to have an impact on glycemic control (i.e., HbA1c). Additionally, Sürücü et al. (2018) found social support to be a significant predictor among people with DM2 for four essential components of optimal diabetes self-management: blood glucose monitoring (β

= 0.16, $p = 0.011$), diet ($\beta = 0.24$, $p < 0.001$), exercise ($\beta = 0.26$, $p < 0.001$), and proper foot care ($\beta = 0.19$, $p = 0.003$). Rogers et al. (2016) found that, while primary care provider support comprised just 15.5% of socially-mediated forms of self-management support, patients placed significant value in the support they receive from their provider.

The measure of proxy agency performed for my study was not significantly associated ($p > 0.05$) with quality of DM2 self-management, as evidenced by glycemic control. According to Gray, Hoerster, Reiber, Bastian, and Nelson (2019), diabetes-specific social support factors (e.g., healthy eating, physical activity, blood glucose monitoring, medication adherence, and foot care) were strongly and positively correlated with improved quality of DM self-management efforts ($p < 0.01$), while general social support was not significantly associated with DM self-management efforts. Thus, because the CIRS instrument was designed to generally measure aspects of social support in the context of chronic illness, and not those specifically pertinent to DM, this may have been a factor influencing the study's nonsignificant analysis of data. Likewise, based on the literature review, factors involving individual agency were also implicated in self-management efforts among people with DM in the context of chronic health conditions. These factors include autonomy, autonomy support, self-efficacy, and personal attitudes and value systems. This study's measure pertaining to the individual mode of agency was found to not be significantly associated ($p > 0.05$) with quality of DM2 self-management, as evidenced by glycemic control. However, a study by Al-Dwaikat, Chlebowy, Hall, Crawford, and Yankeelov (2020) examined the mediating role that self-management (i.e., individual agency) had in the relationship between factors of social support (i.e., proxy agency) and diabetes biomarkers of HbA1c and body mass index, similar to my exploration of the complementary role that individual agency and proxy agency serves in the self-management of DM2. Al-Dwaikat, Chlebowy, Hall, Crawford, and Yankeelov (2020) found that individual agency according to self-management behaviors—measured using the factors of diet, physical activity, and medication adherence—did not mediate the relationship between social support factors and DM2-related health outcomes (i.e., HbA1c and BMI). These findings further support that no statistically significant association exists between individual and proxy modes of human agency and quality of self-management efforts as evidenced by glycemic control.

Based on the literature review, no study was located that used participant responses to items within the CIRS instrument as measures of modes of human agency. My study involves exploring diabetes self-management efforts in the context of human agency modality. Findings from my study support exploring specific factors that may influence DM2 self-management (e.g., patient autonomy, self-efficacy, DM-related knowledge, levels of personal relationships within social networks, value placed on different members of social networks people with DM have, etc.) and using broader factors (e.g., poxy agency, individual agency, etc.) is not as predictive of the quality of DM2 self-management efforts. Thus, this study’s findings may be interpreted to inform nursing practice, as well as practices of other health care professionals, by suggesting the importance of focusing efforts in supporting DM-related patient needs on specific aspects of DM self-management rather than assessing and supporting needs that are more broadly defined.

The theoretical framework used for this study was the TDSCM. The TDSCM is a diabetes-focused nursing theory that integrates variables and concepts from Orem’s TS-C and Bandura’s TS-E, making it ideal. The TDSCM research framework is designed to describe testable relationships for the purpose of identifying the value of personal and environmental factors.

Limitations of the Study

Limitations to generalizability with this study can be distinguished in terms of sociodemographic categories. Racial makeup of the study sample was mostly White (*N* = 39), with one participant reporting a race of Black and one identifying as Hispanic/Latino. According to the CDC (2020), the majority of new diabetes diagnoses occur among Black and Hispanic populations—8.2 per 1000 people and 9.7 per 1000 people, respectively—compared to Whites (5.0 per 1000 people). The youngest participant was 46-years-old while the oldest was 88-years-old (μ = 69.6). While incidence of diabetes increases with age, adults of all ages are diagnosed with it. The CDC (2020) estimated that 4.2% of U.S. adults aged 18 to 44 (95% CI = 3.4 – 5.0) and 17.5% of those aged 45 to 64 (95% CI = 15.7 – 19.4) had diabetes. Additionally, annual income and employment status indicated limitations in terms of generalizability of results, with more than half of the study sample (*N* = 18) having reported an annual income of greater than $75,000 and 10 participants reporting being employed either full- or part-time while most were retired (*N* = 27). Among the general U.S. population, 7.5% of adults with some form of college education had diabetes (CDC, 2020).

Another limitation with this study relates to the small sample size. As discussed in Chapter 4, G*Power software generated a required sample size of at least 44 in order to meet a desired power level of 0.80. However, only 41 participants ultimately responded to the study invitations, which leads to a post-hoc power analysis indicating an actual power of 0.76.

Recommendations

Further research could be directed at exploring implications and relationships between factors that are known to influence DM self-management efforts among people diagnosed with the condition. Evidence from this study, as well as that which exists within the literature, seems to suggest that broad factors, such as the proxy and individual modes of human agency, may not serve as useful predictors for DM self-management outcomes as more specific factors may (e.g., patient autonomy, self-efficacy, DM-related knowledge, levels of personal relationships within social networks, value placed on different members of social networks people with DM have, etc.). It may be beneficial to further explore the complementary nature of individual and proxy agency in the self-management of DM while minimizing the limitations identified in this Chapter. Further research into the role of human agency modality in the setting of DM self-management may help inform best practice approaches for nurses and other healthcare professionals in terms of supporting health-promoting behaviors among their patients by promoting a greater understanding among them of the interplay between the individual and social realms of DM self-management.

Implications

Potential positive social change implications resulting from this study can be recognized through improved understanding among health care providers and their patients of the complex personal and social processes involved with DM self-management. My findings support results from other research suggesting that looking at these processes from the broad standpoint of all actions one performs at an individual level and all actions performed on one's behalf at a social level does not appear to render statistical significance. Rather, it appears as though the many factors involved with each of these two realms, validated through previous research, show more significance in predicting and describing relationships and outcomes that are similar in context as this study.

Conclusion

The purposes of this quantitative study were to determine (a) if there is a relationship between the extent that the individual mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year and (b) if there is a relationship between the extent that the proxy mode of human agency is employed and quality of diabetes control among adults who have been diagnosed with DM2 for at least one year. I found that individual agency and proxy agency are not significant predictors of quality of DM2 self-management according to HbA1c values among non-newly diagnosed adults with DM2. A diabetes-focused nursing theory—the TDSCM—guided this study. The TDSCM research framework is designed to support research efforts to describe relationships in order to determine the value of individual and environmental factors in the setting of self-managed DM, and in the context of supportive nursing care. Individual agency and proxy agency were expected to be predictive of DM2 self-management quality, according to glycemic control. However, this quantitative descriptive study has filled a gap in knowledge related to factors that affect the quality of DM2 self-management and contributed to health care providers' understanding of how to most effectively support patients' DM2 self-management efforts through findings that indicated supportive efforts may be better directed according to specific components and aspects of each mode of human agency, rather than more broad consideration wholly involving the modes of agency. My study contributed to positive social change by generating further knowledge and understanding of the complex and dynamic processes involving the interface between personal, social, and health care realms of primarily self-managed DM2 among adults diagnosed with the condition. Thus, social change will be supported by positively guiding social processes among the population of people with DM2 and supportive individuals, related to DM2 self-management and support in a manner that more effectively controls the condition, thereby reducing the negative health consequences and burden on health care resources poor control of DM2 imposes. The findings of my study may be of value to nurses and other health care professionals that are interested in developing and providing appropriate supportive approaches to adult patients with DM2.

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Appendix A: Sociodemographic Data Form

Complementary Modes of Agency in the Self-Management of Diabetes

Complete the following items by marking the space next to the response that most accurately describes you.

What is your age?.......................... ____

Your sex:

Male……………….......... ____

Female…………………… ____

Prefer not to answer……... ____

Race you identify as:

Black……………….…….. ____

White…………..………. ____

Hispanic or Latino……..…. ____

Other race……..……….. ____

Your highest level of education completed:

Some or no high school…... ____

High school diploma/GED... ____

Some college……………… ____

Associate degree……..…….. ____

Bachelor degree…..……….. ____

Master degree…..……..……. ____

Doctoral degree…………… ____

Number of years diagnosed with type-2 diabetes ____

Marital status:

Married………………….. ____

Not married/separated/widowed/divorced ____

Your approximate total annual household income:

Less than $10,000………. ____

$10,000 - $24,999……… ____

$25,000 - $49,999……… ____

$50,000 - $75,000……... ____

Greater than $75,000…..... ____

Prefer not to answer….…. ____

Employment status:

Employed full-time……. ____

Employed part-time……. ____

Retired…………………. ____

Unemployed…..……….. ____

Prefer not to answer…… ____

Health insurance status:

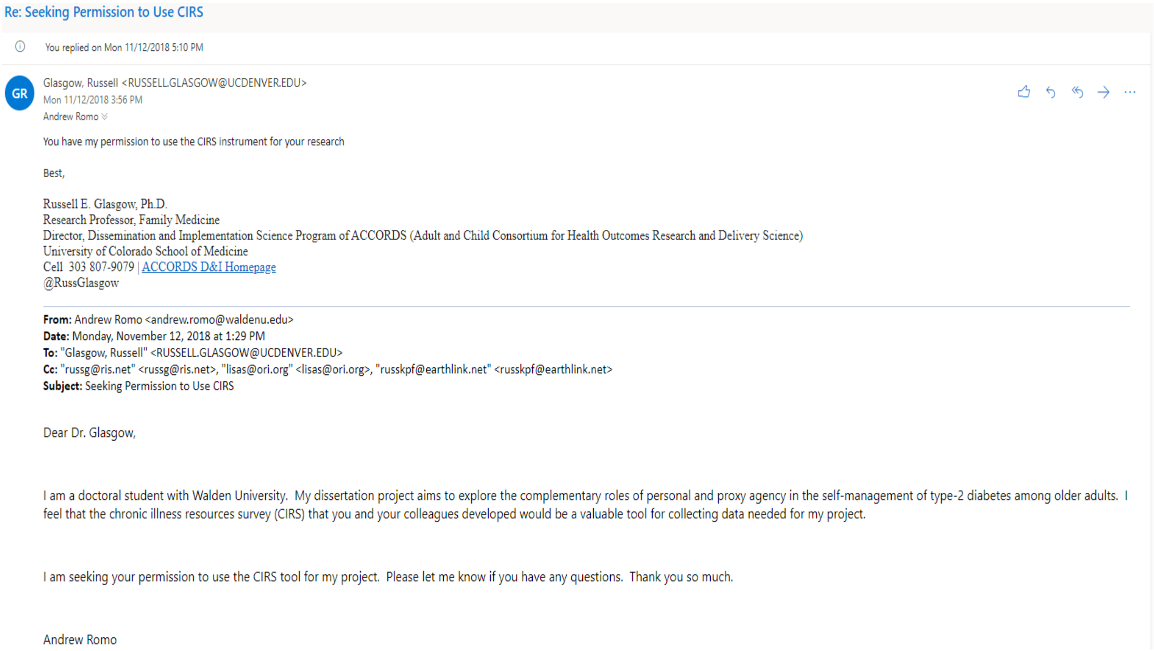
Some insurance coverage ____

Uninsured……………… ____

Approximate distance in miles to nearest health care facilities ____

Number of friends and family members that can be confidently relied upon as sources of support for self-managing your type-2 diabetes ____

Appendix B: Request and Permission to Use Survey Instrument



Re: Seeking Permission to Use CIRS

You replied on Mon 11/12/2018 5:10 PM

Glasgow, Russell <RUSSELL.GLASGOW@UCDENVER.EDU>
Mon 11/12/2018 3:56 PM
Andrew Romo

You have my permission to use the CIRS instrument for your research

Best,

Russell E. Glasgow, Ph.D.
Research Professor, Family Medicine
Director, Dissemination and Implementation Science Program of ACCORDS (Adult and Child Consortium for Health Outcomes Research and Delivery Science)
University of Colorado School of Medicine
Cell 303 807-9079 | ACCORDS D&I Homepage
@RussGlasgow

From: Andrew Romo <andrew.romo@waldenu.edu>
Date: Monday, November 12, 2018 at 1:29 PM
To: "Glasgow, Russell" <RUSSELL.GLASGOW@UCDENVER.EDU>
Cc: "russg@ris.net" <russg@ris.net>, "lisas@ori.org" <lisas@ori.org>, "russkpf@earthlink.net" <russkpf@earthlink.net>
Subject: Seeking Permission to Use CIRS

Dear Dr. Glasgow,

I am a doctoral student with Walden University. My dissertation project aims to explore the complementary roles of personal and proxy agency in the self-management of type-2 diabetes among older adults. I feel that the chronic illness resources survey (CIRS) that you and your colleagues developed would be a valuable tool for collecting data needed for my project.

I am seeking your permission to use the CIRS tool for my project. Please let me know if you have any questions. Thank you so much.

Andrew Romo