Understanding Older Adults Living in Medically Underserved Areas Perspectives Regarding Type 2 Diabetes Care Received

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UNDERSTANDING OLDER ADULTS LIVING IN MEDICALLY UNDERSERVED AREAS PERSPECTIVES REGARDING TYPE 2 DIABETES CARE RECEIVED

BY
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School of Health and Medical Sciences

APPROVAL FOR SUCCESSFUL DEFENSE

Doctoral Candidate, Christopher Rogers, has successfully defended and made required modifications to the text of the doctoral dissertation for the Ph.D. during the Spring Semester 2021

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DEDICATION

I dedicate this dissertation to my mother, Areh Howell, my wife, Latisha Rogers, and my three children, Christian, Anani, and Christopher Jr.
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ABSTRACT

UNDERSTANDING OLDER ADULTS LIVING IN MEDICALLY UNDERSERVED AREAS PERSPECTIVES REGARDING TYPE 2 DIABETES CARE RECEIVED

Christopher K. Rogers
Seton Hall University
2021

Older adults with type 2 diabetes living in medically underserved areas (MUAs) have unique health and social needs that must be taken into consideration when supporting their type 2 diabetes treatment and management care. Effective treatment and management of type 2 diabetes for older adults living in MUAs requires incorporating the preferences, desires, needs, values, and goals of the person at the center of the care into his/her care plan. Shifting care to be conducive to the treatment and management goals and plans co-created with older adults living in MUAs based on their individual physical, psychological, social, and spiritual preferences, values, desires, needs and goals requires health care systems to redesign and restructure their services and roles to be more favorable to elderly adults. Utilizing a basic qualitative research study design, semi-structured, in-depth
interviews were conducted to understand the perspectives of older adults living in MUAs regarding health care received in the treatment and management of their type 2 diabetes. Twelve older adults with type 2 diabetes living in MUAs recruited from senior housing facilities in two designated MUAs participated in the study. The constant comparative method was used for qualitative data analysis. NVivo 12 was used to organize the emerging codes. The Donabedian Model of Care was used as a conceptual framework to guide this research study and provided a lens into which the findings of the study were interpreted, summarized, and reported. Six themes emerged from the qualitative analysis: care treatment and management, accessible services for older adults, information sharing and provider communication, attributes of health care providers, social support, and older adults’ diabetes self-management behavioral strategies. This study gave older adults living in MUAs a voice that offered health care providers with a better understanding of what is important to this vulnerable population in treating and managing their type 2 diabetes. This study provided a framework for health care providers striving to deliver type 2 diabetes treatment and management care to older adults living in MUAs that is holistic, respectful and individualized. Incorporating the findings from this study into practice could lead to greater empowerment and more effective treatment and management care of type 2 diabetes for older adults living in MUAs.
Key Words: type 2 diabetes; older adults; underserved; person-centered care; patient-centered care; qualitative research
Chapter I.
INTRODUCTION

Chronic diseases are among the top causes of death in the United States (U.S.) (Centers for Disease Control and Prevention [CDC], 2019a). Diabetes mellitus, a major chronic disease, is the seventh leading cause of death globally, and the eighth leading cause of death in high-income countries (World Health Organization [WHO], 2018). More specifically, diabetes, type 1 and type 2 combined, is the seventh leading cause of death in the U.S. (CDC, 2019a), and sixth leading cause of death for persons 65 years and over (Heron, 2017).

Approximately 34.2 million people living in the United States (U.S.) have diabetes (CDC, 2020). Of the 34.2 million adults with diabetes, 11.5 million are adults aged 65 years and older with diagnosed diabetes, and 2.9 million with undiagnosed diabetes (CDC, 2020). This equates to more than 25% of the U.S. population aged 65 and over as having diabetes (CDC, 2020; Kirkman et al., 2012a).

Approximately 90% of all diabetes occurrences worldwide are type 2 diabetes (WHO, 2018). According to the King et al. (1998), the majority of people with diabetes in developed countries will be age 65 years and older by
Among all U.S. adult age groups, the prevalence of type 2 diabetes is the highest among adults aged 65 years and older (Bullard et al., 2018). However, medically underserved older adults of lower socioeconomic status suffer disproportionately from chronic disease health disparities, namely type 2 diabetes (Carter et al., 1996).

The characteristics of medically underserved areas (MUAs) are associated with a disproportionate prevalence rate of type 2 diabetes (CDC, 2018a). MUAs, as designated by the Health Resources Services Administration (HRSA), are disadvantaged populations disproportionately affected by a shortage of primary care physicians, high infant mortality, high poverty or a high elderly population (HRSA, 2016). MUA designation involves the application of a four-variable Index of Medical Underservice (IMU), including percent of the population with incomes below poverty, population-to-primary care physician ratio, infant mortality rate and percent elderly. The value of each of these variables for the service area is converted to a weighted value, according to established criteria (HRSA, 2016). The four values are summed to obtain the area’s IMU score (HRSA, 2016). The IMU scale is from 0 to 100, where 0 represents completely underserved and 100 represents best served or least underserved (HRSA, 2016). Each service area found to have an IMU of 62.0 or less qualifies for designation as a Medically Underserved Area (HRSA, 2016).
Demographics and socioeconomic status, for example, age, gender, race/ethnicity, educational attainment, and income, of MUAs are associated with the global prevalence of type 2 diabetes (King et al., 1998; WHO, 2018). Groups with the lowest levels of education and income experience the greatest socioeconomic disparity in age-standardized prevalence of type 2 diabetes (CDC, 2013). Studies show that adults living in MUAs attribute their diabetes management problems to social factors, such as lack of transportation (Horowitz et al., 2003), poor neighborhood characteristics (Longnecker & Daniels, 2001; Wanko et al., 2004), and food insecurity (Seligman et al., 2012).

Given the rise in the predicted probability of type 2 diabetes among the world’s elderly population, and type 2 diabetes association to health disparities, poor health outcomes and lower quality of life for people living in MUAs, innovative interventions are needed to empower older adults with type 2 diabetes living in MUAs and their caregivers with instruction in self-management and resources that will aid them in the day-to-day care of their chronic disease.

The primary goal of type 2 diabetes treatment and management in older adults is to achieve a balance between targeted glucose levels and blood pressure to prevent complications and comorbidities, while avoiding hypoglycemia (American Diabetes Association [ADA], 2021a). The starting point for living well with type 2 diabetes and preventing further complications
is a rewarding interaction between the patient and the interdisciplinary care team involved in treatment and management planning (ADA, 2021a). This treatment and management plan includes both pharmacological interventions and nonpharmacological interventions such as self-management (Kaku, 2010; Rodger, 1991).

The American Diabetes Association (ADA) (2021a) recommends that the treatment plan be created with the person based on their individual physical, psychological, social and spiritual needs, preferences, values, goals and desired outcomes (ADA, 2021a). Additionally, the ADA (2021a) recommends that the care management plan take into account the older adults’ type 2 diabetes self-management knowledge and skills, caregiver support, socioeconomics, health beliefs, health knowledge, cultural factors, and the presence or absence of coexisting chronic conditions. An important component to the collaborative treatment and management plan is for the health care provider to foster a trusting relationship in which patients feel valued, trusted and psychologically safe (Tol et al., 2015). Such a synergetic relationship between the interdisciplinary health care team and patient that takes into account the physical, cognitive, psychological, and social aspects of a person, as well as his or her values, beliefs, goals, desires and preferences, helps patients to: (1) become active participants in their health care, (2) make smarter decisions regarding their health, and (3) take control of their own lives (Tol et al., 2015).
Problem Statement

There is a shift in health care toward people with chronic conditions receiving care that seeks to bring them to a state of wholeness in body, mind, spirit and relationships (with other people and the environment) based entirely on respecting their individual needs, desires, goals, values, and preferences (Kogan et al., 2016a). However, because older adults with chronic conditions who live in MUAs often face significant and unique health disparities that complicate their treatment and management care plan (CDC, 2018a; ADA, 2021a; Philp et al., 2017; Kirkman et al., 2012a; Northwood et al., 2018), health care could benefit from understanding this approach to care from the perspectives of elderly persons living in these communities who have type 2 diabetes. Holistic care that respects the unique needs, goals, desires, values and preferences of older adults with type 2 diabetes empowers and promotes quality of life and self-management among this group of patients (Tol et al., 2015).

Furthermore, as described above, previous research has highlighted the importance of improving the health outcomes and quality of life of older adults with type 2 diabetes through a collaborative treatment and management care plan that is individualized and takes into consideration the person’s needs, preferences, desires, goals and values. Similarly, previous research has described how the person’s role and perspectives are of significant value in refining care processes and empowering them to
participate in their own care. However, there seems to be a lack of literature on both of these approaches to care individualized for older adults with type 2 diabetes living in MUAs from their perspectives.

In addition, shifting care to be conducive to treatment and management goals and plans co-created with type 2 diabetic older adults living in MUAs based on their individual physical, psychological, social and spiritual preferences, values, needs, desires and goals, requires health care systems to redesign and restructure their services and roles to be more propitious to this vulnerable group of elderly adults (Kogan et al., 2016b).

There is a need for more research from the perspectives of older adults with type 2 diabetes living in MUAs on the system- and provider-level improvements that would facilitate individualized type 2 diabetes care processes that increase patient empowerment for this population. The perspectives of what is important to older adults living in MUAs in treating and managing their type 2 diabetes is essential to inform the design of care delivery systems and processes that provides a foundation of support and education for the elderly patient and motivates and empowers this vulnerable population to become active decision-makers in their care.

**Purpose Statement**

The purpose of this qualitative study is to understand older adults living in medically underserved areas perspectives regarding health care received in the treatment and management of their type 2 diabetes.
**Research Questions**

**Overarching research question.** What are the perspectives of older adults living in medically underserved areas regarding health care received in the treatment and management of their type 2 diabetes?

**Sub-questions.**

1. How do older adults living in medically underserved areas experience the care they receive from their health care provider(s) for treatment and management of their type 2 diabetes?
2. What do older adults living in medically underserved areas prefer in the care they receive for treatment and management of their type 2 diabetes?
3. What do older adults living in medically underserved areas desire to be incorporated into their treatment and management care in order to improve their type 2 diabetes?
4. What do older adults living in medically underserved areas value in the care they receive for treatment and management of their type 2 diabetes?

**Conceptual Framework**

The conceptual framework used to guide this qualitative research is the Donabedian Model of Care (Donabedian, 1980). This conceptual framework was selected because it outlines the impact that structures, processes, and outcomes have on treating and managing chronic diseases.
with the aim to empower self-care and improve the quality of chronic disease outcomes in older adults with type 2 diabetes living in MUAs.

Therefore, as applied to this research study, Donabedian’s structure, process, and outcome quality of care model was used to emphasize the value each domain has on the perspectives of older adults living in MUAs regarding health care received in the treatment and management of their type 2 diabetes. These perspectives framed according to structures, processes, and outcomes will provide unique information on the holistic (bio-psychosocial-spiritual) treatment and management approach to delivering quality care that is respectful and individualized, allowing negotiation of care, and offering choice through a therapeutic relationship where older adults living in MUAs are empowered to be involved in health decisions at whatever level is desired by that individual who is receiving the care.

**Significance of the Study**

As patient desires, preferences, needs, goals and values increasingly become drivers of individualized treatment plans and of patient engagement and empowerment, a clear understanding of the components of these elements from the perspectives of the person at the center of the care could facilitate the design of better type 2 diabetes disease treatment and management systems and processes of care tailored towards older adults living in MUAs. This approach to care may result in improved patient
participation, engagement, empowerment and adherence leading to improved health outcomes and health-related quality of life.

When individualized type 2 diabetes care for older adults living in MUAs is achieved, health care professionals involved in diabetes treatment and management care for older adults will “center consciousness and intentionality on caring, healing, and wholeness, rather than on disease, illness and pathology” (Watson, 1988, p. 179). This approach to care helps health care professionals to “acknowledge, facilitate, encourage and support the person with diabetes in making informed decisions about their diabetes self-management” (Australian Diabetes Educators Association, 2015, p. 4).

The value of understanding what is important in diabetes treatment and management care from the perspective of older adults with type 2 diabetes living in MUAs may help providers deliver better holistic (biopsychosocial-spiritual) care that is respectful and individualized, allowing negotiation of care, and offering choice through a therapeutic relationship where older adults living in MUAs are empowered to be involved in health decisions at whatever level is desired by that individual who is receiving the care. This approach to treatment and management care could empower and promote health by supporting older adults with type 2 diabetes living in MUAs in living a sustained quality of life over the course of their lifespan. The findings from this research will incorporate older adults’ perspectives into practice, which could lead to greater empowerment and type 2 diabetes
treatment and management care that is more effective for older adults living in MUAs.
Chapter II.

LITERATURE REVIEW

Conceptual Orientation

When defining the terms *conceptual framework*, this research follows and adapts the approach and usage of Jabareen (2009) as applied to qualitative research. Jabareen (2009) defined conceptual framework as a “network, or “a plane,” of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena” (p. 51). A conceptual framework is used to guide research and frame a study. The conceptual framework provides guidance in formulating the purpose of the study, the research questions, and in qualitative research the interview guide. The conceptual framework also provides a lens into which the findings of the study can be interpreted, summarized, and reported. The Donabedian Model of Care by Donabedian (1980), is a conceptual model that was used in this study as a framework for examining the perspectives of older adults living in MUAs regarding health care received in the treatment and management of their type 2 diabetes.

**Donabedian Model of Care.** Avedis Donabedian, a physician and innovator of the study of quality in health care, concluded that “quality is a property that medical care can have in varying degrees” (p. 3, 1980). In other
words, quality health care is a heterogeneous concept with multiple attributes or characteristics that necessitates criteria and standards to judge its merit (Donabedian, 1980). Donabedian (1980) postulated that the attributes of quality about medical care be assessed “indirectly about the persons who provide care, and about the settings or systems within which care is provided” (p. 3). As a result, quality is defined and assessed based on “the attributes of these persons and settings and the attributes of the care itself” (Donabedian, 1980, p. 3).

Donabedian (1980) concluded that there is no singular definition that captures the essence of “quality medical care” and that the differences in the definition of quality “may be almost anything anyone wishes it to be, although it is, ordinarily, a reflection of values and goals current in the medical care system and in the larger society of which it is a part” (2005, p. 692). Donabedian (1988) further explained that in defining quality “several formulations are both possible and legitimate, depending on where we are located in the system of care and on what nature and extent of our responsibilities are” (p. 1743). Therefore, instead of resting on a specific definition of what “quality medical care” means, Donabedian (1980) proposed to begin with “the simplest complete module of care: the management by a physician, or any other primary practitioner, of a clearly definable episode of illness in a given patient” (p. 4). Donabedian (1980, 1988) divided this management into two domains: the technical and the interpersonal, which are
part of a larger group of coaxial concepts at which quality may be assessed: amenities of care, contributions to care of the patient themselves as well as of members of their families, and care received by the community as a whole. The information from which inferences can be drawn about the quality of care led to Donabedian’s (1980) groundbreaking model of care, which proposes using specific operational measures that express what quality is. Donabedian (1980) classified these more specific operational measures into three domains: structure; process; outcome (Figure 1).

**Figure 1**

*Conceptual framework that illustrates and provides examples of the Donabedian Model of Care domains: structure, process, and outcome*

Structure. Donabedian (1980) defines *structures* as the context or attributes of the settings in which health care occurs. These characteristics of the providers of care are the fundamental components of an organization that influence the kind of care that is provided (Donabedian, 1980). The concept of structure includes the human, physical, organizational, financial and other resources of the health care system and its environment (Donabedian, 1980, 1986). For example, structures can include the organization of the medical staff or nursing staff in a hospital, the manner in which health care providers conduct their work, in individual or group practice, quality improvement strategies of a hospital, or geographical accessibility of health care resources available to a population of people within a defined territory (Donabedian, 1980). Donabedian (1980) recommended that population characteristics such as demographic, social, economic and location be taken into consideration when designing structural features of health care. Good structures frame the manner in which quality of care is monitored and its findings are acted upon (Donabedian, 1980). Donabedian (1980) concluded that “good structure, that is, a sufficiency of resources and proper system design, is probably the most important means of protecting and promoting quality of care” (p. 82).

Process. According to Donabedian (1980), “the structural characteristics of the settings in which care takes place have a propensity to influence the process of care so that its quality is diminished or enhanced” (p. 84). That is, care processes build upon the established structural components
of the organization. The process domain depicts the elements of the care delivery team’s performance to maintain or improve the health of patients. *Processes are defined by Donabedian (1980, 1988) as actions done in giving and receiving health care including those of patients, families, and health care providers. It includes patient engagement activities such as seeking care and carrying it out, and decision-making or expressing opinions about different treatment methods, as well as the practitioner’s activities in making a diagnosis and recommending or implementing treatment (Donabedian, 1980, 1988). Donabedian (1980) distinguishes between the provider’s diagnostic process and the therapeutic process. The diagnostic process, for example, includes the history that is taken, the physical examination that is performed, and the laboratory tests that are ordered (Donabedian, 1980). The therapeutic process, for example, includes the performance of surgery, the institution of drug treatment, supporting patient’s self-management, respect for the patient’s autonomy, and use of enough time; not rushing the patient (Donabedian, 1980). Donabedian describes a key component of the process of health care as the management of the interpersonal relationship between the provider and the patient (1982). Finally, Donabedian (1980) emphasized that the processes of care be “related to need and to sociodemographic and residential characteristics of the clients” (p. 95). According to Donabedian (1980):
Elements of the process of care do not signify quality until their relationship to desirable changes in health status has been established…but, once it has been established that certain procedures used…are clearly associated with good results, the mere presence or absence of these procedures in these situations can be accepted as evidence of good or bad quality. (p. 83)

**Outcomes.** Outcome measures epitomize the impact of care and sustainability of the organization. Improving outcomes important to the individual and society as a whole is the overarching goal of health care (Donabedian, 1980). Patient social, demographic, and residential differences shape the current and future improvements in health care (Donabedian, 1980). Outcomes are the current or future improvement effects on health status, quality of life, knowledge, behavior, goals, values and satisfaction of patients and populations that can be attributed to antecedent health care (Donabedian, 1980, 1986, 1988). These include social and psychological function in addition to physical and physiological aspects of performance (Donabedian, 1980). For example, outcomes include preventable disease, morbidity, mortality, disability, satisfaction with care, restoration of physical, psychological and social function, understanding of illness and the treatment and management plan of care, and adherence to the treatment and management plan (Donabedian, 1980).

In summary, Donabedian (1980) states:
The set of activities…called the “process” of care…is the primary object of assessment, [however] the basis for the judgement of quality is what is known about the relationship between the characteristics of the medical care process and their consequences to the health and welfare of individuals and of society, according to the value placed upon health and welfare by the individual and by society. (p. 79-80)

Jones and Meleis (1993) supported this view and the authors stated that the evolution of the patient’s health, through self-management, can be improved on increasing his/her empowerment. Empowerment, they say, is “both process and outcome” (Jones & Meleis, 1993, p. 8). Gibson (1991) described empowerment as a “social process of recognizing, promoting, and enhancing people’s abilities to meet their own needs, solve their own problems, and mobilize necessary resources to take control of their own lives” (p.359). Gibson (1991) defined empowerment as simply “a process of helping people to assert control over the factors which affect their health” (p. 358).

These processes that empower self-care and quality of life for people with chronic disease as outlined by Donabedian in the 1980s and reemphasized in the 1990s by Gibson (1991) and Jones and Meleis (1993) include: (1) positive interactions with one’s health care team while receiving care; (2) health care professionals serving as a resource person and resource mobilizer who facilitates access to both physiological, psychological and social resources that promote and support health; and (3) coordination and communication
among various members of the health care team so that all involved are working toward a common goal shaped by the patient’s values, beliefs, fortitude and experience. The outcome of the process of empowerment is people experiencing improved health and well-being, as described by achieving the goals important to the individual (Jones & Meleis, 1993), which is consistent with Donabedian’s outcome domain. For example, the outcome of empowerment is employing the necessary knowledge and skills to self-manage one’s type 2 diabetes, thus lowering one’s risk for diabetes-related complications such as hypertension.

In conclusion, each domain, structure, process, and outcome, is influenced by the other and each is interdependent on the other (Donabedian, 1988). The basis for judging quality health care are the goals and values established by the individual. The antecedent to this is the structural capabilities for enhanced processes of care that make realization of good health care possible. According to Donabedian (1988), the triad approach to health care quality improvement “is possible only because good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome” (p. 1745). Moore et al.’s (2015) study showed statistically significant correlations between the characteristics of the health care setting (structure) and clinical processes performed in the health care setting (process), and clinical processes performed in the health care setting and the status of the patient following a given set of interventions (outcomes).
Donabedian (1980) underscored that the way patients view good care is based on their needs and these patient’s perspectives are inseparable from good structures, processes, and outcomes of health care. Health care treatment and management interventions directed at facilitating a connection between structures, processes, and outcomes, as well as research efforts to understand the structures and processes of health care received in treating and managing type 2 diabetes in older adults living in MUAs, will shed further light on models of care that respect the values, needs, goals, and preferences of this vulnerable population and that promote and empower self-management.

Epidemiology of Type 2 Diabetes in Older Adults

As the nation’s population of older adults continues to grow at a rapid pace (United States Census Bureau, 2017), the prevalence of type 2 diabetes is expected to increase concurrently (Yakaryılmaz & Öztürk, 2017). Among all U.S. adult age groups, the prevalence of type 2 diabetes is the highest among adults aged 65 years and older (Bullard et al., 2018). In 2016, the overall crude prevalence of diagnosed type 2 diabetes among U.S. adults aged 65 years and older was 19.62% (95% CI = 18.54-20.74; Bullard et al., 2018). With respect to the target population within New Jersey for this study, in 2017 the crude rate of diagnosed diabetes among older adults aged 65 years and older in Camden, NJ was 26.6% (CI: 17.4%, 38.3%), and 25.9% (CI: 17.3%, 36.8%) in Bergen, NJ (NJSHAD, 2017). The number of cases of diagnosed
diabetes in those over 65 years of age is expected to increase 82% between 2005 and 2050 (Narayan et al., 2006).

Those over age 65 years have higher rates of emergency department visits for hypoglycemia, a complication of type 2 diabetes, compared to the general adult population (Wang et al., 2015). Older adults with diabetes have higher rates of visual impairment (Leasher, 2016), hearing impairment (Bainbridge et al., 2011), major lower extremity amputation (Li et al., 2012), and end-stage renal disease (Narres et al., 2016). Death resulting from type 2 diabetes complications is significantly higher among the elderly (Kirkman et al., 2012b).

**Social Determinants of Type 2 Diabetes**

There are varying degrees of individual determinants that affect health, but research has established that social determinants of health (SDoH), also known as health-related social needs (HRSNs), have a significant impact on health, namely type 2 diabetes. SDoH stem from the unequal distribution of power, income, goods, and services across populations that impact one’s access to and equitable use of health care (Marmot et al., 2008). SDoH reflect the social factors and environmental conditions, for example, education, employment, transportation, leisure, community, neighborhood, housing, shelter, natural environment, built environment, social support, or social norms and attitudes, that impact one’s access to and equitable use of health care (Marmot et al., 2008).
There are a range of individual and population health factors that influence type 2 diabetes risk, treatment and management. For type 2 diabetic patients, social factors are key determinants in their ability to successfully manage their condition and live a productive lifestyle. Demographics and socioeconomic status are associated with the global prevalence of diabetes (King et al., 1998; WHO, 2018). Non-Hispanic Blacks, Hispanics, and people of other or mixed race have higher age-standardized prevalence of diabetes compared to Asians and White non-Hispanics (CDC, 2013).

Groups with the lowest levels of education and income experience the greatest socioeconomic disparity in age-standardized prevalence of diabetes (CDC, 2013). More specifically, in 2014, the age-adjusted prevalence rates of diagnosed diabetes among the general population of U.S. adults with less than a high school education was 12.9% compared to 6.7% for those with greater than a high school education (CDC, 2015b). In 2016, the prevalence of type 2 diabetes in adults with less than a high school education rose to 14.20% compared to 6.89% for adults with a high school diploma (Bullard et al., 2018). The age-standardized prevalence of diabetes among the general population of U.S. adults classified as poor (1.0 times the federal poverty level) was 10.1% compared to 5.5% for those with high income (greater than or equal to 4.0 times federal poverty level; CDC, 2013). Also, people who
have diabetes have higher unemployment rates than non-diabetics (Robinson et al., 1989).

Physical environment factors such as transportation affect type 2 diabetes outcomes. For example, there is a link between limited or no transportation access and successful follow-up care for diabetes management (Wheeler et al., 2007). Research has shown that the number of visits made to the doctor is an independent predictor of glycemic control (Zhang et al., 2012). Diabetic adults who had a minimum of four visits in a year to the doctors, as per ADA recommendations, had better glycemic control compared to diabetic adults with no health care visits (Zhang et al., 2012). This suggests that adequate transportation to the doctor’s is an important factor in supporting ADA recommendations for glucose management.

Research has also demonstrated that there are racial and ethnic disparities in diabetes care due to transportation issues (Kaplan et al., 2013). Further, studies have also demonstrated an association between lack of transportation and self-management of diabetes. Musey et al. (1995) showed that 43% of low-income medically underserved African American patients with diabetes hospitalized with a primary diagnosis of diabetic ketoacidosis reported they stopped insulin therapy because of lack of money to purchase insulin from the pharmacy and transportation barriers to the hospital. These findings are consistent with another study that showed adults living in MUAs
attribute their diabetes management problems to lack of transportation (Horowitz et al., 2003). Given the inequitable distribution of medical providers in MUAs (Grumbach et al., 1997), residents must travel far for care (Rosenthal et al., 2005), which presents barriers for individuals with limited or no transportation.

Additionally, the built environment – the human places where people live, work, worship, play, and more – has been a key factor impacting health and health outcomes. For example, Dwyer-Lindgren et al. (2017) showed that differences in socioeconomic and racial/ethnic disparities amalgamated with where a person lives affects health outcomes, life expectancy at birth, and age-specific mortality risk. Furthermore, neighborhood characteristics of MUAs such as no convenient, accessible or nearby places to exercise or no safe places to exercise are associated with an increased risk of developing diabetes, poor management of diabetes, and adverse outcomes (Sigal, Kenny, Wasserman, & Castaneda-Sceppa, 2004; Wanko et al., 2004).

Housing conditions, a nexus between the built environment and health disparities, has been the focus of diabetes research. Previous studies demonstrated that unstable and poor housing is associated with the increased risk of developing diabetes (Burton, 2007) and the increased risk of diabetes-related emergency department, inpatient and outpatient visits (Berkowitz et al., 2018; Berkowitz et al., 2015). Exposure to toxins, lead paint, pest infestation and poor air quality in housing are associated with an
increased risk of developing diabetes, poor management of diabetes, and adverse outcomes (Longnecker & Daniels, 2001; Remillard & Bunce, 2002; Bener et al., 2001; Vasiliu et al., 2006; Adamkiewicz et al., 2014; Schootman et al., 2007).

In the literature, a relationship between food insecurity—no, limited or uncertain access to nutritionally adequate and safe foods at the household or individual levels due to resource or other constraints (Bickel et al., 2000; Wunderlich & Norwood, 2006)—and diabetes risk has been noted (Seligman & Schillinger, 2010). Moderate and high levels of food insecurity among racial/ethnic minorities, individuals with less educational attainment, and individuals with low-income, respectively, are associated with higher odds of type 2 diabetes (Seligman et al., 2007). Horowitz et al. (2004) showed that access to healthy foods in MUAs severely prohibits diabetics from eating the ADA recommended diet of foods low in fat and high in fibers.

Recent research showed that a lack of money to buy healthy foods, lack of proper cooking facilitates, not owning a stove, and eating microwavable foods are all barriers to optimal self-management in urban adults with diabetes (Chan et al., 2015). Seligman and colleagues (2012) reported that type 2 diabetic adults living in MUAs who were food-insecure had higher odds of poor glycemic control, defined as a HbA1c ≥8.5% (targeted range for people with diabetes is usually less than 7%). In a separate study among low-income adults living in MUAs, Seligman et al. (2010) showed that
food insecurity is a barrier to diabetes self-management. Other studies have reported an association between food insecurity and low self-efficacy to manage diabetes (Vijayaraghavan et al., 2011; Lyles et al., 2013). Pilkington et al. (2010) reported that out-of-pocket expenses for the management of diabetes, such as purchasing prescribed medication, orthopedic shoes or required mobility devices exacerbates food insecurity.

**Etiology of Type 2 Diabetes**

Type 2 diabetes is attributable to clinical, pathological, and biochemical defective changes of insulin secretion and insulin resistance (Rodger, 1991). There are pathogenetic processes and genetic defects of the pancreatic beta cells that produces the onset of hyperglycaemia in patients with type 2 diabetes (Alberti & Zimmet, 1998). Table 1 provides clinical attributes for the preponderance of type 2 diabetic patients.

**Table 1**

*Clinical Attributes of Type 2 Diabetic Patients*

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of onset:</td>
<td>Usually greater than 30 years</td>
</tr>
<tr>
<td>Body mass:</td>
<td>Obese</td>
</tr>
<tr>
<td>Plasma insulin:</td>
<td>Normal to high initially</td>
</tr>
<tr>
<td>Plasma glucagon:</td>
<td>High, resistant to suppression</td>
</tr>
<tr>
<td>Plasma glucose:</td>
<td>Increased</td>
</tr>
<tr>
<td>Insulin sensitivity</td>
<td>Reduced</td>
</tr>
<tr>
<td>Therapy:</td>
<td>Weight loss, thiazolidinediones, metformin, sulfonylureas, insulin</td>
</tr>
</tbody>
</table>

In type 2 diabetes, the plasma glucose concentrations breakdown resulting in pathological defects to pancreatic islet beta cells that disable insulin secretion and increase insulin resistance (Kaku, 2010). Furthermore, physical and environmental factors such as obesity, overeating, lack of exercise, stress, smoking, alcohol drinking, and aging exacerbate type 2 diabetes impaired insulin secretion and insulin resistance (Kaku, 2010). The combined effect of increases in visceral fat and decreases in muscle mass in obese people gives rise to insulin resistance (Kaku, 2010). Glucose intolerance in obese people results from an increase in fat intake, decrease in starch intake, increase in the consumption of simple sugars, and decrease in dietary fiber (Kaku, 2010). Obese people have a 3- to 8-fold increase in the risk of developing diabetes (Mokdad, 2003).

**Insulin resistance.** Prior to the onset of type 2 diabetes, hyperinsulinemia occurs, which is an increase of plasma insulin concentration in the blood (Guyton & Hall, 2006). In a counterbalance response there is decreased sensitivity of pancreatic beta cells of the target tissues to the metabolic effects of insulin, a condition referred to as insulin resistance (Guyton & Hall, 2006). The decrease in insulin sensitivity causes interference of carbohydrate, fat and protein metabolism, raising blood glucose and increasing insulin secretion (Guyton & Hall, 2006). Prolonged impaired insulin secretion produces glucose toxicity and lipotoxicity (Kaku, 2010). Left
untreated, glucose toxicity and lipotoxicity decreases pancreatic beta cell function affecting glucose regulation (Kaku, 2010). As insulin resistance develops and proliferates over a prolonged period of time, moderate hyperglycemia occurs after ingestion of carbohydrates, giving rise to the early stages of type 2 diabetes (Guyton & Hall, 2010). In the later stages of type 2 diabetes, the body does not produce enough insulin to prevent severe hyperglycemia because pancreatic islet cells become “exhausted” and there are prolonged defects in insulin secretion producing glucose insensitivity and amino acid hypersensitivity of insulin release (Guyton & Hall, 2010; Ozougwu et al., 2013).

**Physiology of diagnosis of diabetes mellitus.** Four main chemical test of the urine and the blood are used to diagnose diabetes. In contrast to a normal person, a person with diabetes will lose glucose in small to large amounts, given the stage of the disease and their intake of carbohydrates (Guyton & Hall, 2006). As such, a glucose in urine test can be used to determine the amount of glucose in the urine to confirm diabetes (Guyton & Hall, 2006).

As stated earlier, ketoacidosis is a serious complication of diabetes. In early stages of diabetes small amounts of keto acids are produced (Guyton & Hall, 2006). As prolonged and severe insulin resistance persist, and the body uses fat for energy, excessive amounts of keto acids are produced, giving rise to diabetic ketoacidosis (Guyton & Hall, 2006). Keto acids can be detected

Another method to diagnose diabetes is through fasting blood glucose and insulin levels (Guyton & Hall, 2006). Evidence suggests that in a normal person fasting blood glucose on awakening be between 70 and 100 mg/100ml (Guyton & Hall, 2006). A fasting blood glucose above this level is a sign of diabetes mellitus or at least pronounced insulin resistance (Guyton & Hall, 2006).

Furthermore, the glucose tolerance test is a medical test in which glucose is ingested and a blood sample is drawn to measure blood glucose levels (Guyton & Hall, 2006). When a fasting, normal person ingest glucose their glucose level rises from about 70 to 100 mg/100 ml to 120 to 140 mg/100 ml and falls back to normal range in 2 hours (Guyton & Hall, 2006). In a person with diabetes, upon ingestion of glucose, their blood glucose level will rise beyond the normal level of 140 mg/100 ml to greater than 200 mg/100 ml and fall back to below normal after 4-6 hours; yet failing to fall below the control level of 140 mg/100 ml (Guyton & Hall, 2006; ADA, 2016).

Finally, the A1C test, also known as the hemoglobin A1C, HbA1C, glycated hemoglobin, and glycosylated hemoglobin test, is a blood test that provides the average levels of blood glucose over the past three months (ADA, 2016). The A1C test is used to diagnosis type 2 diabetes or
prediabetes. The A1C level percentage is the average blood glucose level, in milligrams per deciliter (mg/dL) and millimoles per liter (mmol/L; ADA, 2016).

Table 2 presents the associated A1C level, average blood sugar level and diabetes status. An A1C level greater than 6.5% on two consecutive occasions confirms diagnosis of diabetes (ADA, 2016). A score above the diagnostic threshold on two different tests (for example, A1C and glucose tolerance test) also confirms the disease (ADA, 2016). In contrast, if the results of the two different tests conflict, it is recommended that the test above the diagnostic threshold be repeated (ADA, 2016). For example, glucose tolerance test 140 mg/100 ml and falls back to normal range within 2.5 hours and A1C 5.7%, repeat glucose tolerance test. The recommendation is that the test be repeated in 3-6 months (ADA, 2016).

Table 2

<table>
<thead>
<tr>
<th>A1C Level</th>
<th>Diagnosis</th>
<th>Average Blood Sugar Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 5.7 percent</td>
<td>Normal</td>
<td>Below 117 mg/dL (6.5 mmol/L)</td>
</tr>
<tr>
<td>5.7 percent to 6.4 percent</td>
<td>Prediabetes</td>
<td>117 mg/dL (6.5 mmol/L) to 137 mg/dL (7.6 mmol/L)</td>
</tr>
<tr>
<td>6.5 percent or above</td>
<td>Diabetes</td>
<td>140 mg/dL (7.8 mmol/L) or above</td>
</tr>
</tbody>
</table>

Treatment and Self-Management of Diabetes

Pharmacological interventions and nonpharmacological interventions such as self-management are the treatment approaches for type 2 diabetes (Kaku, 2010; Rodger, 1991). The goal of both interventions is to prevent the onset and progression of hyperglycemia, dyslipidemia, and cardiovascular disorders such as hypertension (Rodger, 1991; Kaku, 2010). An essential element in all pharmacological and nonpharmacological approaches that guide type 2 diabetes clinical decisions and care is ensuring that treatment and management recommendations reflect what is important to the person and takes into consideration his or her physical, mental, emotional, cultural, social and spiritual preferences, needs, and values (ADA, 2021a).

**Pharmacological treatment.** In persons with type 2 diabetes, pharmacological treatment focuses on drugs to increase insulin sensitivity or to induce increased production of insulin by the pancreas (Guyton & Hall, 2006). The first goal of pharmacological treatment in persons with type 2 diabetes is to evaluate current medications known to stimulate hyperglycemia (Rodger, 1991). Medications that raise blood glucose level such as epinephrine, glucocorticoids, thiazide diuretics, salbutamol, phenytoin, niacin, and syrup additives should be avoided (Rodger, 1991). In contrast, evidence suggest persons with type 2 diabetes be prescribed medicines that lower blood glucose such as beta blockers, salicylates, ethyl alcohol, and phenylbutazone (Rodger, 1991). Guidelines recommend prescribers look to
substitute medications that raise blood glucose for those that do not, such as replacing an angiotensin-converting-enzyme (ACE) inhibitor for thiazide diuretic in persons with vascular complications in addition to type 2 diabetes (Rodger, 1991).

Clinical guidelines recommend that in persons with type 2 diabetes, dietary changes be the first approach to lower blood glucose levels (Rodger, 1991). If blood glucose levels do not return to reasonable thresholds within 3 to 6 months, pharmacotherapy in association with diet, education and support should be initiated (Rodger, 1991).

In cases where pharmacotherapy is necessary to reduce hyperglycemia in older adults with type 2 diabetes, it is preferred that they are prescribed medications with a low risk of hypoglycemia (ADA, 2021b). Avoidance of hypoglycemia in older adults is essential in order to prevent cognitive decline (for example, dementia), insulin deficiency requiring insulin therapy, and progressive renal insufficiency (ADA, 2021b). Furthermore, lipid-lowering drugs and medicines that reduce the risk of cardiovascular events and control blood pressure is warranted (Kirkman et al., 2012).

Special care is required in prescribing older adults with diabetes pharmacological therapy (ADA, 2021b). Older adults are at an increased risk for polypharmacy, or the simultaneous use of multiple drugs to treat a single ailment or condition (Parulekar & Rogers, 2018). Also, pharmacological therapy can complicate older adults’ clinical, cognitive, and functional
heteromorphism (ADA, 2021b). As such, it is recommended that glycemic goals in older adults be considered in light of their underlying chronic conditions, diabetes-related comorbidities, physical or cognitive functioning, life expectancy, and frailty (ADA, 2021b; Table 3).

**Table 3**

*Association Between Health Status and Recommended Glycemic Goals in Older Adults*

<table>
<thead>
<tr>
<th>Health Status</th>
<th>A1C Goal</th>
<th>Fasting Glucose</th>
<th>Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy (few chronic conditions, good cognitive and physical function)</td>
<td>&lt;7.5% (58 mmol/mol)</td>
<td>90-130 mg/dL (5.0-7.2 mmol/L)</td>
<td>&lt;140/90 mmHg</td>
</tr>
<tr>
<td>Complications (multiple chronic conditions or 2 or more instrumental activities of daily living (ADL) impairments or mild-to-moderate cognitive impairment)</td>
<td>&lt;8.0% (64 mmol/mol)</td>
<td>90-150 mg/dL (5.0-8.3 mmol/L)</td>
<td>&lt;140/90 mmHg</td>
</tr>
<tr>
<td>Poor health (palliative care and end-of-life care, moderate-to-severe cognitive impairment or 2 or more ADL dependencies)</td>
<td>Avoid reliance on A1C</td>
<td>100-180 mg/dL (5.6-10.0 mmol/L)</td>
<td>&lt;150/90 mmHg</td>
</tr>
</tbody>
</table>


When medication is needed in older adults with type 2 diabetes, certain antihyperglycemic medication classes are preferred (ADA, 2021b).
Before prescribing medication, consideration of cost due to older adults’ limited income is essential (ADA, 2021b). It is also important to evaluate older adults’ ability to comply with supporting self-management regiments, for example, blood glucose testing and insulin injection, prior to prescribing a certain antihyperglycemic medication since many of them struggle to main adequate cognitive and physical functioning as they develop multiple medical conditions (ADA, 2021b). Once all factors have been considered, the following hypoglycemic agents for older adults are recommended: metformin, thiazolidinediones, insulin secretagogues, incretin-based therapies, sodium-glucose contransporter 2 inhibitors, and insulin therapy (ADA, 2021b).

Metformin, an orally administered drug used to treat high blood glucose levels that are caused by type 2 diabetes, is the principal agent for older adults (ADA, 2021b). Insulin therapy, a cloudy or milky suspension of insulin administered in the fat under the skin using a syringe, insulin pen, or insulin pump, is used in over 30% of the people with diabetes (CDC, 2014). In older adults, clinical guidelines suggest that insulin therapy be used by patients or caregivers that have good self-management ability and visual, motor and cognitive skills (ADA, 2021b). Experts recommend that pharmacological treatment be coupled with nonpharmacological treatment in the form of education, training, and support (ADA, 2021b; Rodger, 1991).

**Nonpharmacological treatment.** Nonpharmacological treatment for older adults emphasizes behavior change through diabetes self-management...
education/training (DSME/T) that leads to effective diabetes self-management (American Association of Diabetes Educators [AADE], 2020; ADA, 2021b). In addition, mathematical literacy (numeracy) and health literacy are important for older adults achieving targeted blood sugar levels and improved health outcomes (ADA, 2021b; Kirkman et al., 2012a; Cavanaugh, 2011). With respect to diabetes self-management, a focus of this research, the level of diabetes self-management success for older patients or their caregivers is dependent on having good visual, physical and cognitive skills and the presence or absence of coexisting chronic conditions (ADA, 2021b). It is important to make DSME/T accommodations for older patients experiencing impairments in visual, motor and cognitive functioning (Kirkman et al., 2012a). Matching the diabetes treatment regimens with the self-management ability of an older adult is essential (ADA, 2021b). Individualized DSME/T based on the older adult’s medical, cultural and social status may increase self-management compliance (Kirkman et al., 2012b). Continuous diabetes self-management education and ongoing diabetes self-management support is essential to experience the long-term benefits of nonpharmacological treatment in older adults (ADA, 2021b).

**Self-management.** Self-management, also called self-care, has been defined as “activities undertaken by individuals to promote health, prevent disease, limit illness, and restore health. The critical component of this definition is that [self-management] practices are lay initiated and reflect a
self-determined decision-making process” (Stoller, 1998, p. 24). Self-management has also been associated with patient behaviors, patient education, and health promotion programs (Lorig & Holman, 2003). Effective self-management behavior is a skill that is learned over the years through experience (Majeed-Ariss et al., 2013).

Self-management skills include problem solving, decision making, resource utilization, cultivating a patient-provider relationship, action planning, and self-tailoring (Lorig & Holman, 2003). Self-management behaviors range from recognizing and addressing symptoms, information seeking, utilizing home medical supplies and equipment to manage diseases, taking prescribed and over-the-counter medications, and implementing changes in activities (for example, eating healthier, increasing physical activity, or quitting smoking; Clark et al., 1991; Dean, 1986; Kart & Engler, 1994).

The American Association of Diabetes Educators (AADE; 2020) has defined 7 Self-Care Behaviors that provide a framework for person-centered DSME/T and care that affects clinical and health-related outcomes at the individual and population levels. The AADE7 Self-Care Behaviors (2020) are as follows: healthy coping, healthy eating, being active, taking medication, monitoring, reducing risk, and problem solving (Table 4). These seven self-care behaviors AADE (2020) suggests are essential processes of diabetes management, education, and care to achieve desired health-related outcomes and improved quality of life.
Previous research has demonstrated positive associations between each of the AADE7 Self-Care Behaviors, respectively, and clinical and health-related outcomes. For example, through a two-arm randomized controlled trial of low-income urban African Americans with type 2 diabetes and suboptimal blood cholesterol, blood pressure, and blood sugar, Hill-Briggs et al. (2011) demonstrated that a literacy-adapted, intensive, problem-solving based diabetes self-management training was effective in improving clinical and behavioral outcomes for intervention group participants. In addition, medication adherence is associated with improved HbA\textsubscript{1c} control, fewer emergency department visits, decreased hospitalizations, lower out-of-pocket medical costs, increased physician trust and patients’ feeling that their physician listens and addresses their needs (Capoccia et al., 2016; Polonsky & Henry, 2016). Further, previous research has highlighted how healthy coping, which Kent et al. (2010) defined as “responding to a psychological and physical challenge by recruiting available resources to increase the probability of favorable outcomes in the future”, is associated with better quality of life, decreases in diabetes-related distress, better self-reported health, improved mental health, and optimal glycemic control (Thorpe et al., 2013; Kent et al., 2010; Fisher et al., 2007).

**Table 4**

*Overview of the AADE7 Self-Care Behaviors*
<table>
<thead>
<tr>
<th>AADE7 Self-Care Behaviors</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Eating</td>
<td>“A pattern of eating a wide variety of high quality, nutritionally-dense foods in quantities that promote optimal health and wellness” (AADE, 2020, p. 143). Nutrition and healthy eating impacts blood glucose control. Well-balanced meals consist of non-starchy vegetables, lean meats, fish and beans, some low-fat dairy, fruit, whole grains.</td>
</tr>
<tr>
<td>Being Active</td>
<td>“Being Active is inclusive of all types, durations, and intensities of daily physical movement, which equates to bouts of aerobic or resistance exercise training (structured or planned “exercise”), as well as unstructured activities” (ADDE, 2020, p. 144). Examples include walking, swimming, dancing, or bike riding.</td>
</tr>
<tr>
<td>Monitoring</td>
<td>“Self-monitoring of blood glucose, blood pressure, activity, nutritional intake, weight, medication, feet/skin, mood, sleep, symptoms like shortness of breath, and other aspects of self-care” (AADE, 2020, p. 146).</td>
</tr>
<tr>
<td>Taking Medication</td>
<td>“Following the day-to-day prescribed treatment with respect to timing, dosage, and frequency, as well as continuing treatment for the prescribed duration” (AADE, 2020, p. 144).</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>“A learned behavior that includes generating a set of potential strategies for problem resolution, selecting the most appropriate strategy, applying</td>
</tr>
</tbody>
</table>
the strategy, and evaluating the effectiveness of the strategy” (AADE, 2020, p. 148). Being prepared for unexpected events that may disrupt diabetes self-management or make it more challenging.

Healthy Coping

“A positive attitude toward diabetes and self-management, positive relationships with others, and quality of life” which is “critical for mastery of the other six behaviors” (AADE, 2020, p. 141). Examples include stress management, avoiding diabetes self-management burnout, preventing depression.

Reducing Risks

“Identifying risks and implementing behaviors to minimize and/or prevent complications or adverse outcomes. These include hypoglycemia, hyperglycemia, diabetes-related ketoacidosis, hyperosmolar hyperglycemic state, retinopathy, nephropathy, neuropathy, and cardiovascular complications” (AADE, 2020, p. 147).


Furthermore, in order to be successful at self-management activities, individuals must be (1) knowledgeable about their disease and its treatment to make informed decisions; (2) perform the AADE7 Self-Care Behaviors (2020) outlined above or in the case of elderly persons receive assistance
with activities; and (3) apply skills necessary for maintaining adequate psychosocial functioning (for example, managing the feelings associated with a deteriorating condition; Clark et al., 1991; ADA, 2021b). Self-management activities are undertaken with the guidance of a physician or other health care professional (Clark et al., 1991). The self-management of type 2 diabetes for older adults is interdisciplinary, including primary care physicians, endocrinologist, nurses, social workers, psychologist, dietitians, podiatrist, and community health workers.

**Self-management and the elderly.** At the heart of self-management practices for the elderly is taking into account the person’s values, needs, preferences, and goals (ADA, 2018a). Self-management in old age involves a variety of activities shaped by sociocultural and other social psychological factors, genetic, physiological and biological characteristics (Stoller, 1998). Psychosocial aspects of self-management among the elderly necessitates both intra- and interpersonal coping processes (Clark et al., 1991). For example, the effects of social support can influence self-management practices of older adults (Clark et al., 1991).

Social support is a critical factor believed to mediate improved self-management practices among the elderly (Clark et al., 1991). Social support has been conceptually categorized into four domains: informational (information provided, advice, suggestions), instrumental (the provision of tangible aid or tangible goods and services), appraisal (communication of
information that gives a sense of social belonging), and emotional support (the provision of empathy, concern, caring, love, trust, or encouragement; Krause, 1987, Weinert 1987; Valentiner et al., 1994). Nicklett and Liang (2010) demonstrated that older adults with increased social support increased their likelihood of adherence to self-management regimens. In a separate study, Wen et al. (2004) examined the perceived level of all four domains of social support on diabetes outcomes for older adults who lived with family members and found that higher levels of perceived social support were associated with higher levels of diabetes self-care management activities (healthy eating and exercise).

Stoller (1993) found that elderly adults normalize their chronic disease related symptoms by attributing them to the aging process. As a result of this normalization, older people do not respond to their symptoms with self-management behaviors (Stoller, 1993). For example, under half of respondents studied by Stoller (1993) who experienced weakness, dizziness, urination difficulties, joint or muscle pain, shortness of breath, heart palpitation, or swelling indicated that their symptoms was not at all serious and did not respond with self-care. Thus, elderly people do not necessarily recognize and address their symptoms because they consider them outside a disease framework (Stoller, 1993; Stoller, 1998).

Another factor that impacts older people’s self-management behaviors is that they frequently use medical terminology that does not always reflect
medicine’s scientific guidelines (Stoller, 1998). For example, using expressions such as “high blood,” sugar,” “fallin’ out,” and “nerves” to explain complications is linguistically defined in terms of older adults lived experiences (Stoller, 1998). As a result, provider self-care instructions often result in contextual interpretations that lead to older patients misunderstanding their physicians’ directions and not self-managing their disease (Stoller, 1998).

Additionally, Stoller (1998) reported that older adults’ perceptions had an impact on the symptom to self-management response relationship. Stoller’s (1993) research showed that older adults perceived their symptoms on a scale from serious to benign, and the degree to which they perceived their symptoms affected their self-management response. In a study by Leventhal and Prohaska (1986), the authors reported that elderly adults who associated their disease symptoms to aging were more likely to say they would cope by (1) waiting and watching, (2) accepting the symptoms, (3) denying or minimizing the threat, or (4) postponing or avoiding medical attention. Finally, Stoller (1993) concluded that the interpretation of symptoms by older adults is influenced by situational factors. Stoller (1993) explained that variations in social settings, social situations, social stress, and social support impacts the degree to which older adults respond and address their symptoms.
In a meta-analysis by Norris et al. (2002), the researchers found that self-management interventions, such as instruction in weight loss/weight management, physical activity, medication management, and blood glucose monitoring, alone do not promote behavior changes that result in long-term improvement in glycosylated hemoglobin. Rather, self-management is dependent on multiple levels of influence, for example, applied behavior interventions, as well as social, organizational, community, policy, and economic factors, that work together to elicit behavior change and lifestyle modification in individuals (Sallis & Owen, 2015; McLeroy et al., 1988; Glasgow, 1995).

Finally, type 2 diabetes self-management abilities in older adults is complicated because this population has higher rates of premature mortality, reduced functional status, balance problems and muscle atrophy linked to increased risk of falls, and comorbidities such as coronary heart disease, stroke, and hypertension (Kirkman et al., 2012a). Additionally, common geriatric syndromes (for example, polypharmacy, cognitive impairment, vision and hearing impairment, urinary incontinence, injurious falls, and persistent pain) impact older adults’ diabetes self-management abilities (Kirkman et al., 2012a; ADA, 2021b). According to ADA (2021b), older adults should be screened for these geriatric syndromes to ensure any ailments do not affect diabetes self-management and quality of life.

**Quality Improvement for Treatment and Management of Type 2 Diabetes**
The experiences and actions that impact health outcomes and health-related quality of life of older adults with diabetes are affected by more than just the disease process. As stated above, sustained quality of life and lifespan proportional to healthy people is the goal of people with type 2 diabetes (Kaku, 2010). In light of the rise in the predicted probability of diabetes among the world’s elderly population, multilevel quality improvement strategies targeting diabetes care coordination between health care systems, health care providers, older adults and their caregivers could prove beneficial (ADA, 2021b; Tricco et al., 2012; Schmittdield, 2017). Care coordination should aim to improve the efficiency of diabetes care for older adults, and control for geriatric syndromes (such as polypharmacy, cognitive impairment, vision and hearing impairment, urinary incontinence, injurious falls, and persistent pain) that reduce older adults basic and instrumental activities of daily living that may affect diabetes self-management and quality of life (ADA, 2021b; Tricco et al., 2012; Schmittdield, 2017). These are important goals that will aid this population with day-to-day care of their chronic disease (ADA, 2021b; Tricco et al., 2012; Schmittdield, 2017).

At the center of health care’s quest to improve diabetes care for vulnerable older adults are quality improvement strategies designed to mobilize individuals directly involved in the care process to examine and improve the process with the goal of achieving a better outcome (Hayward et al., 2004). For example, health care providers treatment and management
actions/interventions aimed at facilitating improvements in patient health status, satisfaction, or health behaviors. This can be achieved primarily through an individually care plan based on the person's needs, preferences, values and goals that involves pharmacological interventions and nonpharmacological interventions such as self-management (Kaku, 2010; Rodger, 1991; ADA, 2018a).

Evidence suggested that those directly involved in the care process should construct an individualized tailored care plan that meets the individual needs, preferences, values and goals of older adults and their caregivers (ADA, 2018a). Moreover, quality improvement strategies targeted towards “redefining the roles of the health care delivery team and empowering patient self-management are fundamental to the successful implementation of [chronic care delivery models]” that support pharmacological and nonpharmacological interventions in older adults (ADA, 2018a, p. S8). Holistic system-level strategies that respect the values, needs, preferences, and goals of older adults living in MUAs with type 2 diabetes, and that coordinate quality physiological, psychological and social care across provider and practice settings are recommended to empower self-management and improve health outcomes of older adults with type 2 diabetes (ADA, 2018a).

Care delivery systems are situated in a unique position to optimize the care of older adults with chronic diseases by implementing multilevel interventions beyond disease-reduction that affect health outcomes and
quality of life for persons with type 2 diabetes (Hansen et al., 2018). System-level improvements requires centralized, focused attention on improving the quality of diabetes care through an individualized collaborative treatment and management plan between the interdisciplinary health care team and the older adult based on the person’s individual physical, psychological, social and spiritual needs, preferences, values and goals (Wagner et al., 2001; ADA, 2018a). This approach to improving the quality of care for older people with diabetes requires collaborative, interdisciplinary health care teams (ADA, 2018a) that:

- Provides care that is in accordance with evidence-based diabetes guidelines (Fleming et al., 2001).
- Supports their patient’s performance with self-management tasks (O’Connor et al., 2011).
- Redesigns care processes of their delivery system to meet the health status, culture, values, and social context of the patient so as to allow him or her to play an active role in their care plan (Feifer et al., 2007; Powers et al., 2016).
- Assess and address psychosocial, emotional, and socioeconomic factors (Powers et al., 2016).
- Links patients to community resources to address their needs (Tung & Peek, 2015).
Additionally, in increasing the quality of diabetes care, ADA (2021b) recommends the care plans and goals take into account the older adults:

- living situation, as it may affect diabetes management and support,
- type 2 diabetes self-management knowledge and skills,
- caregiver support,
- health beliefs,
- health knowledge, and
- the presence or absence of coexisting chronic conditions.

For older adults with chronic conditions, an active role with their health care provider in deciding about and planning their care, especially designed to address the multilevel context of patient care, could prove beneficial in strengthening their (or their caregivers) type 2 diabetes self-management practices. From identifying older adults whose living situation and social support networks (for example, adult children, caretakers) negatively affects diabetes management and support, to elderly patients who feel disrespected after a care encounter and walk away less likely to comply with treatment recommendations, or older adults who need more community support to overcome the barriers keeping them from managing their type 2 diabetes, an understanding of the multilevel processes that influence older adults type 2 diabetes outcomes will help providers deliver better quality health care that facilitates shared decision-making and supports this vulnerable population in maintaining self-management behaviors over the course of their life.
Research on Individual Patient Preferences, Needs, Values, and Goals for Type 2 Diabetes Treatment and Management

The following section outlines previous research on type 2 diabetes treatment and management goals and plans based on individual patient preferences, needs, values, and goals.

Beverly et al. (2014) conducted focus groups with adults 60 years of age and older diagnosed with type 2 diabetes to explore their personal values and preferences for diabetes care. Two themes emerged representing older adults’ values and preferences for diabetes care: 1) importance of an effective physician-patient treatment relationship and 2) prioritizing quality of life in diabetes care (Beverly et al., 2014). With respect to effective physician-patient treatment relationship, participants valued a strong working relationship with their diabetes physician; a relationship in which they could trust their physician’s treatment decisions. Relatedly, “older adults’ valued physicians who encouraged them to be involved in their own care and listened to their [diabetes] concerns” (Beverly et al., 2014, p. 46). Older adults expressed the following preferences to facilitate an effective physician-patient treatment relationship: a physician who knew them as a person; an honest physician; a physician who understood their diabetes in the context of their overall health; seeing a diabetes specialist; attending a clean, organized physician office; and attending a physician office that is conveniently located within their geographic proximity. Furthermore, older adults expressed the
following specific preferences for quality of life in diabetes care: the ability to
choose the type and intensity of their diabetes treatment; and shared
decision-making with their physician regarding end-of-life care.

Lopez et al. (2016) conducted a mixed-methods, qualitative and
quantitative, research study involving adult members aged 18 years and older
with self-reported type 2 diabetes residing in the United States who
participated in PatientsLikeMe®, an online research network of patients. The
study aimed to quantify and assess the utilization of various types of diabetes
management programs among a real-world sample of patients with type 2
diabetes, in order to elucidate patient preferences for diabetes management
and support (Lopez et al., 2016). Most respondents had goals of improving
diet (77%), weight loss (71%), and achieving stable blood glucose levels
(71%). The most preferred type of support was diet/weight-loss support
(62%). Doctors or nurses (61%) and dietitians (55%) were the most preferred
sources of diabetes support.

Mazureenko et al. (2015) conducted a “qualitative study examin[ing]
diabetic patients’ experiences at one PCMH [patient-centered medical home]
setting, using in-depth interviews to understand patients’ perspectives of the
shared power and responsibility between patient and provider in their
diabetes care” (p. 61). The sample included type 2 diabetic adults 25 to 89
years of age, of varying genders and racial/ethnic backgrounds who lived in a
Southwestern state of the United States. The researchers sought to
understand “how do patients characterize the type of relationship they would like to have with their physician” (Mazurekenko et al., 2015, p. 63). Results showed that patients would like their physician to make them feel comfortable/welcomed, cared for, and listened to. Patients also described that ideally, they would like their physician to take extra time to talk to them, specifically about non-medical topics other than health issues.

Morrow et al. (2008) conducted qualitative in-depth interviews with adults over 55 years in age with diabetes and other morbid conditions and/or their caregivers, when appropriate, to “investigate the life and health goals of older adults with diabetes and examine the relationship, if any, between those goals and diabetes self-management” (p. 2). The researchers sought to distinguish between participants life goals vs. health goals. “Health goals were initially thought of as pertaining to improving, treating, or remaining absent of illness while life goals encompassed all areas of a subjects’ life they deemed important” (Morrow et al., 2008, p. 420). Older adults expressed the following life goals: longevity, improve or maintain physical functioning, spending time with family, and maintaining independence. Furthermore, participants described achieving their life goals in relation to diabetes self-management goals, citing changes in lifestyle behaviors such as diet, exercise and weight, controlling sugar intake, and avoiding diabetes related complications. Additionally, older participants expressed the following goals pertaining to improving diabetes self-management: health care providers’
responsiveness to their needs; and ancillary resources both within and outside of the health care system to assist with changing their lifestyle behaviors and medication adherence, such as pharmacist, reading books, family, and peers.

Pooley et al. (2001) conducted a qualitative study using in-depth interviews with adults aged 50 years and older with type 2 diabetes, “to explore the issues that they perceive as central to effective management of diabetes, primarily within a primary care setting” (p. 318). Patients expressed a need to have sufficient time during consultations to ask questions, receive information, and agree on a treatment and self-management plan in accordance with their wishes. Patients also expressed a preference for continuity of care by having most of their diabetes care delivered through one designated individual, for example, diabetes specialist nurse. Furthermore, patients stated the importance of their practitioner creating an environment in which they feel comfortable with raising their concerns and asking questions. Patients emphasized that they had good awareness of how their diabetes affected them, and how it should be managed. Participants preferred an environment in which they felt their views were listened to and taken seriously, that their provider is readily accessible when they needed advice, and that they valued two-way communication that is authentic. Lastly, patients stressed a desire to have care tailored towards their individual needs because
“no two patients have exactly the same set of experiences or respond to
treatment in the same way” (Pooley et al., 2001, p. 323).

**Why is Type 2 Diabetes Care for Older Adults Living in MUAs So Complex**

Older adults with type 2 diabetes living in MUAs have complex health needs that make their treatment and management care more challenging and complicated. These challenges include:

- Lack of care planning that incorporates the preferences, values, needs and goals of older adults and their families (ADA, 2021b; Kirkman et al., 2012a).
- Side effects and adverse drug interactions from multiple medications (i.e., polypharmacy; ADA, 2021b; Kirkman et al., 2012a).
- Poor coordination between multiple care providers (Philp et al., 2017).
- Communication barriers including hearing, language, and communication style (Kirkman et al., 2012a).
- Comorbidities, and normalization of chronic disease related symptoms (Kirkman et al., 2021a).
- Life expectancy in light of age, gender, race/ethnicity, and underlying comorbidities and functional status (ADA, 2021a; Kirkman et al., 2012a).
One must also consider older adults living in MUAs social and emotional experiences. These include:

- social support system, social isolation and loneliness (Hackett et al., 2020; Kirkman et al., 2012a),
- decreased mobility (ADA, 2021b; Northwood et al., 2018; Kirkman et al., 2012a),
- loss of independence (ADA, 2021b), and
- change in resources including food insecurity, transportation needs, housing instability, and financial insecurity (Northwood et al., 2018).

Older adults, specifically those with type 2 diabetes, have unique health and social needs that must be taken into consideration when redesigning care processes. There are no simple solutions for addressing the fragmented systems of care that fail to account for the multilevel factors that impact complications and premature death of type 2 diabetes among elderly individuals. Efforts to improve the health outcomes and quality of life for older adults with type 2 diabetes will require tailored interventions that address an individual’s social and physical environments, the health care he or she receives and the associated systems he or she accesses, and individual-level factors such as health behaviors.

Summary

Where there is a negative interplay between treatment and management goals and plans, patient’s age, cognitive abilities, health beliefs,
support systems, social situation, cultural factors, comorbidities, and individual needs, preferences, values, and goals, these combine to deny the person with diabetes a sense of personhood (ADA, 2018a; Clissett et al., 2013). The demoralizing sense of personhood results from “care practices such as infantilization, intimidation, stigmatization and objectification which create the ‘malignant social psychology’ where the individual is depersonalized, invalidated and treated as an object” (Clissett et al., 2013, p. 1496). When the person with diabetes is not respected and their personhood (i.e., their physical, psychological, social and spiritual needs, preferences, values, and goals) is not included in their care treatment and management plan they are less likely to exhibit self-care behaviors (Inzucchi et al., 2012; Williams et al., 2016).

Effective treatment and management of type 2 diabetes is a partnership between the “patient” and health care provider. Effective treatment and management of type 2 diabetes requires incorporating the preferences, needs, values, and goals of the person at the center of the care into his/her care plan. These preferences, needs, values, and goals are physical, psychological and social, and it is critical for health care providers to understand these factors when making treatment and management decisions. Improving provider’s awareness of how older adults living in MUAs define their preferences, needs, values, and goals in terms of health care received is a crucial step in helping to design care delivery systems that individualize
multilevel interventions beyond disease-reduction to empower self-management and optimize health outcomes and quality of life.
Chapter III.

METHODOLOGY

Aim of the Study

The provider-patient relationship remains at the heart of the patient experience, and diversity of perspective in the delivery of health care is what may optimize patient outcomes. Patients’ perspectives of the health care delivery system appear to contribute to their engagement in the care process and ultimately the patient feeling empowered to participate in their own care through self-management. As patient preferences, needs, goals and values increasingly become drivers of individualized treatment plans and of patient engagement, a clear understanding of the components of these elements from the perspectives of the person at the center of the care could facilitate the design of better type 2 diabetes disease treatment and management systems and processes of care tailored towards older adults living in MUAs. This may result in improved patient participation, engagement, and adherence leading to improved health outcomes and health-related quality of life. The purpose of this study is to understand older adults living in medically underserved areas perspectives regarding health care received in the treatment and management of their type 2 diabetes. This study seeks ultimately to incorporate the perspectives of older adults living in MUAs into
practice, which could lead to greater patient empowerment and more effective treatment and management of type 2 diabetes for this vulnerable population.

**Research Approach**

A basic qualitative research study design was used to understand the perspectives of older adults living in MUAs regarding health care received in the treatment and management of their type 2 diabetes. "Qualitative Research is an umbrella concept covering several forms of inquiry that help us understand and explain the meaning of social phenomena with as little disruption of the natural setting as possible" (Merriam, 1998, p.5). In other words, qualitative research places the researcher a part of the participants’ process as the researcher collects and interprets data about the participants’ experiences in order to determine what is meaningful (Merriam, 2009; Creswell, 2013; Patton, 2015; Charmaz, 2008).

Qualitative research is used when a problem or issue needs to be explored (Creswell, 2013). This is needed to study a group of people, to study how things work, to capture stories to understand people’s perspectives and experiences, or to further explain how systems function and their consequences (i.e., the events that occur as a result of the concept) for people’s lives (Creswell, 2013; Patton, 2015).

Basic qualitative research as a design is used when one of the five traditional approaches (i.e., narrative research, phenomenology, grounded theory, ethnography, or case study) to inquiry are not appropriate (Merriam,
The tradition most closely related to this study is grounded theory because it is an interpretative approach aimed at describing and understanding the social phenomena understudy (Charmaz, 2008). However, grounded theory is typically used by sociologists as a general inductive approach (Charmaz, 2008) to build theory, rather than health sciences, although grounded theory has been used more frequently in the field of nursing research (Schreiber & Stern, 2001).

Furthermore, the emphasis of the study will determine which methodology is used (Cooper & Endacott, 2007). When the emphasis of the study does not fit the distinguishing features of a specific qualitative tradition, a basic qualitative approach is selected (Cooper & Endacott, 2007). In the case of this study, while grounded theory design most closely aligns, the emphasis is not to build a theory (grounded theory), rather to explore the older adults’ perspectives regarding health care received in the treatment and management of their type 2 diabetes. Therefore, instead of focusing this study through the optics of one specific qualitative tradition, the researcher applied credibility strategies (Caelli et al., 2003) to focus on understanding older adults’ experiences with health care received in the treatment and management of their type 2 diabetes. Hence, a basic qualitative design fits this study’s purpose.

Using a basic qualitative approach, the researcher conducted semi-structured, in-depth interviews to understand the perspectives of older adults
living in MUAs regarding health care received in the treatment and management of their type 2 diabetes. The researcher used a semi-structured in-depth interview guide with predetermined, sequenced, and logical questions (Durdella, 2018; Jamshed, 2014; Morris, 2015) to ask each participant about their experiences, preferences, desires and values regarding health care received in the treatment and management of their type 2 diabetes. Questions were guided by the conceptual frame, the Donabedian Model of Care (1980), and aimed to understand the value each domain has on the perspectives of older adults living in MUAs regarding health care received in the treatment and management of their type 2 diabetes, including patient experiences and outcomes. Probes were provided to ensure a thorough understanding of the participants’ perspectives (Durdella, 2018; Guest et al., 2013). Finally, the researcher analyzed data using Donabedian’s (1980) structure, process, and outcome quality of care conceptual frame (Gale et al., 2013).

**Participants and Sample**

This qualitative research study used the purposeful sampling strategy. Specifically, a criterion sampling approach was used to identify a homogeneous sample of individuals who met the specific criteria and had experienced the phenomenon under study (Patton, 2015; Creswell, 2013). This sampling approach produced a group of participants that provided information-rich insights that contributed to the understanding of the
phenomenon (Creswell, 2013). Participants enrolled in the study were older adults 65 years of age or older, diagnosed with type 2 diabetes, English-speaking, did not have an identified cognitive diagnosis, living in a MUA, experiencing one or more HRSNs, and at least one visit in the past 12 months to a doctor, nurse, or other health professional for type 2 diabetes. Each participant was screened using a pre-screening questionnaire (Appendix A) to identify older adults living in MUAs with type 2 diabetes meeting the inclusion criteria and experiencing the phenomenon under study. Participants meeting the inclusion criteria were invited to take part in a one-on-one in-person interview. Non-purposive snowball sampling was used to ask participants to identify new people they know that met the inclusion criteria (Patton, 2015).

Recruitment took place at four senior housing facilities in Camden, New Jersey and Garfield, New Jersey; two senior housing centers from each area, respectively. Both Camden, NJ and Garfield, NJ are designated MUAs according to HRSA (2016). The purpose of using geographical disparate sites was to achieve what Shenton (2004) called “site triangulation.” Site triangulation is recruiting participants from several organizations “so as to reduce the effect on the study of particular local factors peculiar to one institution” (Shenton, 2004, p. 66). In citing Dervin’s (1983) concept of “circling reality” when explaining the purpose of site triangulation, Shenton (2004) suggested that the goal of site triangulation is to increase the diversity in perspectives because this provides “a better, more stable view of ‘reality’
based on a wide spectrum of observations from a wide base of points in time-space” (p. 66). The Principal Investigator (PI) submitted a formal request to each senior housing facility explaining the research study and asking permission to recruit senior residents and conduct on-site one-on-one interviews at a time and space agreed upon by the PI and the facility. Senior housing facilities agreeing to participate in the research study were asked to sign a site permission letter (Appendix B).

Following IRB approval (Appendix C), the PI posted recruitment flyers (Appendix D) throughout each senior housing facility that explained the purpose of the study, highlighted inclusion criteria, and asked for participation. The recruitment flyer included the dates and times the PI would be on-site to conduct in-person recruitment and administer the pre-screening questionnaire. At the time of recruitment, the PI was on-site to discuss the study with residents, and for the residents to complete the pre-screening questionnaire, sign study consent, and schedule one-on-one interviews.

This research study required approximately 15 participants who met the inclusion and exclusion criteria. Instead of using g-power to calculate sample size as with quantitative studies, because this is a qualitative study, this research followed qualitative precedent and used saturation as the criterion for determining sample size. Glaser and Strauss (1967) define saturation as “the criterion for judging when to stop sampling the different groups pertinent to a category…Saturation means that no additional data are
being found whereby the [researcher] can develop properties of the category” (p. 61).

Additionally, guidelines for the number of research participants to recruit for qualitative research have been suggested in the literature. Guest et al. (2006) suggested that saturation will be achieved within the first 12 participants interviewed. While Patton (2015) does not give a specific sample size for qualitative designs, he cited several studies that conducted in-depth interviews with sample sizes ranging from 1-10. Finally, Crabtree and Miller (1992) recommended sample sizes of 6-8 for homogeneous groups, and 12-20 for maximum variations. As such, since this qualitative study used homogeneous groups to conduct in-depth one-on-one interviews as the data collection method, the sample size was approximately 15 older adults meeting the inclusion criteria.

Data Collection

The PI used “a series of interrelated activities aimed at gathering good information to answer…research questions” (Creswell, 2013, p. 146). Data collection occurred in three steps. First, a paper-based pre-screening questionnaire (Appendix A) was administered by the PI on-site at the senior housing facilities. The pre-screening questionnaire was developed using questions from the CDC’s (2019) Behavioral Risk Factor Surveillance System Survey (BRFSS) and the Centers for Medicare and Medicaid Services’ (n.d.) Accountable Health Communities (AHC) Health-Related Social Needs
(HRSNs) Screening Tool. The BRFSS is a national survey conducted since 1984 to measure adult’s health-related risk behaviors, chronic health conditions, and use of preventive services (CDC, 2019b). The AHC HRSNs Screening Tool is designed to screen patients for social determinants of health, such as unmet housing and food needs (Billioux et al., 2017).

The pre-screening tool had two sections that must be completed by each participant to determine if they would be included in the study: background and HRSNs. The background section asked for age, type 2 diabetes status, geographical location, language spoken, cognitive status, and health care access. The second section asked if the participant was experiencing one or more HRSNs in six (6) different domains: housing instability, food insecurity, transportation difficulties, utility assistance needs, financial strain, and lack of family and community support.

An eleven-item paper-based researcher-administered demographic survey (Appendix E) was provided to all participants at the start of the one-on-one interviews. The demographic survey was developed with questions from the CDC’s 2019 BRFSS, the CDC’s Health-Related Quality of Life Measures survey (2018b), the CDC’s National Health and Nutrition Examination Survey (2012), the National Comorbidity Survey (Kessler, 2012), and the Western Europe Survey (Pew Research Center, 2017a). Demographics was used in the Results section to describe the sample of participants interviewed. The demographic survey asked the participant’s gender, race/ethnicity, education
attainment, marital status, spirituality, quality of life, years diagnosed with type 2 diabetes, A1C level, comorbidities, prescribed oral hypoglycemic medications, and prescribed insulin injections.

The primary method of data collection was one-on-one in-depth interviews. Older adults’ perspectives regarding health care received in the treatment and management of their type 2 diabetes draws out the participant’s internal state: his/her thoughts, feelings, and experiences about the structure, functioning, and processes of the health care system regarding their personal health care. This made individual interviews best suited for this study, because interviews are most appropriate “when people tell stories, they select details of their experience from their stream of consciousness” to give access and make understandable complex issues through their experiences upon which the phenomenon is built (Seidman, 2013, p. 7). Given that health care received is an individualized holistic approach to care that incorporates various dimensions of a person’s well-being, including their individual expressions, beliefs and preferences, it is important to conduct individual interviews to elicit detailed information about each older adult’s perspectives on the structure, functioning, and processes of the health care they received antecedent to improvements in health status, quality of life, and patient satisfaction.

All one-on-one interviews were conducted in-person to maintain consistency between interviews. A $15 gift card was provided to all
participants interviewed. Interviews were recorded using a digital voice recorder and transcribed verbatim. Interviews took approximately 60 minutes for each participant and utilized a semi-structured approach. The in-depth interviews utilized a semi-structured interview guide. The interview guide (Appendix F) questions were predetermined, sequenced, and logical, allowing for consistency over the concepts covered in the interview (Durdella, 2018; Krueger & Casey, 2009; Corbin & Strauss, 2015). Questions were guided by the conceptual frame, the Donabedian Model of Care (1980). The interview guide moved from general questions to focused questions (Durdella, 2018; Krueger & Casey, 2009). The same questions were asked in each interview (Corbin & Strauss, 2015). Participants were free to add anything to the interview that they felt was relevant to the discussion (Corbin & Strauss, 2015).

**Study Procedures**

Subsequent to receiving IRB approval from Seton Hall University, the PI spoke to a designee from each senior housing facility to identify times, events and spaces to recruit participants and conduct the one-on-one interviews. Afterward, the PI posted recruitment flyers throughout each of the housing facilities, and set-up a table in the residential hall to discuss the study with potential participants and for participants to complete the pre-screening survey and sign study consent. If the participant met the inclusion criteria, he or she was scheduled for the in-person one-on-one interview. After the
participant agreed to take part in the interview, the PI assigned the individual a participant number to maintain confidentiality. The participant number was used throughout the study’s interview, analysis, and results phases to identify the participants. Participants were also given an option at the start of the interview to be identified by a pseudonym instead of a participant number to preserve anonymity. The pseudonym was linked to the appropriate participant number to ensure consistency and accuracy. Additionally, each senior housing facility was assigned a site number to maintain confidentiality and to identify participants’ site location throughout the study’s interview, analysis, and results phases.

The PI requested of the housing facilities that the space to conduct the one-on-one interviews be private in order to maintain the privacy and confidentiality of the participants and quite in order to reduce noise and distractions. On the day of the interview, the PI began the conversation with verbally confirming the participant’s identity with the assigned participant number. Next, the participant signed the interview letter of consent. Once the letter of consent was signed, the participant completed the researcher-administered demographic survey. The PI used the interview protocol (Appendix G) to start the interview. The PI asked the participant for verbal permission to record the interview and if he or she consented, the interview began with the PI stating the purpose of the study, defining treatment and management, and continuing with the interview guide questions (Appendix F).
After each interview was completed, the PI began the transcription and data analysis process.

**Data Analysis**

Continued collection and analysis of data based on concepts derived during the research process was the overall data analysis process for this research study (Corbin & Strauss, 2015; Charmaz, 2006; Creswell, 2013). The PI applied the constant comparative method. Charmaz (2006) advises to use constant comparative methods which allows the analyst to “make comparisons at each level of analytic work…for example, compare interview statements and incidents within the same interview and compare statements and incidents in different interviews” (p. 54). As interviews were conducted, transcribed and analyzed concurrently, the PI coded data in order to develop emerging categories and subsequent themes (Creswell, 2013; Charmaz, 2008). The PI used QSR International’s NVivo 12 (2018) qualitative data analysis software to organize the emerging codes.

**Transcriptions.** All interviews conducted for this study were recorded using a digital voice recorder. After each interview was completed, the PI transcribed the data verbatim (i.e., recorded word for word, exactly as said) utilizing a transcription key to denote voice pitch and tone, pauses, and other mannerisms (Creswell, 2013). The PI proofread all transcriptions against the digital voice recording and revised the transcript file accordingly (Creswell, 2013). Each digital voice recording was listened to three times against the
transcript before it was considered final. The transcripts were saved as a text file rich text file with an .rtf extension on a USB memory key, and kept in a locked, secure physical site.

**Memo writing.** After the PI reviewed the transcript for accuracy, the PI read through the transcript several more times to gain familiarity with the data and jotted down any preliminary words or phrases for codes in the margins for future reference (Saldana, 2009; Creswell, 2013). Writing memos in the margins allowed the PI to compose analytic notes to “explore, check, and develop ideas” (Charmaz, 2008, p. 166) that were used to hone the development of categories (Charmaz, 2006). All transcripts were imported into NVivo 12 for organizing codes and themes developed.

**Initial coding.** The PI initiated coding by closely reading the data to extract significant insights into the participants key experiences regarding health care received in the treatment and management of their type 2 diabetes (Charmaz, 2008). First impression codes emerged from the perspective of older adults in order to develop categories and subsequent themes (Saldana, 2009; Creswell, 2013). The PI coded word-by-word, line-by-line, incident-by-incident using gerunds to help define the participants’ experiences in order to make connections between codes, and to keep categories and themes emerging (Saldana, 2009; Charmaz, 2008). In Vivo Codes were used when the code was taken from the participant’s own testimonies (Charmaz, 2006; Saldana, 2009). Constant comparative analysis
method was used to allow the PI to “make comparisons at each level of analytic work…for example, compare interview statements and incidents within the same interview and compare statements and incidents in different interviews (Charmaz, 2006, p. 54).

**Focused coding.** Focused coding followed line-by-line initial coding, allowed the PI to capture, synthesize, and clarify the notable and recurring initial codes (Charmaz, 2006). In developing the focused codes, the PI maneuvered between interviews and observations and compared participants’ experiences, actions, and interpretations (Charmaz, 2006). The PI and Committee Chair coordinated to ensure agreement on the assignment of focused codes to particular data (Saldana, 2009). If focused codes were not harmonized, the PI and Committee Chair worked together to come to an agreement. The PI elevated the focused codes to preliminary categories which underwent further refinement through saturation and memo writing (Charmaz, 2008; Creswell, 2013). All focused codes were organized and stored in NVivo 12 (2018).

**Sorting and diagramming themes.** The PI sorted, ordered, and refined piles of memos with categories in order to produce a written analytic rendition of the participants’ experiences regarding health care received in the treatment and management of their type 2 diabetes (Corbin & Strauss, 2015). The PI methodically codified the categories and created and refined conceptual links in order to make comparisons between categories (Charmaz,
The PI used the conceptual frame, Donabedian Model of Care (1980), in order to understand the emerging categories and to diagram them into themes (Creswell, 2013). Diagrams helped the PI to “revise…a category into a more exacting form as a diagram illustrating the properties of a category” (Charmaz, 2008, p. 118). Diagramming provided the PI with a way of visually representing the “structural elements that shape and condition” (Charmaz, 2008, p. 118) the perspectives of older adults living in MUAs regarding health care received in the treatment and management of their type 2 diabetes. Diagramming further helped the PI to “move from micro to organizational levels of analysis and to render invisible structural relationships and processes visible” (Charmaz, 2008, p. 118). Diagrams provided a visual representation of the categories and their relationships of the emerging themes (Charmaz, 2008). Themes were directly related to the research questions under study and were agreed upon with the PI’s Committee (Durdella, 2018).

**Interpretation**

Sorting and diagramming helped with the final interpretation and integration of the data needed to write the manuscript (Charmaz, 2008). Specifically, the conceptual model helped the PI to explain the importance each domain has on older adults living in MUAs preferences, desires and values regarding health care received in the treatment and management of their type 2 diabetes. Interpreting the data provided unique information on the
structures and processes of care that facilitate a holistic (bio-psychosocial-spiritual) treatment and management approach to delivering quality diabetes care that is respectful and individualized, allowing negotiation of care, and offering choice through a therapeutic relationship where older adults living in MUAs are empowered to be involved in health decisions at whatever level is desired by that individual who is receiving the care.

**Consistency and Truth Value**

Trustworthiness, or the credibility process (Noble & Smith, 2015), is a qualitative term used to judge the quality of a qualitative research study (Patton, 2015). While Long and Johnson (2000) and Creswell (2013) use terms like validity and reliability to describe what constitutes good and quality qualitative research, Noble and Smith (2015) use terms like consistency instead of reliability and truth value instead or validity. Creswell (2013) suggests that multiple strategies be used to ensure trustworthiness.

Reliability in qualitative research has to do with consistency (Leung, 2015). Consistency is achieved in qualitative research when the researcher verifies the accuracy of the data “in terms of form and context with constant comparison, either alone or with peers” (Leung, 2015, p. 326). According to Creswell (2013), “reliability often refers to the stability of responses to multiple coders of data sets” (p. 253). Consistency in this study was increased in several ways. First, interviews were transcribed verbatim, having utilized a transcription key to differentiate participants’ voice mannerisms (Creswell, 2013).
Next, the transcripts were checked several times to ensure no mistakes were made (Creswell, 2013). Thirdly, the PI ensured confirmability by documenting the procedures for checking and rechecking assertions, findings, and interpretations (Patton, 2015), which Charmaz (2008) describes as ‘constant comparative methods.’ Additionally, the PI documented, as detailed in the preceding sections, the logical process of the inquiry (Lincoln & Guba, 1982). Lastly, intercoder agreement was achieved by having the PI’s Committee Chair review and agree on codes (Creswell, 2013).

Truth value refers to the integrity and application of the methods, that is tools and processes, assumed and the accuracy in which the interpretations reflect the data (Leung, 2015; Noble & Smith, 2015). Truth value in this study was achieved in several ways. First, at the beginning of the study the PI utilized a positionality statement to evaluate his systems of values, attitudes, and beliefs in relationship to the phenomena under study (Saldana, 2009; Creswell, 2013). To guide himself against the biases that positionality lends itself to, the PI used a conceptual frame to control for his subjectivities (Saldana, 2009). Secondly, the interview guide was read and checked by the PI’s Committee Chair and other Committee Members (Anney, 2014). Furthermore, the PI triangulated the data by recruiting participants from several senior housing facilities in order to corroborate participants’ experiences (Shenton, 2004; Creswell, 2013). The PI also used rich, thick descriptions by providing detailed and sufficient information when writing
about actions, processes, or experiences using strong gerunds (Creswell, 2013; Charmaz, 2008). Finally, the PI used member checking to ensure and improve accuracy by sharing research findings with participants (Creswell, 2013).
Chapter IV.

RESULTS

The results presented in this chapter are delineated in two sections. The first section reports the demographic survey and pre-screening results. Demographics of the older adults are provided. And lastly, self-reported HRSNs and health status of the older adults are provided.

The second section reports the interview findings. A description of the types of health care providers involved directly in the type 2 diabetes treatment and management care of the older adults are provided. The health provider examinations received by the older adults are reported. And finally, section two concludes with six themes and their corresponding subthemes that emerged during data analysis of the one-on-one interviews.

Demographic Survey and Pre-Screening Results

Demographics

Table 5 presents descriptive characteristics for the participants. The participants included 12 older adults with type 2 diabetes (eight women and four men). The mean age of the participants was 72 years, with a range of 65 to 84 years old. Of the participants, 67% were minorities (six Black or African American and two Hispanic, Latino/a, or Spanish origin) and the remaining were White (33% or four). Five older adult participants graduated from high
school, followed by some college or technical school (three older adults),
some high school (two older adults), and elementary (two older adults).
Twenty-five percent of the participants were either widowed or divorced,
respectively, 17% were either never married or separated, respectively, 8% a
member of an unmarried couple, and one participant’s marital status is
unknown. All participants reported their religion as Christianity. Camden, New
Jersey had the highest number of older adults participating (58%), and the
remaining 42% of participants lived in Garfield, New Jersey.
Table 5

Demographic Description of the Participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Pseudonym</th>
<th>Age</th>
<th>Sex</th>
<th>Race/Ethnicity</th>
<th>Marital Status</th>
<th>Highest Level of Education</th>
<th>Religion</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edward</td>
<td>70</td>
<td>Male</td>
<td>Black or African American</td>
<td>Widowed</td>
<td>Grades 9 through 11</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Daisy</td>
<td>70</td>
<td>Female</td>
<td>Black or African American</td>
<td>Never married</td>
<td>Grades 1 through 8</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Jacob</td>
<td>65</td>
<td>Male</td>
<td>White</td>
<td>Never married</td>
<td>Grade 12 or GED</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Leslie</td>
<td>79</td>
<td>Female</td>
<td>Black or African American</td>
<td>Separated</td>
<td>Grade 12 or GED</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Julie</td>
<td>66</td>
<td>Female</td>
<td>Black or African American</td>
<td>Divorced</td>
<td>Grades 1 through 8</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Laura</td>
<td>71</td>
<td>Female</td>
<td>Black or African American</td>
<td>A member of an unmarried couple</td>
<td>College 1 year to 3 years</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Josephine</td>
<td>72</td>
<td>Female</td>
<td>Hispanic, Latino/a, or Spanish origin</td>
<td>Separated</td>
<td>College 1 year to 3 years</td>
<td>Christian</td>
<td>Camden</td>
<td></td>
</tr>
<tr>
<td>Tim</td>
<td>65</td>
<td>Male</td>
<td>White</td>
<td>Divorced</td>
<td>Grade 12 or GED</td>
<td>Christian</td>
<td>Garfield</td>
<td></td>
</tr>
<tr>
<td>Jacqueline</td>
<td>75</td>
<td>Female</td>
<td>Black or African American</td>
<td>Widowed</td>
<td>Grade 12 or GED</td>
<td>Christian</td>
<td>Garfield</td>
<td></td>
</tr>
<tr>
<td>Lucia</td>
<td>84</td>
<td>Female</td>
<td>Hispanic, Latino/a, or Spanish origin</td>
<td>Widowed</td>
<td>Grades 9 through 11</td>
<td>Christian</td>
<td>Garfield</td>
<td></td>
</tr>
<tr>
<td>Larry</td>
<td>73</td>
<td>Male</td>
<td>White</td>
<td></td>
<td>Grade 12 or GED</td>
<td>Christian</td>
<td>Garfield</td>
<td></td>
</tr>
<tr>
<td>Susan</td>
<td>70</td>
<td>Female</td>
<td>White</td>
<td>Divorced</td>
<td>College 1 year to 3 years</td>
<td>Christian</td>
<td>Garfield</td>
<td></td>
</tr>
</tbody>
</table>
Health-Related Social Needs

Results in Figure 2 show the HRSNs of the participants. Among the older adults interviewed, financial strain, or one’s ability to pay for the very basics like food, housing, medical care, and heating was most prevalent (29%) among the participants. Twenty-six percent of the participants reported needs associated with requiring help with activities of daily living (for example, bathing, preparing meals, or shopping) or feeling lonely or isolated.

Figure 2

Identified Health-Related Social Needs of Participants

Nineteen percent of the participants indicated that they were food insecure or at risk of food insecurity. Unmet transportation, or the lack of
transportation to get to any destinations for daily living, was reported among 16% of the participants. Unmet housing needs, or poor housing quality, was reported among 7% of the participants. Difficulty paying utility bills, for example, electric, gas, oil, or water, was reported among 3% of the participants.

**Health Status**

Figure 3 displays the self-reported health status for older adults in this study. The mean duration of diabetes for reporting participants was 20.5 years. The mean number of health care visits in the past 12 months to a doctor, nurse, or other health professionals for type 2 diabetes was 21.5 years. One participant reported visiting the health care provider 156 times or three times per week in the past year. On average, participants reported having two comorbidities. Common comorbidities reported were hypertension, cardiovascular disease, severe arthritis, and severe kidney or liver disease.

**Figure 3**

*Participant Self-Reported Health Status*
Note. Self-reported health status box and whisker charts for duration of diabetes years, health care provider visits for diabetes in the past 12 months, and number of comorbidities.

Figure 4 displays the type of medication, diabetes insulin or pills, taken by the participants. Ten of the twelve older adults interviewed were prescribed diabetes medication. As displayed in Figure 4, 58% of the participants were prescribed diabetes insulin or pills, respectively. And the remaining participants, 42%, as highlighted in Figure 4 in the orange, were not taking diabetes insulin or pills, respectively. Of participants prescribed diabetes medication, 40% were prescribed both insulin and diabetic pills, which indicates disease severity.

Figure 4

Participant Diabetes Medication Use
Furthermore, participants were asked about their self-reported health status. Forty-two percent of the participants perceived their wellbeing as good or fair, respectively. Eight percent of the participants self-reported their health status as excellent or very good, respectively.

Lastly, participants were asked to recall their last HbA1c level. Ten of the twelve participants did not know or was not sure of their last HbA1c level. The other two participants reported a HbA1c level of 5.5 and 9.9, respectively.

**Interview Findings**

The second section reports the interview findings. First, the types of health care providers involved directly in the type 2 diabetes treatment and management care of the older adults are reported. Next, the health provider
examinations received by the older adults are described. Presented lastly are six themes and their corresponding subthemes that emerged during data analysis of the one-on-one interviews.

**Types of Health Care Providers**

Older adults' experiences involved interactions with an array of health care providers involved directly in their treatment and management care (Table 6).

**Table 6**

*Health Care Providers Involved in Diabetes Treatment and Management Care*

<table>
<thead>
<tr>
<th>Health Care Providers</th>
<th>Number Receiving Care</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Care Provider</td>
<td>11</td>
<td>92</td>
</tr>
<tr>
<td>Podiatrist</td>
<td>8</td>
<td>67</td>
</tr>
<tr>
<td>Health Insurance Company</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td>Optometrist</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td>Nurse</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Endocrinologist</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Home Health Aide</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Social Worker</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Medical Assistant</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

*Note. N = 12 for participants' receiving care from each health care provider.*
Eleven (92%) of the older adults stated that they received their diabetes care from a primary care provider (PCP). One participant stated she received her primary diabetes care from a nurse practitioner. In addition to a PCP, three (25%) of the older adults stated they received specialized diabetes care from an endocrinologist. A total of eight (67%) older adults received care from a podiatrist. Five (42%) older adults stated their health insurance company was involved in their care, for example, by providing appointment reminders and medication management.

**Health Care Provider Examinations**

Older adults cited an assortment of examinations they received from their health care providers (Table 7). The health care provider examinations that emerged are part of ADA’s (2021c) recommended type 2 diabetes health checks at initial, follow-up, or annual visits. Although not all older adults in this study received each examination, for example, liver examination, skin examination, and cognitive examination, these results do suggest that some health care providers may be aware of ADA’s recommended components of the comprehensive diabetes medical evaluation at initial, follow-up, and annual visits. As mentioned previously, the ADA (2021b) recommends health care providers screen older adults for geriatric syndromes, for example, cognitive impairment, to ensure any ailments do not affect diabetes self-management and quality of life.
Table 7

**Health Care Provider Examinations Received by Older Adults**

<table>
<thead>
<tr>
<th>Examinations</th>
<th>Number Receiving Care</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood glucose test</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Foot examination</td>
<td>9</td>
<td>75</td>
</tr>
<tr>
<td>Eye examination</td>
<td>8</td>
<td>67</td>
</tr>
<tr>
<td>Physical examination</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Cardiac examination</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Kidney examination</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Cognitive examination</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Dental examination</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Liver examination</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Skin examination</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

*Note. N = 12 for participants’ receiving examination from health care provider.*

All older adults interviewed described their experiences with their health care providers monitoring their blood glucose. Susan said, “I get blood work done before I meets with the = Dr. Doe =, the doctor looks over the blood work and adjusts my insulin if she needs to.” Julie said:

Just staying up on things…You know uh appreciating the blood tests and uh attention that I do get where it’s you know noticeable and they'll be able to stop it before it get started, you know where it gets too high…
Six (50%) older adults discussed their experiences receiving a general physical examination, for example, that included blood pressure measurement and checking weight. Nine (75%) older adults discussed receiving foot examinations from their health care providers. Daisy described her foot examinations: "Uh they keep make sure my toenails is clipped and my (. ) you know if I got any problems with my feet they make sure you know I get the stuff I need."

Themes

The codes extracted from interviews were categorized and divided up into six themes with subthemes that emerged during data analysis of the one-on-one interviews.

**Care Treatment and Management**

The older adults interviewed expressed their desires, preferences, and values regarding care treatment and management, as the first theme (Table 8). The six subthemes (Table 8) reflect what the participants’ preferred, desired, or valued as part of their treatment and management care that they would like to receive.

Table 8

*Theme 1 and Corresponding Subthemes*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care treatment and management</td>
<td>• Older adults going to see different health care providers</td>
</tr>
</tbody>
</table>
• Older adults receiving thorough health checkup from doctor
• Doctor making the right diagnosis in diabetes
• Health care provider who listens and responds to older adults’ diabetes problems and needs
• Long-time doctor-person relationship
• Older adults taking the right medicine

**Going to See Different Health Care Providers.** Older adults interviewed valued going to see different health care providers, as identified in Table 8. This involved a health care provider who provided links and referrals for different providers and services, for example, community resources, diabetes education classes, specialist, and hospitals. Several participants valued a health care provider who consistently refereed them to a specialist for their identified problems. Jacqueline, a participant with comorbidities, said, “…she told me that I need to get a foot doctor cause then there the ones to check out the foot (.) to make sure that um (.) you know that everything’s OK with them.”

Laura explained how she valued her primary care doctor, who was responsible for her diabetes care, asking her if she wanted a referral to a mental health provider:

…she would call me at least once a week and check up on me and say, you know, how are you doing? How’s it going? Do you need to
talk to somebody about this? She said, because we can arrange for you to go and talk to someone... And she really wanted me to go and talk to somebody, because (.) mentally (.) in the beginning, it was tearing me up.

Additionally, participants valued a health care provider who tracks referrals and follows through with them on the care plan from the specialist. Josephine said:

...if I wanna go to uh a certain specialist, she, she'll give me a referral right away, it's all taken care of. And she'll ask me questions, uh which doctors have I gone to, and I need to go to this doctor for this, and this and that.

Older adults also valued the role their health insurance company has in ensuring they received care from other health care providers. More specifically, participants spoke about their health insurance company encouraging them to speak with their physician for a referral to diabetes classes. Tim explained, “...they send me thing for classes if I want to take it talk to my doctor to see if he can take this class…”

**Thorough Checkup.** Older adults interviewed valued receiving a thorough checkup from their doctor to check their overall health. This included the physician conducting routine blood glucose test and monitoring, examining their blood pressure, weight, heart, kidneys, liver, skin, eyes, feet,
and teeth, lipid testing to provide a detailed analysis of cholesterol, and diet and nutrition assessment. Laura said:

She's so thorough with so many things to the point where I'ma be honest with you, she's thorough. I mean, when I say thorough, I mean, like...I had to go get my kidneys checked, my heart checked, uh at every anything that had to do with diabetes I had to get done; dermatologist for my skin, I mean.

Edward, an older adult in this study who reported multiple comorbidities stated:

...they do the best they can to tell you where you going wrong at, even down far as your calcium, your phosphorus, and proteins, and all of that. Whatever your body supposed to be functioning at they will make sure that they keep a check on that.

The older adults valued receiving a head-to-toe physical examination to check their overall health. Daisy said, “Well = Dr. Jane Doe =...she checked everything to make sure my ankles wasn't swollen, you know, check my heart, yeap.”

Some participants expressed a desire for more components of a thorough checkup. Susan said, “I wanna go for my uh checkup my eye. I find there's a cataract and I make an appointment will go for my eyes and change my glasses.”
The Right Diagnosis. Older adults interviewed desired and valued a health care provider who made the right diagnosis in diabetes, an accurate and timely diabetes diagnosis. For example, Laura described her experience with her former doctor not making a timely and correct diabetes diagnosis, while her current doctor made an accurate and timely diabetes diagnosis at her first appointment. To illustrate this Laura said:

I think when I was going to = Dr. Clark = and I had been going to = Dr. Clark = all those years that she could've told me that I had type 2 diabetes, instead of constantly telling me that, oh, you're on the borderline. I will not I will not lie to you, the very first time that I went to = Dr. Doe = and they did the blood thing she said, you're a diabetic, type 2 diabetic. From day one, from day one, and she said, we have to do something about this immediately. She said, I'm surprised you're still walking around.

Another participant described her experience with her health care provider not diagnosing her diabetes, which she believed resulted in several adverse health effects. Julie said:

I had an aneurysm (. ) 2002, where I can't see out my right eye. Um it was caused by, my doctor, which he retired now was giving me medicine for cholesterol but never checked me for diabetes. I had a couple car accidents and I lost this sight. My blood vessels is gone in my right eye where I can't see out my right eye. And so (. ) he said it's
nothing he can do though, I'll be blind forever. So I'm blind in one side, you know, in my right eye.

**Listens and Responds to Problems and Needs.** Older adults interviewed desired and valued a health care provider who proactively listened and responded to their diabetes problems, needs, complications and associated comorbidities so that they may receive the appropriate treatment and management care. Jacqueline said:

...if I'm having any problems especially with being under chemotherapy um the doctors give me a lot of attention now because your numbers can play around with you and they need to be more involved and they're showing me that they're interested.

Laura also stated:

I like the fact that if I have a problem, if there's if if anything, like, for instance, I have gout and...I called her yesterday and I said, listen, what can I do about this gout? You know what she told me? She said, listen, I want you to get some lemons and squeeze them in some water and drink it, because that kills the uric acid that causes gout.

Other participants described how their health care provider listened to them. Jacob said, “Uh he listens to me when I tell him something. It seems like I know he can listen; he listens good to me and everything cause he comes and see me every month.”
Long-time Doctor. Under the next subtheme, older adult participants communicated their desires, preferences and values to have a long-time doctor-person relationship. Tim stated, “I've been with him for diabetes 15 years, at least now. I've known him for a long time, his good. He knows my name.”

Other participants described their desire for a constant doctor and not one that frequently changed beyond their control. For example, Daisy said:

I guess they just left and went somewhere else I guess, you know. You never get to hear the truth, you know. So um but that's one thing I don't really care for you know. My first doctor when I first started going to = Clinic = I had the same doctor for a long time, = Dr. Jane =. Then she left and went to = Hospital = and since she left (.) I then had three different or four different doctors. I just wish I can have a steady one…

Taking the Right Medicine. The final subtheme which occurred consistently throughout the interviews, emphasized older adults’ desires, preferences, and values for taking the right medication. Several participants shared the sentiment of one participant who plainly stated, “…a lot of times they did prescribe medicine and I've been under several medicines that it, it wasn't right for me. It was terrible, you know. The side effects was horrible…I need to get the right medicine” (Josephine).

Edward preferred not to take his diabetes medication regularly because of the adverse side effects and not doing so would help him to avoid
severe hypoglycemia and keep his glycemic levels within targeted ranges. Therefore, Edward valued a doctor who supported his right not to take his medication regularly. Edward said:

I ain’t taking nothing now…And if I take my medicine, I can assure you that my sugar is gonna drop…so…that’s what actually made me stop taking my medicine. I said it’s time for me to stop. Now I told my doctor. He said long as it don’t, as long as your sugar stay down go head, go for it.

Other participants valued health care providers that ensured their medications are administered safely and accurately. Julie said:

…he’ll give me uh uh stronger medicine. Like one time I went, and my sugar was doing all right so (.) he dropped it he dropped the dosage, like from 500 to 5000, so he made it a little less. But then eventually he had to bring it back up cause it went back.

Medication safety in polypharmacy to ensure the older adult was taking the right medication was cited as an important topic for the older adults interviewed. Laura stated:

I was on a lot of medication from = Dr. Clark = I mean, a lot of medication from = Dr. Clark =. And = Dr. Doe = took me off of everything and put me on a very good regimen of medication…I stopped the needles and all of that…
Other participants valued their doctor ensuring they were taking the right medication for their diabetes. Jacqueline said:

Well, they make sure (.) the diabetes doctor will make sure that you taken the right amount of insulin. Depending on which your numbers, whether they should go up in your insulin or or should it go down in your insulin (.) just to make sure that your numbers are in with that 6.5 where they really want you to be (.) for your um A1C. But they they just have a look at um (.) the whole scale to make sure that your medicine that you’re taking besides the insulin is all in accord with (.) to make you better.

**Accessible Services for Older Adults**

Older adults interviewed discussed the role of their health care provider cultivating an atmosphere where they are able to get the right services at the right time, as the second theme (Table 9). The participants highlighted three major subthemes as reflected in Table 9.

**Table 9**

*Theme 2 and Corresponding Subthemes*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible services for older adults</td>
<td>• Health care services in older adults’ homes</td>
</tr>
</tbody>
</table>
Home Health Care. Older adults interviewed valued receiving health care services in their home. Jacob said, “…they [nurses] come to my home. Once in the morning I go…down to the office on uh second floor here. And then at night she comes to my house.”

Older adults also valued a doctor visit to their home to diagnose and treat illness(es) related to diabetes, the feet and lower limbs and other complications and comorbidities, prescribe medications, and patient education. Susan stated:

…I’m happy = Dr. Mark = comes to the building. You know like cut the nails, because they going grow. Yeah, especially the toes. The growing on the side something, it’s better now. I like…stimulation for my feet. He gave me a prescription for the shoe place where I go…for diabetic shoes.

Older adults also expressed their values for visitation from a nurse or medical assistant to administer medication, monitor blood glucose, blood pressure and general health, and other general support. Leslie described her experiences with the medical assistant in her senior housing facility where she lives:
I like her cause she pays attention to me you know and everything like that, you know. I like her. Well, she take my sugar and, and, you know, like that she takes my sugar…to see if it’s high or low and…they come like 3 times a day…

Older adults interviewed also valued counseling, locating community resources, and other medical social services support from social workers that come to their home; care from home health aides to help with basic personal needs and activities of daily living; dietary assessments and guidance on meal planning from dietitians; home delivery of medicine and medical equipment; transportation to and from a medical facility for treatment and management care; and home-delivered meals. Josephine described her experience receiving food education from a dietitian at the senior housing facility:

There was a lady here many years ago, we had a group going, it was really nice. And she would go and she would bring all kinds of um mats with food and all kinds of like a puzzle, something to work with. And she would ask us a lot of questions, how did we do this. And you know what what to watch for. And when we buy food, you know, watch for the sugar intake and all kinds of stuff like that. So she was very, very informative.
Jacob said, “Well, the health insurance I got is starting this month, they’re going to...pay for...these = Mom’s Meals =. And this month I’m going to have diabetes dinners [delivered]...every two weeks.

**Close Health Care Services.** Older adults desired and valued health care services that were geographically close to their home. This included having health care providers and diabetes education programs located nearby. Tim emphasized, “Yea really good, everything’s OK. The doctors are close, I mean everything is close…” Yet, Tim also cited not participating in diabetes classes that could help him improve his type 2 diabetes because they were not located in his area:

...= Insurance Company =...send me thing for [diabetes] classes if I want to take it talk to my doctor to see if he can take this class or not...I haven’t been, but I’m thinking about it...I say I’m take it take it and then I don’t...sometimes they ain’t [convenient] sometimes there in different towns or whatever...

However, Tim further stated, “I would probably take them [diabetes classes],” if they were located nearby.

Other older adults discussed their values for health care providers located in the area. Susan said, “…I like because she [doctor] in = City = now, closer than a longer time, I had before a doctor in = Borough =.” Josephine valued having her pharmacist located nearby stating, “Yeah, I have a good
pharmacist…it's down the street. I go get it [medicine], yeah. I have no problem.”

**Spending Time.** Overall, participants valued a health care provider who spends time with them. Edward said, “once they get to know you, know know you, they give you that extra [time], especially if they see you where you uh fall off the trail at…” Additionally, Larry said, “She'll take time out to talk to you, you know what I mean, talk to you, you know.”

On the other hand, some participants described how their health care provider always seemed to be in a hurry, and therefore they desired their health care provider to spend more time with them. Daisy said:

You just go in there and they say “hi you doing,” and then they read the charts they got and ask you any questions, you know, but it's not that same kind of contact, you know, feeling between a doctor and a patient…it don't seem like people have time no more…

Similarly, older adults preferred their health care provider spend more time than they did with them, with Susan stating, “I think my diabetes [doctor] could’ve checkup me like every two two months, much often…”

**Information Sharing and Provider Communication**

Information sharing and provider communication was a major theme expressed by the older adults interviewed. The four subthemes (Table 10) have been categorized in two groups: informational, which reflects the ADA (2020a) guidelines for what information should be discussed with the patient
at the initial and subsequent diabetes doctor’s visit; and relational which reflects the quality of the communication between the health care provider and older adult.

Table 10

*Theme 3 and Corresponding Subthemes*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information sharing and provider communication</td>
<td>Informational</td>
</tr>
<tr>
<td></td>
<td>• Information from online to help with diabetes self-care</td>
</tr>
<tr>
<td></td>
<td>• Information and recommendations from health care provider to support with diabetes self-management</td>
</tr>
<tr>
<td></td>
<td>Relational</td>
</tr>
<tr>
<td></td>
<td>• Discussing things that interest the person</td>
</tr>
<tr>
<td></td>
<td>• Health care provider communication by telephone</td>
</tr>
</tbody>
</table>

*Information from Online to Help with Diabetes Self-Care.* Older adults interviewed desired and valued information from online to help with diabetes self-care. Participants found social media useful in supporting diabetes self-management. Josephine explained:

    I look at Facebook a lot and uh a lot of times they have a lot of things uh pertaining to diabetes. Um (,) they have you know medicine…a lot
of times they have um (.) menus, so I take it from there, you know, and
I write them down…

Older adults also valued mobile technology, for example, cellphones, tablets, and iPads, as a convenient way for getting information to help them identify healthy foods to support with better managing their type 2 diabetes. Tim said, “On my phone…sometimes I look up see what things like to eat and stuff like that.” Lucia concurred stating:

Right, I have the information I need…From my iPad…I read sometimes, uh, you know uh on Facebook, I’ll put uh, uh about diabetic and they give you um a list to follow and what you should eat and what you shouldn’t eat…

One participant described his desire to use his cellphone for diabetes information. Jacob said, “No, I haven't used the phone. I should try to get up, get some information on it [type 2 diabetes].”

**Information and Recommendations to Support Diabetes Self-Management.** Older adults preferred and valued information and recommendations from their health care provider to support with diabetes self-management.

Participants reported preferences for a health care provider who made recommendations that will help them to control their blood glucose. Jacqueline stated:
“…with my um diabetes doctor…when I'm asking her a question, I want something that I could deal with…if I tell her um ooh my sugar was high this morning or something, I want her to come back to me with solutions as to um (...) what I could do to help that out…”

Furthermore, older adults interviewed preferred their health care provider give them recommendations that will improve their self-management behaviors. Jacob said, “…I'd like to have support where they can…tell me…how I can manage my diabetes and stuff.”

Additionally, participants valued their health care provider recommending diabetes activities, workshops, books, and other free resources that will enhance their self-care behaviors. Laura said:

…she’s always recommending various things, um activities, workshops, books um that I could do for myself, you know, and I appreciate that…she made me aware of is that my uh = insurance company =…I can get this book and I can order the diabetic socks free…my insurance will pay for it.

Lastly, many older adults valued a range of reminders they received from their health care providers that were intended to promote better self-management. For example, participants valued receiving reminders to take their blood glucose, with one participant stating that her nurse would remind her to monitor her blood glucose three times a day. Laura said, “= Peggy =, the nurse…was really good. She was…really good, you know, cause
she...would say, did you...take the...blood test and on the monitor...three times a day..."

Nearly all of the participating older adults valued reminders to eat healthy. Older adults stated that they were frequently reminded to avoid foods with large amounts of sugar: "I like it because he's very concerned about me and everything. He usually tells me make sure you eat, eat a good diet and stay away from sugars and sodas" (Jacob).

**Discussing Things that Interest the Person.** Older adults interviewed discussed their preferences for their health care providers discussing things that interest them. Daisy said, “Before the doctor used to sit there and talk with you and, you know, discuss things, different things about how you feel and everything they don't do that now.”

Other participants expressed their values for their health care providers discussing things that interest them. Josephine stated:

And she's interested in you. Cause she'll call me right away like like in my blood or something, she'll call me...I never had a doctor to call me and tell me what was wrong with me. And she stays up on that.

Jacqueline also explained:

...conversation, communication, show interest in what I'm explaining to them. Um I like with my with my um diabetes doctor like the answers she's gonna give me when I'm asking her a question, I want something that I could deal with...
Communication by Telephone. Older adults interviewed valued receiving telephone calls from their health care providers regarding a range of diabetes wellness topics, for example, checking on their physical health, emotional wellbeing, medication refills, blood sugar results, and reminders. Jacqueline said:

…the doctor talks to me and they talk (. ) call you up. I like that part where they call you on the phone to discuss (. ) how where your numbers are and what you should do to get them into the right spot.

Laura shared an impactful story of how her diabetes doctor would call her to check on her family and emotional wellbeing:

I like the fact that they they really you know, the other thing that really touched my heart was the fact that = Dr. Doe = has constantly kept up and constantly she'll call and ask me, how how's your how's little = John = ?How's he doing? You know what I'm saying. And that touched me that that really touched because a lot of doctors when cause this is an 11 year old child that got shot through the neck, that went out through his brain. He will never be what he was. You know what I'm saying. And um he's had four operations so far, and um she's been very good at kind of keeping me updated on what happens and everything, and I appreciate that, that that means a lot to me, you know, her and the nurse, they’re you know, they keep me updated and stuff and I appreciate that.
While many participants valued telephone calls, some participants preferred more telephone calls from their health care providers, for example, to see if they need new medication. Lucia said, “Well…if they give you a call once in a while (,) uh that would be you know something good…just to find out how you’re doing and uh in case you need new medication…”

**Attributes of Health Care Providers**

Attributes of health care providers was a theme that emerged from the older adults interviewed. Older adults interviewed described a whole host of qualities that they valued in their health care providers. Table 11 presents the eight subthemes that emerged from the overarching theme.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes of health care providers</td>
<td>Honest, Trustworthy, Smart, Humorous, Being there for the person, Smiles, Caring, Patient</td>
</tr>
</tbody>
</table>

**Honest.** Several older adults valued an honest health care provider. Laura said, “I like the fact that they don’t…try to sugar coat nothing. They
don't sugar coat it. They give it to you right to your face…” Julie said, “I know he’s gonna tell me what's good for me.”

**Trustworthy.** Older adults also valued a trustworthy health care provider.

“Right, I trust him, yeah, I do.” (Larry)

“I couldn’t do it without her, put it that way.” (Julie)

“Feels good, that I have someone I can trust.” (Jacob)

“Well, I’m uh glad I can always count on them...” (Lucia)

**Smart.** Another quality that was valued by older adults is a health care provider who has the broadest-possible knowledge of medicine. Josephine said, “She she’s very smart, you know, she's uh on top of things. She's very on top of things, you know, yeah.”

**Humorous.** Older adults interviewed also valued a health care provider that is humorous. Larry stated:

I go there and what I do what I got to do, and we talk, he [podiatrist] listens to me, you know, make, cracks jokes and stuff like that…I just go there ((laughs)) you know, so he listens to me, you know, and crack jokes all the time, you know, that's all…I like him.

**Being There.** Additionally, participants valued a health care provider who is there for them when they need them. Julie said, “…she's there for me…” Lucia said, “…they’re always there if I need them…” Josephine said,
“I’m pretty sure if I need to know, I can always go to, you know, my doctor. Like I said, she’s willing to help me out, you know, in any areas that I need.”

**Smiles.** Other participants valued a health care provider that smiles.

Daisy said:

She was a people person, you know. You know you come in smiling; you know. You know even if you’re unhappy you got a smile, you know. That makes you feel better, you know. Come in with the puss on your face, you know, ((laughs)) that's kind of down you know. But uh = Dr. Jane Doe = always had us long, yeap.

**Caring.** Most older adults valued a caring and compassionate health care provider. Josephine said, “She’s caring. She’s very caring, you know. That's, that's the most, most important, she’s caring.” Jacob said:

I like it because he comes over and talks to me about my diabetes and does the blood test and everything on it. I like it because he’s very concerned about me and everything. He usually tells me make sure you eat, eat a good diet and stay away from sugars and sodas. It helps me a lot because he, he shows that he cares and everything.

Laura also expressed how her health care provider is caring by stating:

I just feel like = Dr. Doe = just has this way of making you feel like you're the only person, you're the most important person that she cares about and that she wants it done correctly, you know what I'm saying, that she wants you to survive, she wants you to be healthy.
**Patient.** Older adults also valued a patient health care provider. Daisy described her experience with the doctor being patient while checking her blood pressure:

Ah cause she always took a thing with my blood pressure for some reason. Cause she’d say just sit there and relax. Cause she said when you get up fast it makes your blood pressure go up high. I said that don’t make my blood pressure high, it's coming in this office that ((laughs)) makes my blood pressure high. I said every time I come to the doctor my blood pressure goes up. But she always said sit there for few minutes and then she’d take it again, you know. So that extra care.

**Social Support**

Social support was a theme identified by the older adults interviewed. Older adults in this study identified receiving social support from family, friends, their health care provider and the community. The four subthemes (Table 12) have been categorized into two groups: instrumental which reflects tangible aid and services provided for older adults to support type 2 diabetes self-management; and informational which is advice, suggestions, reminders, and information given to older adults to support type 2 diabetes self-management.

**Table 12**

*Theme 5 and Corresponding Subthemes*
<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes</th>
<th>Informational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support</td>
<td>Instrumental</td>
<td>• Family provides information for diabetes self-management</td>
</tr>
<tr>
<td></td>
<td>• Family involvement in doctor’s appointments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Financial assistance with diabetes care costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Community assistance with social services</td>
<td></td>
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</tbody>
</table>

**Family Involvement in Doctor’s Appointments.** Older adults valued involvement of family with scheduling and attending doctor’s appointments.

Laura stated:

…my daughter, = Mary =, my oldest daughter, she’s a registered nurse… I was drinking water like gallons of it. And she said, Mom, she said, there’s something wrong, you’re not supposed to be drinking that much water. OK. And I said, but I’m thirsty all the time…I was thirsty and something else was wrong with me. But it was all symptoms of being a diabetic. And by her being a registered nurse, I went up to stay with her…She said, what is doctor = Dr. Clark =? I said, I don’t know…she came down here, she said, I made you an appointment with doctor, another doctor at = Hospital = and we’re going now.

Susan described support received from her daughter with attending doctor’s visits to perform blood sugar test: “I get blood work done before I meets with the = Dr. Doe =, the doctor looks over the blood work and adjusts
my insulin if she needs to...like every 3 months...my daughter schedules me because I do go for blood work...My daughter always go, go with me. She take me to her.”

Edward, who reported multiple diabetes related comorbidities including severe kidney disease, referenced his girlfriend taking him to the hospital because of complications:

...my kidneys had start to fail...my kidneys wasn’t producing that water. Ah the next thing I know I was in the congestive heart failure. They said if I hadn’t went to the hospital when I did, I might not made it. Only thing I know all that day I wanted to sleep, to sleep. Finally, about 6, 7 o’clock that night my girlfriend told me you got to go to the doctor. You’re going to the hospital.

Financial Assistance with Diabetes Care Costs. Older adults interviewed valued financial assistance they received with diabetes care costs from their health care providers, family or friends. Josephine said, “I have = Financial Assistance Program = that helps me with my medicine, you know.” Additionally, Jacqueline valued receiving free insulin samples to help with the costs of diabetes medicine:

And if it wasn’t for like some time with your diabetes doctor or the primary [care doctor] they get samples from um (.) like the um people that come in and drop off samples and things. So, they’ll help you out by giving you um (.) some of the insulin to overfray the cost.
Susan valued receiving support from her podiatrist giving her free diabetic socks and bandages to help heal diabetic wounds:

Well = Dr. Mark = uh he try, uh he try bring me you know bandage because I bandage, cause my woman [home health aide] bandage my leg. Diabetic shoes and bandage. He said he going bring me new bandage because I, I wrapping both my legs. He said he going to bring me bandages because I, that way I don't have to buy bandages, he going to bring the bandages.

Daisy valued the use her friend’s blood glucose machine because she did not have the money to buy one which created a barrier to her monitoring her blood sugar. Daisy’s friend’s blood glucose machine was free to use and thus provided her with what she needed for diabetes self-care. Daisy stated:

I did [check A1C] when I had a [blood glucose] machine. I had just got another machine now my insurance company sent me a letter I think it was last month said they no longer going pay for it seeing I just got it. So now they’re not going to pay for it...So, I haven't checked it in a while...But I can just about tell when it's if it's acting up, you know, then I'll might use a friends' or something like that to take it…if I'm not feeling good my sugar is up…I can use a friends of mines machine, you know.

**Community Assistance with Social Services.** Older adults interviewed described their desires, preferences, and values for receiving
community assistance with social services to support their HRSNs and diabetes self-management. For example, older adults interviewed valued having food at their senior housing facility to support a healthy diet. Daisy who reported experiencing food insecurity stated, “Well they have a food program here, so they give us food here you know once a month, so (.) you know that's good. That helps.” Susan said, “I have the congregant program. They serve meals that don’t have any seasonings in them, no salt or anything so it’s pretty diabetic friendly and eat lunch down here every day.”

Further, older adults cited their desires, preferences, and values related to transportation assistance and their diabetes care. Julie stated:

“So I can get where I had to go (.) without having to worry about how I’m going to get the money to get there…it's nobody there to help you uh senior citizens when we get um to the place where we have to be certain place and being able to get there. That's the only support I need…get to the doctors and stuff like that.

Others discussed transportation support they received from social services at their housing facility. Leslie said:

…they [senior housing facility] take us places like, like Wednesday they’ll take us, we’ll go I think we’ll go to the big Walmart Wednesday. Then we’ll go to maybe to the Shoprite or whatever that store is, if we want to go something like that you know. Every Wednesday they take you somewhere or something like that…”
Additionally, participants valued receiving social services supports that help them to navigate and complete tasks associated with conducting routine daily business. For example, one participant valued the social worker at the senior housing facility helping her complete documents having to do with life affairs. Leslie, who reported needing help with day-to-day activities, described how she valued the social services office in her senior housing facility supporting her routine daily business:

Well I have social services downstairs in the program I belong to. And they help me a lot like, help me take care of say if I have a um I need different papers or I need them to help me with paperwork and everything like that…

**Family Provides Information for Diabetes Self-Management.** Older adults interviewed also spoke about how they valued their family providing information to support diabetes self-management. For example, older adults in this study valued receiving information from their family on programs that teach healthy and easy to cook recipes for improved diabetes self-management. Tim said, “They have programs [on balancing a diabetes diet] that they I go to once in a while yea I mean just like I said, she [girlfriend] makes me she says I sign you up.”

Larry described how his girlfriend used her cellphone to provide him with type 2 diabetes information to support with self-management: “…I'm not computer literate, you know, my girlfriend is. But as far as the phone goes, I
just use it making uh phone calls, basically that's all…my girlfriend use the phone sometimes to search type 2 diabetes information.”

Additionally, older adults in this study valued reminders that they received from their family to help them with self-management, for example, reminders to eat healthy. Susan, who reported food insecurity said, “She [daughter] put me on a diet. She said she want me to stop eating out because she want me to lose weight. She said she’s going to buy the foods for me.” Tim, who reported food insecurity and being prescribed insulin and diabetic pills, explained how his girlfriend reminds him to take his medication and eat healthy:

She makes sure I take it. She she's with me every day and she teaching me making sure I take it morning and night in between like she sometimes she's out. She she watches me. She sits there and watches me. Yea she reminds mind yea yea. O when we go out to dinner when we have lunch or something, she'll say you know “Tim can't eat that (you know, stuff like that, and) you shouldn’t have that.”

**Older Adults’ Diabetes Self-Management Behavioral Strategies**

Older adults’ diabetes self-management behavioral strategies were a theme that emerged from the interviews. The eight subthemes have been categorized into three groups: physical behavioral strategies for diabetes self-management, intellectual diabetes self-management behavioral strategies, and spiritual behavioral strategies for diabetes self-management (Table 13).
Table 13

Theme 6 and Corresponding Subthemes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Older adults’ diabetes self-management</td>
<td>Physical</td>
</tr>
<tr>
<td>behavioral strategies</td>
<td>• Monitoring blood sugar</td>
</tr>
<tr>
<td></td>
<td>• Taking diabetes medication</td>
</tr>
<tr>
<td></td>
<td>• Managing comorbidities</td>
</tr>
<tr>
<td></td>
<td>• Exercising</td>
</tr>
<tr>
<td></td>
<td>• Healthy eating</td>
</tr>
<tr>
<td></td>
<td>• Regular doctor visits</td>
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<tr>
<td></td>
<td>Intellectual</td>
</tr>
<tr>
<td></td>
<td>• Diabetes education</td>
</tr>
<tr>
<td></td>
<td>Spiritual</td>
</tr>
<tr>
<td></td>
<td>• Prayer</td>
</tr>
</tbody>
</table>

**Monitoring Blood Sugar.** As a diabetes self-management behavioral strategy, older adults frequently cited monitoring blood sugar to ensure they achieved and maintained specific glycemic targets.

I just you know try and watch...as far as you know sugar goes...try and watch my sugar level...I got a meter...And I know uh certain level, you know, I just try and get, you know. Sometimes it’s uh, depends sometimes it’s like 120, 130, varies. Uh I use it maybe, (.) maybe once a week. (Larry)
Well, at least once every three months, I get a blood work done and um she uh has me at least once a week I have to take my blood, uh what is it you know um (.) I have to take the...Yeah, I have to take that to see what it is. And that and as long as it stays between uh I think it’s one mine usually stays between 92 and 101 and that, and she’s very pleased with that. (Laura)

In addition, monitoring blood sugar levels was also a behavioral strategy that older adults conducted as a measure to reduce their risk for diabetes complications. Jacob said:

…I have to take the sugar, the insulin and stuff all the time and I have to check my sugars all time…I know I have to manage it because I know you can lose you can lose stuff from diabetes.

Making sure my AC one whatever don’t get too high where it be out of control…I don’t want to get to the point where I’m be totally dependent on someone to take care of me, like go into a coma, be in a hospital. I don’t want none of that, I wanna keep going as I’m going. (Julie)

**Taking Diabetes Medication Regularly.** Taking diabetes medication (insulin or an oral hypoglycemic agent) regularly as prescribed was a diabetes self-management behavioral strategy emphasized by older adults. Tim said, “…it keeps me doing my medicine, I look back and I see I don't want to be like
this so and I do the medicine I do the meds and keep on try to keep on top of it, you know.”

Jacqueline described her experience with diabetes numeracy, or the ability to understand and use math skills to adjust the amount of insulin she takes:

Depending on my um (. ) my sugar test that tells me how much insulin I'm going to take (. ) with my um experience with my diabetes doctor they have me on like um a slide sliding scale that when my sugar is a certain amount that I have to use a certain amount of insulin…

Other older adults shared their experiences with taking diabetes medication regularly as a behavioral strategy to increase their success rates in achieving blood sugar targets. Daisy said:

I take my medicine…before I eat… I take twice a day. So, one of my pills I had to take uh my metformin I take twice a day. So I take that in the morning and then I take it when I eat my dinner…I don't forget…But basically, my sugar is really it's under you know, it stays the same it's like under control…But I think if I didn't take the medicine it might not would be you know.

In addition, older adults cited taking diabetes medication regularly as a strategy to reduce the likelihood of diabetes complications or to prevent diabetes complication from getting worse. Lucia said, “Well all I do is take
medication, all I do is take my pill...once in a while I would get dizzy...but the medication helps me. I take my medication every morning.”

**Managing Comorbidities.** Managing comorbidities of diabetes such as chronic kidney disease, cancer, or depression was a self-management behavioral strategy emphasized by older adults. Susan stated, “I got a psychiatrist and taking pills for depression.” Jacqueline said:

I am a cancer patient also so I'm currently under chemotherapy for the next nine weeks. And when you are getting steroids (.) and and chemo it messes with your diabetes (.) it causes your numbers to go up. So therefore, you have to control the insulin that you take.

Larry, who reported being diagnosed with severe kidney diseases explained:

I do have kidney problems, okay. I got a nephrologist and urologist. So, I visit them maybe every three months or so. They'll take blood work and uh (.) they'll uh (.) if it's, something is not right according to the blood work, they'll uh give me give me medication or maybe see uh give me a (. ) try to see a specialist, something like that, you know.

**Exercising.** Older adults discussed exercises such as walking, swimming, and going to the gym as self-management behavioral strategies to help control blood sugar levels, promote weight loss, and improve well-being.

“I do a lot of a lot of walking.” (Larry)
“I got this other health insurance, it's uh = Insurance Company =, and they're going to, they cover the uh SilverSneakers for gyms and stuff. I can go to the gym. I want to try to go like maybe three days a week.” (Jacob)

“Try to exercise as much as possible...Uh I go to uh um adult day care center and we exercise there...exercising and stuff that it takes control over the diabetes and keep it stable.” (Julie)

“Exercising is real important, you know, exercise, you have to exercise when you have diabetes...I decided to do swimming.” (Laura)

**Healthy Eating.** Eating healthy in order to keep blood sugar levels in target ranges was a diabetes self-management behavioral strategy discussed by older adults. Jacqueline stated:

“I just got to be more attentive to my diet. Once that is then I (. ) you know then I think I'll have a better control on my type 2 diabetes...Diet is really important (. ) with diabetes. I've found out like (. ) with diabetes (. ) when I eat something and that's not really a good lay out for that day, I can notice how the sugar would go up (. ) and then try something else that um where it has less carbohydrates and then you'll find that you can control it a little bit better without um the starches.

Julie also said, “Basically relaxing and trying to just take one day at a time and hoping that you know by me eating the things I eat and exercising and stuff that it takes control over the diabetes and keep it stable.” Laura said:
I control my diabetes with my diet… I decided to go to the classes that taught me how to uh cook for myself, what to eat, what not to eat, when to eat, because it's important that you know, when to eat, when you have diabetes…And um some of the soups that I were eating was not good for my high blood blood pressure or my diabetes. So I had to stay away from them.

Some participants stated their desire to have healthy foods available to eat so that they can better self-manage their diabetes. Josephine said:

Uh it’s been a long time since I’ve had diabetes…it’s been like uncontrollable…Maybe it’s because of my what I eat too. Sometimes I don’t have the right food for me to um (.) to, you know, to have a good, healthy meal, you know, I eat what I have. So sometimes that’s that’s a problem…I know you know what to do if I had the stuff…I know, you know, what to eat and what not to eat, you know, but basically, I eat what I have.

**Regular Doctor Visits.** Older adults in this study discussed the importance of regularly attending doctor visits as a strategy to manage their type 2 diabetes. Jacob said:

I see my doctor all the time…primary care doctor. He does blood tests and uh tells me to watch out for sugars and stuff and tells me just to keep, keep like don’t eat a lot of starches and stuff. And uh he told me
stay away from sodas and stuff. He just tells me basically to eat right and everything, exercise and stuff.

Edward, who reported multiple diabetes related comorbidities discussed the importance of regularly attending doctor appointments as a way to build his confidence to self-manage his diabetes:

Do your doctors...you don't want to skip too many. You don't want to skip too many appointments...You gotta have a little bit of confidence in yourself. It's just like anything else you do. If you don't have no self-confidence or self-esteem for yourself most everything you do will be negative. Pull your self-esteem up, have plenty of confidence. I can do, I will do, I have done, all that, you pretty much get away with it.

Older adults also discussed the importance of visits to specialist doctors, for example, eye doctor, for examinations as an essential part of diabetes self-management. Daisy said, “I always go to doctor eye doctor once a month I got a appointment for 18th uh this month. I had to go at least once a year cause of my diabetes you know, (.) to keep track.”

**Diabetes Education.** Older adults interviewed valued various formats of diabetes education as a self-management behavioral strategy. For example, older adults valued peer group education as a source of intellectual information to help learn self-management strategies to better control blood glucose levels. Jacqueline stated:
...when you're talking to other people about diabetes and listening to what their um (.) experiences are with diabetes you learn a lot from...seeing how other people are tolerating with their insulin...I think that more like you when you're involved and like um focus groups and um (.) just talking with other people that have the experience you you learn a lot...maybe something that they do...great controls it a little better than you do.

Older adults also valued reading diabetes self-management education information in print format. Laura stated:

And you have um the the my diabetic magazines that I get I get those every month, my diabetic magazines, I get them every single month, I read them... And the best thing about the diabetic magazine is they're always giving you different ideas on um exercising, um how to keep your eyes healthy you know, how to keep your skin because when you're diabetic your skin's very, very dry.

Susan said, "I read my Polish book on my diabetes I know doctor says I have to read it to know how to manage it."

Prayer. Prayer was an important spiritual diabetes self-management behavioral strategy expressed by older adults interviewed. Several older adults described prayer as an integral part of diabetes health care and daily life. Josephine said, "I just keep on praying that's all. Yeah. I pray every day about this."
Older adults in this study valued that their health care provider speaking with them about their spiritual beliefs and encouraged them to pray about their diabetes. Laura stated, “And she [doctor] said, you have to put it in God's hands and God will guide you and you have to pray about this.”

Further, older adults in this study also valued the role of prayer as a source of strength in helping them to cope with their diabetes. Lucia said, “…every morning when I get up, I say thank you God give me another day and help with my illnesses…”

A discussion of the findings is provided in chapter five.
Chapter V.  
DISCUSSION, IMPLICATIONS, CONCLUSION

Donabedian Model of Care as an Interpretation Framework

The Donabedian Model of Care will be used as a lens to interpret the data and understand the results. The six themes and their subthemes that emerged during data analysis correspond to two of the three domains which reflect type 2 diabetes treatment and management care received by the older adults living in MUAs in this study. It is important to highlight that the majority of the themes that emerged fit with the process domain, which in light of the purpose of this study aligns congruently since the process domain reflects actions done in giving and receiving health care. Figure 5 below displays which themes correspond to each domain. Outcomes reflect select improvements in diabetes measures gleaned from the interviews and prior literature.

Figure 5

*Conceptual Framework for Older Adults Living in MUAs Preferences, Desires, and Values for Type 2 Diabetes Treatment and Management Care Received*

Structure

The first domain of the Donabedian Model of Care is structure. These characteristics of the providers of care are the fundamental components of an organization and its environment that influence the kind of care that is provided (Donabedian, 1980). The concept of structure includes the human, physical, organizational, financial and other resources of the health care system and its environment (Donabedian, 1980, 1986). The theme that is associated with the structure domain is Accessible Services for Older Adults.
**Accessible Services for Older Adults.** Older adults living in MUAs interviewed discussed the role of their health care provider cultivating an atmosphere where they are able to get the right diabetes care at the right time. Findings from the interviews showed that older adults desire, prefer, and value structure-related dimensions of care that are accessible. For example, this qualitative study highlighted that older adults living in MUAs valued receiving convenient access to health care services in their home. This included receiving home health care to diagnose and treat illness(es) related to diabetes, dietary assessments and guidance on meal planning from dietitians, home delivery of medications and food, and medical social services support. This is the first study to the author’s knowledge to provide an understanding of the characteristics and values of home health care for older adults with type 2 diabetes living in MUAs. These characteristics and values are necessary to optimize the diabetes home health care that health care providers offer to older adults living in MUAs.

Previous research has reported that home health care services for older adults is underutilized (Reckrey, 2020; Wysocki et al., 2019). This research study demonstrates that older adults living in MUAs value diabetes home health care services. In addition, as articulated by the older adults in this study, home health care services may prove beneficial for improving their diabetes self-management skills and diabetes outcomes.
Dietary counseling has been widely studied as being beneficial for type 2 diabetes (Evert et al., 2019). However, the results of the National Home and Hospice Care Survey (CDC, 2000; Jones et al., 2012) showed that among adults aged 65 years and over receiving home health care, dietary counseling and social services were less frequently received. This finding is concerning in light of this study which showed that 19% of the participants indicated that they were food insecure or at risk of food insecurity and that older adults living in MUAs valued receiving at-home dietary assessments and guidance on meal planning from dietitians to support with their diabetes self-management. Given the importance of healthy eating for optimal diabetes self-management, it seems that dietary counseling would be a critical service that home health care provides to older adults living in MUAs.

It is also important to highlight that the older adults living MUAs in this study valued home-delivered meals to support with a healthy diabetes diet. Previous research has been mixed when analyzing various outcomes of adults (age > 18 years) receiving home-delivered meals compared with those who are not recipients of home-delivered meals. For example, Luscombe-Marsh et al. (2013) found no significant differences in weight loss between older adults who received home-delivered meals compared to those older adults who did not receive home-delivered meals. Lee et al. (2015) conducted a study that showed older adults receiving home-delivered meals were significantly less likely to report being food insecure compared to those older
adults who did not receive home-delivered meals. In a randomized study, Edwards et al. (1993) found that elderly receiving home-delivered meals were less likely to have uncontrolled diabetes and hospitalizations compared to older adults not receiving home-delivered meals. In contrast, Berkowitz et al.’s (2019) study found no significance differences of improvements in HbA1c for adults when they received home-delivered meals compared to when they did not receive home-delivered meals. Despite these and other mixed research findings on how home-delivered meals may contribute to health and addressing HRSNs, older adults with type 2 diabetes living in MUAs in this study articulated that they valued receiving healthy home-delivered meals to address food insecurity and support with diabetes self-management.

In this study, older adults living MUAs also desired and valued diabetes health care services in close proximity to their home. Provider network accuracy and accessibility is a key component of the care continuum to ensure patients have access to the right care when needed. Provider networks consist of contracted physicians, hospitals and health systems, nonphysician professionals, ancillary and therapeutic services and facilities, social services and supports, and any other providers of care (Giovannelli et al., 2016; Busch & Kyanko, 2020; Segal, 1999). The service area, or the geographic area in which the health insurance plan provides access to hospital care and other health and social services, is crucial to eliminating barriers to care for patients, especially those who require specialty care.
physicians, behavioral health care providers, and social services support.

Despite the advantages of an accurate and accessible provider networks that are associated with better health outcomes and reduced mortality (Fields et al., 2016), underserved communities continue to face challenges with accessible provider networks to address health disparities (Haeder et al., 2019; Morelli, 2017). Haeder (2019) found that older adults living in urban communities had limited access to endocrinologists. Nevertheless, the findings in this study show that older adults with type 2 diabetes living in MUAs desired and valued a range of centrally located health and social care providers in their community that can help them to improve their diabetes outcomes. These findings suggest the importance of ensuring strong provider network access where health care and social services can be conveniently accessed to facilitate improved diabetes outcomes for older adults living in MUAs.

In this study, older adults with type 2 diabetes living in MUAs discussed the importance of having a health care provider that spends time with them. Previous research in the U.S. shows that in the late 1980s physicians spent an average of 26.3 minutes with patients during an office visit, compared to 18.3 minutes in 1998, 17.4 minutes in the early 2000s, and 22.5 minutes in 2016, the latest year available (Mechanic et al., 2001; Tai-Seale et al., 2007; Rui & Okeyode, 2016). On the other hand, Yawn et al. (2003) found that primary care office visits lasted about 10 minutes. While this
study did not do a quantitative analysis of the amount of time the physicians of the older adults in this study spent with them, older adults living in MUAs with type 2 diabetes in this study valued a health care provider who spends extra time with them, and desired or preferred their health care provider to spend more time than they did with them. This perhaps suggest that 10 – 22.5 minutes is or is not long enough for the older adults with type 2 diabetes living in MUAs in this study.

Health care provider constraints on how much time they spend with patients could have an impact on health outcomes. Previous research has shown that providers who spend less time with their patients are, for example, prone to have more malpractice claims and have lower patient trust ratings (Levinson et al., 1997; Fiscella et al., 2004). Similarly, Zhang et al. (2020) found that only 22.7% of surveyed patients admitted to a tertiary hospital were completely satisfied with the amount of time nurses spent with them. In contrast, Lin et al. (2001) research suggested that patients who feel that they spent more time than anticipated with their health care provider are significantly more satisfied with the visit, which in-turn could positively impact quality of care and type 2 diabetes outcomes (Narayan et al., 2003; Alazri & Neal, 2003).

Finally, Donabedian (1980) has suggested that increasing the level of, and equalizing access to care is a key indicator and dimension of the structures of quality of care. Additionally, Penchansky and Thomas (1981)
conceptualized the dimensions of access, which includes geographically accessible services and time spent with patient, as important facilitating factors to cultivate an atmosphere where persons are able to get the right care at the right time. These findings are consistent with other studies that suggested key structure components, such as the ability of people to reach the services that they need and prefer, and re-designing visits to allow providers to spend more time with the patient are important organizational facilitators in delivering care that is responsive to the individual preferences, values, needs, and desires of patients (Takane & Hunt, 2012; Wolinsky & Marder, 1982).

**Process**

The second domain of the Donabedian Model of Care is process. The process domain depicts the elements of the care delivery team’s performance to maintain or improve the health of patients. Processes are defined by Donabedian (1980, 1988) as the actions done in giving and receiving health care including those of patients, families, and health care providers. The themes that are associated with the process domain are Care Treatment and Management; Information Sharing and Provider Communication; Attributes of Health Care Providers; Social Support; and Older Adults’ Diabetes Self-Management Behavioral Strategies.

**Care Treatment and Management.** Older adults living in MUAs in this study discussed their desires, preferences, and values for diabetes treatment
and management care. For example, older adults living in MUAs valued receiving diabetes treatment and management care from different health care providers. An interdisciplinary, coordinated care team whereby health care providers interact with each other for care planning to produce quality care has been identified by Donabedian (1985) as an element in the process of care.

Yet, challenges remain on the health care provider level with ensuring patients are linked and refereed to interdisciplinary providers and services and that the care is tracked and followed through by the originating health care provider. For example, a qualitative study by Friedman et al. (2016) found the following barriers to interdisciplinary, collaborative care when interviewing health care providers: lack of IT functionality; availability of community resources to address SDoH; resistance from clinicians and health care facilities; and resistance from patients to care coordination. Likewise, Zuchowski et al. (2017) conducted a qualitative analysis to explore health providers’ and administrators’ perceptions of care coordination challenges. The authors found care coordination challenges to include providers not working effectively together; lack of role clarity; deficiencies in care tracking; insufficient communication between internal and community providers; communication breakdown across internal systems; delayed and deficient patient records exchange; and delays around authorizations (Zuchowski et al., 2017).
Nevertheless, overcoming care coordination challenges leading to the involvement of an interdisciplinary, collaborative health care team that works in partnership to meet the needs of older adults with chronic conditions is associated with improved use of self-management strategies to control symptoms, decreased readmission rates, lower total inpatient costs, very high satisfaction with care, and helps prevent functional decline (Hoover et al., 2017; Barnes et al., 2012; Counsell et al., 2000; Kresevic & Holder, 1998). Further, several studies have demonstrated patients perceive a cooperative care team working together for ongoing health care management as a beneficial part of their diabetes care (Alazri et al., 2006; Lawton et al., 2009).

Older adults living in MUAs in this study also valued receiving a thorough checkup from their doctor to check their overall health. It is important to note that some of the components of a thorough checkup that emerged are not part of the ADA (2021c) recommended guidelines for what health checks should happen for patients with type 2 diabetes, for example, liver examination, skin examination, and cognitive examination, which indicates some physicians are going beyond recommended guidelines to provide comprehensive care for their patients. This finding in this study is similar to Oboler et al.’s (2002) study that reported most adults in the U.S. valued a comprehensive annual physical examination that included blood pressure measurement and a check of the heart, lungs, abdomen, reflexes, prostate, and vision. Similarly, in Duan et al.’s (2020) study the authors found
that almost all respondents felt that their health care provider should conduct a total body skin examination, heart examination, abdomen examination, eyes examination, mouth examination, and check their blood pressure.

The above findings on adults’ values and preferences for a thorough and comprehensive exam are noteworthy in light of previous discussions questioning the value of these physical examinations (Himmelstein & Phillips, 2016; Reynolds et al., 2016; Mehrotra & Prochazka, 2015). Krogsbøll et al. (2019) seem to concur considering their systematic review and meta-analysis reported little or no effects of general health checkups on morbidity, hospitalization, disability, or worry. In contrast, a previous systematic review and research reported that the benefits of a periodic/annual physical examination include improved physician-patient relationship, better patient disease detection, and improved patient satisfaction, health behaviors, attitudes, clinical outcomes (e.g., blood pressure, body mass index), hospitalization, disability and costs (Duan et al., 2020; Hyman, 2020; Boulware et al., 2007; Prochazka et al., 2005).

Donabedian (1985) described comprehensive treatment and management care and the components that it entails, for example, the diagnostic process—physical examination and diagnostic test, as a process-related dimension of care to assessing and monitoring quality. In addition, the components of a thorough checkup that older adults in this study valued are
part of ADA's (2021c) recommended type 2 diabetes health checks at initial, follow-up, or annual visits.

Older adults living in MUAs in this study desired and valued a health care provider who makes the right diagnosis in diabetes, an accurate and timely diabetes diagnosis. Unfortunately, doctors misdiagnose patients at an astounding rate (Zwaan & Singh, 2020; Shojania & de Mheen, 2020; Singh et al., 2017). Gunderson et al.’s (2020) systematic review and meta-analysis found that harmful diagnostic errors in hospitalized adults occurs in at least 0.7% of adult admissions. According to the authors, this equates to approximately 249,900 harmful diagnostic errors, including common diseases missed, both cognitive and system-level (Gunderson et al., 2020). Singh et al. (2014) found a rate of outpatient diagnostic errors of 5.08%, or approximately 12 million U.S. adults every year. In Seidu et al.’s (2014) study, the authors found that the prevalence of diagnostic errors in people with diabetes in primary care was 7.4%. Similarly, Samuels et al. (2006) reported that delayed diabetes diagnosis occurred in more than 7% of incident cases for at least 7.5 years after the onset of disease.

The previous data on diagnostic errors makes the finding of this study regarding older adults living in MUAs desires and values for an accurate and timely diabetes diagnosis essential. The concept of timely diagnosis refers to a more person-centered approach to disclose the diagnosis at the right time for the patient with consideration for their unique circumstances and
preferences (Dhedhi et al., 2014). In a survey of adults attending an outpatient appointment at a hospital, 92% of respondents preferred a timely diagnosis, with older adults (<50 years of age) more likely to prefer a timely diagnosis compared to younger adults (Watson et al., 2018). Herman et al. (2015) reported that early diagnosis and treatment of glycemia and cardiovascular risk factors in type 2 diabetes may reduce the run-up time between diabetes onset and clinical diagnosis and to allow for immediate multifaceted treatment. More recently, several articles have called for more timely diagnosis of diabetes in older adults, because this vulnerable population is at a high risk for diabetes-related complications, including cardiovascular, urinary, cognitive, sensory, and extremity (LeRoith & Halter, 2020; LeRoith et al., 2019; Ha & Kim, 2015; Chentli et al., 2015).

Older adults living in MUAs with type 2 diabetes also described their desires and values for a health care provider that listens and responds to their problems and needs. People’s perceptions about their health care provider listening to them has been reported on in the literature, although with mixed findings. In analyzing the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey results for patients receiving care at a public safety-net hospital, Indovina et al. (2016) found that patients gave a positive assessment of their doctors listening carefully to them roughly 86.5% of the time during their hospital stay. In a more recent survey, Tran et al. (2020) reported that approximately 93% of patients surveyed believed that
during the last consultation their doctor listened attentively while they talked. Tran et al. (2020) and Indovina et al.’s (2016) studies stand in somewhat contrast to Zhang et al.’s (2020) study which found that patients admitted to a tertiary hospital were least satisfied with “How nurses listened to patient worries and concerns” (13.4%) and with nurse’s lack of awareness of the patient’s needs (9.6%). In addition, Ospina et al.’s (2019) study which found that, on average, clinicians interrupted patients seven out of every ten times, while listening to patients for 11 seconds before interrupting them.

It seems then that there is little to no benefit in clinicians asking patients about their needs only to briefly listen to their patients’ responses before interrupting (Phillips & Ospina, 2017). Moreover, in Tran et al.’s (2020) study, “Doctor listens attentively while patient talks” was significantly associated with higher patients’ satisfaction with doctors’ communication. Furthermore, Lee et al. (2016) research showed that when health care providers listen to and respond timely to patient needs there is a positive impact on patient perception of care.

Older adults with type 2 diabetes living in MUAs in this study further desired, preferred and valued a long-time doctor-person relationship, a constant doctor for diabetes care and not one that frequently changed beyond one’s control. This finding underscores previous research by Mold et al. (2004) that found older adults with multiple, complex, chronic health conditions benefit on health outcomes from a sustained, continuous
relationship with their health care providers. Unfortunately, fragmented relationships between health care providers and patients are all too common.

In the study by Mold et al. (2004), the authors found a statistically significant association between older adults’ voluntary or involuntary change of physician and duration of relationship. More specifically, Mold et al. (2004) found that approximately 72% to 92% of older adults surveyed reported an involuntary change in PCP at some point during the course of their 10-year provider-patient relationship. The doctor left/died/retired, or insurance/cost issues were cited as the highest reasons. Older adults in urban areas were more likely to involuntarily change PCPs for insurance reasons (Mold et al., 2004). In other national studies, researchers have reported that approximately 11% to 19% of adults experience clinician discontinuity over a 12-month period (Stransky, 2017; Smith & Bartell, 2004). Stansky (2017) also found that adults who were unemployed or had a lower income, respectively, were more likely to have a change in their usual source of care.

The effects of long-time doctor-person relationship have been reported on in the literature. In a survey of physicians conducted by Hines et al. (2017), approximately 45% perceived long-term relationships (LTRs) with their patients have a great impact on clinical outcomes, 65% believed that LTRs contribute to patient trust, and 52% believed that LTRs are more likely to cause a patient to follow a clinician’s medical recommendations. Moreover, Stransky (2018) found that persons who lost their health care providers were
more likely to forgo getting medical care and needed medications. Nam et al. (2019) analyzed the effect of provider continuity on type 2 diabetes outcomes and found that the average incidence of diabetic complications per patient was lower with a higher provider continuity score. Furthermore, previous studies have reported that longer patient-provider relationships are associated with greater patient satisfaction, more confidence in one’s physician, and better communication with providers (Donahue et al., 2005; Smith & Bartell, 2004; Mold et al., 2004; Safran et al., 2001).

Finally, older adults with type 2 diabetes living in MUAs in this study valued a doctor who ensured their medications were administrated safely and accurately. Older adults in this study also desired the right medications and preferred medications that does not cause adverse side effects such as hypoglycemia. Polypharmacy was also an issue that the older adults in this study valued their doctor addressing.

De-intensification of diabetes medication treatment, which is a decrease or discontinuation of any antidiabetic drug without adding another drug, or a reduction in the total daily dose of insulin with or without adding a drug without risk of hypoglycemia, is recommended in elderly patients with strict glycemic control at high risk of hypoglycemia (ADA, 2021b; Pirela & Garg, 2019; Seidu et al., 2019).

Maciejewski et al. (2018) conducted a study that examined rates of overtreatment and “deintensification” of medication therapy for older adults
with diabetes. The authors research suggested that overtreatment for diabetes occurred in almost 11% of the older adults as indicative of having had very low ongoing blood sugar levels (Maciejewski et al., 2018).

Maciejewski et al. (2018) research also showed that older adults over 75 years of age and low-income, dually eligible under Medicare-Medicaid, respectively, were significantly more likely to be overtreated for diabetes. Of the older adults who were overtreated, approximately 14% received reductions in diabetes medication refills within six months following the index HbA1c (Maciejewski et al., 2018). Treatment deintensification was significantly more likely in urban areas compared to rural areas (Maciejewski et al., 2018). However, older adults over 75 years of age were less likely to have their medications de-intensified (Maciejewski et al., 2018). Thus, Maciejewski et al.’s (2018) study suggested that proper prescribing for older adults with diabetes based on their needs may provide relief from unintended side effects that results from glycemic levels out of targeted range.

Furthermore, some older adults in this study cited not taking diabetes medication due to its adverse side effects, and in doing so they would avoid severe hypoglycemia. This finding is consistent with previous studies that show people with diabetes who take certain types of medications to lower their blood sugar sometimes experience extreme hypoglycemia (Kalra et al., 2013; Lipska et al., 2013; Miller et al., 2010). Vijayakumar et al. (2020) reported that approximately 30% of patients in their study had a decrease in
their diabetes medication fills 6-months after experiencing a hypoglycemia-related encounter (i.e., emergency department visit, observation stay, or hospital admission). Thus, while not taking diabetes medication to avoid severe hypoglycemia was preferred in this study, physicians should work with their older patients to personalize medication regiments to increase or decrease drugs to control the side effects.

Whether a patient is prescribed the right medication, prescribed a dosage as to prevent undue medication side effects, or the elimination of unnecessary medications, these are measures of process from which inferences are made about the effectiveness and efficiency of care (Donabedian, 1982). Safe medication administration by health care providers, including using specially trained nurses or pharmacists is associated with significant improvements in glycemic control, non-glycemic measures such as low-density lipoprotein cholesterol, triglycerides, and systolic and diastolic blood pressure, and lower likelihood of polypharmacy and adverse events related to it (Parulekar & Rogers, 2018; Davidson, 2009; Al Mazroui et al., 2009; Davidson, 2007; Choe et al., 2005; Krein et al., 2004). Thus, health care providers should work with their older patients to personalize medication regiments to increase or decrease drugs to control the side effects, as reflected by the desires, preferences and values of the older adults with type 2 diabetes living in MUAs in this study.
Information Sharing and Provider Communication. Additionally, older adults living in MUAs in this study desired, preferred, and valued information sharing and provider communication in the diabetes health care they received. The subthemes were categorized as informational and relational. The significance of interpersonal communication between the doctor and patient in quality care has been well documented by Donabedian (1988, 1990). For example, Donabedian (1982) highlighted instruction to the patient on aspects of self-management as a dimension of process. Previous evidence highlighted that when patient’s values, needs, and preferences are incorporated into cultivating communication, for example, sharing information and making recommendations, they become more active participants in their care, which may improve patient outcomes, such as understanding and adherence to medication regimens and overall satisfaction with care (Teutsch, 2003; Beck et al., 2002; Mead et al., 2014).

Informational subthemes reflected those processes of care described in the ADA’s (2020a) medical evaluation and assessment standards of medical care. For example, the older adults in this study valued information and recommendations from their health care provider intended to support with optimal diabetes self-management. According to ADA’s (2020a) standards of medical care in diabetes, effective communication between the health care provider and person with diabetes should “foster a collaborative relationship…[and] use language that is strength based, respectful, and
inclusive and that imparts hope” (p.S38). In addition, at each visit, a doctor should be evaluating diabetes self-management skills and barriers and educating about self-care (ADA, 2020a). The subthemes that emerged in this study were consistent with ADA’s (2020a) guidelines.

Older adults in this study desired and valued information from online to help with diabetes self-care. Older adults in this study found social media and mobile technology key to supporting optimal type 2 diabetes self-management. Luxford et al. (2011) suggested that supportive information technology are important facilitators that may improve care delivery focused on meeting patient’s needs and preferences. In addition, technology preferences of the person at the center of the care are important processes of health care delivery to improve the health status (Donabedian, 2003). Despite this evidence, older adults and underserved communities experience limited access to technology and the internet as described below.

While roughly four-in-ten older adults reports owning a smartphone, approximately 30% of adults earning less than $30,000 a year do not own a smartphone (Pew Research Center, 2017b, 2019a). A recent survey reported that 15% of older adults in the U.S. go online using their smartphone, 15% used the internet or email to communicate with doctors or other medical professionals, while 52% searched online for health information (Pew Research Center, 2019b; 2020). Even then, older adults, racial and ethnic minorities, and underserved communities are less likely to have broadband
Vaportzis et al. (2017) reported that older adults experience health-related barriers such as poor eyesight and arthritis when using tablets or other technology equipment. Grindrod et al. (2014) reported that older adults who have less experience using apps for health information are often confused because of ambiguous in-app symbols or the functionality may not be “older adult” friendly or too complex. Pal et al. (2013) conducted a systematic literature review that showed computer-based diabetes self-management interventions had limited effectiveness on glycemic control.

Despite these limitations of technology use among older adults and digital technology efficacy on diabetes control, a recent study stated that older adults are embracing the use of digital technology (Andrews et al., 2019). Access to digital technology, including mobile health information and online health services and tools, has the potential to improve chronic disease outcomes as highlighted in this study. A recent survey reported that 52% of older adults in the U.S. searched online for health information (Pew Research Center, 2020). Kim and Song (2008) reported that adults with type 2 diabetes who accessed a web site by using cellphones or computer internet services to receive educational information for diabetes self-management had a statistically significant decrease in HbA1c compared to adults who received in-person educational information from the physician. Similarly, a randomized controlled trial conducted by Kumar et al. (2020) showed that using a mobile
application for health information on diabetes lifestyle modification and medication management improved quality of life for intervention group participants compared to the non-intervention group.

The digital technology challenges highlighted above should be addressed to ensure older adults get the full benefit of using digital technology to support type 2 diabetes self-management. In the meantime, the older adults living in MUAs in this study valued and desired the use of smartphones and tablets to access health information from online to help with diabetes self-management.

Finally, in this study older adults with type 2 diabetes living in MUAs preferred and valued relational communication processes in their relationships with health care providers. For example, older adults in this study valued a health care provider that discusses things that interest them. “Relational communication can be described as those identifiable verbal and nonverbal behaviors that carry message value about the type of relationship the communicators share” (Step et al., 2009, p. 3). Relational communication reflects the quality of the communication between the health care provider and the person at the center of care (Step et al., 2009). Shay et al. (2012) found that positive physician relational communication is associated with patients feeling that their physician understood their health care preferences and values. Furthermore, past studies have demonstrated that positive relational communication between the provider and person at the center of
care is associated with improved health behaviors, fostering hope, greater emotional self-management, adherence to self-care, significant health and psychological benefits including less anxiety and emotional distress, greater patient satisfaction, reduction in health care disparities, lower health care costs, and improved life expectancy (Epstein & Street, 2007; Step et al., 2009; Burgoon et al., 1987). In contrast, negative relational communication is associated with patient psychological distress, feeling dehumanized, and despair (Thorne et al., 2008).

Older adults in this study also valued receiving diabetes care information from their health care provider by telephone. The role of synchronous versus asynchronous communication between the patient and the provider is important due to the value of selecting the right method based on patient preferences for the given clinical situation. Synchronous communication, including the use of the telephone as a communication tool for health care providers to interact with diabetic patients has been widely studied.

Becker et al. (2017) conducted a randomized study evaluating the effectiveness of telephone support and counseling on HbA1c control of elderly people with type 2 diabetes. Intervention group participants received 16 telephone support calls over four months (four calls per month). The control group received their information through the mail. The study demonstrated mixed results. At baseline, the intervention group showed statistically
significant poor glycemic control compared to the control group. Participants receiving the telephone diabetes support and counseling showed statistically significant reductions in the values of fasting blood glucose and HbA$_{1c}$.

Control group participants showed a reduction in fasting blood glucose, although not significant. However, there were no significant differences in values for fasting blood glucose or HbA$_{1c}$, respectively, between the intervention and control groups. Becker et al.'s (2017) study demonstrated that telephone support and counseling is an effective strategy of educating elderly people with diabetes and will help achieve HbA$_{1c}$ optimal levels.

In a separate study, Ward et al. (2018) evaluated the effectiveness of a pilot program that for patients who received telephone-only versus mixed-modalities (i.e., any combination of telephone, videoconferencing, and in-person appointments) medication management and diabetes self-management education from certified diabetes educators (CDE). The study results showed that HbA$_{1c}$ was significantly improved in both groups (percent change in HbA$_{1c}$: -1.2 for telephone-only versus -0.9 for mixed-modality) from baseline to follow-up. Participants in the telephone-only group had more medication management interactions with the CDE compared to the mixed-modality group, 61% versus 37%. The results from Ward et al.'s (2018) study demonstrated that receipt of telephone care for diabetes self-management education has the potential to improve type 2 diabetes outcomes for adults.
Walker et al. (2011) conducted a randomized study involving low-income urban adults to assess the effectiveness of a telephone versus print intervention delivered by health educators to improve type 2 diabetes control. At one-year follow-up, a statistically significant difference was observed in that the telephone group had a mean HbA$_{1c}$ decline of 0.11% compared to a mean HbA$_{1c}$ increase of 0.13% in the print group. The statistically significance difference remained after adjusting for baseline HbA$_{1c}$, sex, age, and insulin use. The results from Walker et al.'s study (2011) is consistent with other studies that show telephone diabetes care delivered by health care providers has the potential to improve type 2 diabetes self-management for adults in low-income communities.

Other studies have shown mixed results for telephone diabetes care impact on diabetes outcomes. McFarland et al. (2012) conducted a nonrandomized, parallel, control-group study that showed no statistically significant difference in mean HbA$_{1c}$ reduction from baseline to six months follow-up for patients with poorly controlled type 2 diabetes who received medication therapy management by a clinical pharmacy specialist either through home telemonitoring versus telephone follow-ups between their face-to-face visits. Similar results were reported by Greenwood et al. (2014), in which adults receiving diabetes self-management support delivered via telephone versus secure message had no significant difference in total mean HbA$_{1c}$ from baseline to nine-month follow-up.
Despite the mixed results on the effectiveness of telephone diabetes care on diabetes outcomes, telephone care may still have potential benefits on diabetes outcomes. The older adults living in MUAs in this study valued receiving telephone care from their health care providers to support with type 2 diabetes self-management.

**Attributes of Health Care Providers.** Older adults living in MUAs in this study highlighted a whole host of essential attributes that they valued in their health care providers. According to Donabedian (1982), the attributes of health care providers are a fundamental process-related dimension of care in the management of the interpersonal relationship between the practitioner and the patient, is a necessary conduit in the application of technical care and contributes to health care quality.

Older adults interviewed valued a caring health care provider. Wen and Tucker (2015) conducted a qualitative study that showed patients valued a doctor who is caring and compassionate, as well as having pleasant interactions with other staff in the doctor’s offices. However, just over half (57%) of Americans say medical doctors care about their patients’ best interest all or most of the time (Pew Research Center, 2019d).

Furthermore, older adults living in MUAs in this study valued an honest health care provider. Physician honesty with patients is said to be associated with reduced risk of misdiagnosis and improper or inadequate treatment, unnecessary worrying about the cause of a medical problem or complication,
informed decision-making, or increased trust in physicians (Zolkefli, 2018; Wu et al., 1997).

However, only about half (48%) of Americans say medical doctors provide fair and accurate information when making recommendations all or most of the time (Pew Research Center, 2019d). A study in *Health Affairs* revealed that some physicians are not always honest with their patients. The authors of the study reported that 34% of physicians surveyed did not think they should disclose serious medical errors to patients, 20% said they did not disclose an error within the previous year for fear of a malpractice claim, and slightly over 10% said they told their patients something that was not true within the previous year (Iezzoni et al., 2012). Failure of health care providers being honest with the person at the center of the care about their condition and prognosis can lead to the person’s false hope (Ngo-Metzger et al., 2008). Despite these disturbing pervious findings, the older adults with type 2 diabetes living in MUAs in this study expressed that consideration for the health care provider-person relationship indicates that honesty may lead to the patient trusting treatment and management recommendations thereby improving adherence and type 2 diabetes outcomes.

Trust in their health care provider was another attribute valued by older adults interviewed. Chandra et al. (2018) conducted a systematic literature review that showed patient trust in the doctor-patient relationship is positively associated with patient satisfaction and perceived quality of health care
services. Physician trust has been associated with adherence to treatment (Altice et al., 2001). However, previous research has shown mixed results in the percentage of patients who trust their health care provider. For example, Kao et al. (1998) research showed that only 60.4% of the respondents surveyed completely trusted their physician “to put their medical needs above all other considerations when treating their medical problems.” An estimated 30% of the respondents completely trusted their health insurance company “to put their medical needs above all other considerations,” while approximately 10% of the respondents did not trust their health insurer at all (Kao et al., 1998). In 2012, only 34% of Americans expressed trust in the leaders of the medical profession (Blendon et al., 2014). In 2014, public trust in the health care system was down to only 23% (Blendon et al., 2014).

Health care provider behavior is key to garnering patient trust (Fiscella et al., 2004). Mistrust of the health care system is associated with not taking medical advice, not keeping a follow-up appointment, postponing receiving needed medical care, and failing to fill a prescription (LaVeist et al., 2009). Building patient trust through one’s behavior is essential to delivering care that older adults with type 2 diabetes living in MUAs value.

**Social Support.** Social support was a theme that emerged from the data. The social support that emerged from the interviews was instrumental and informational. Older adults living in MUAs in this study discussed their desires, preferences, and values for social support for diabetes care received
from family, friends and peers, health care providers and community. For example, older adults living in MUAs in this study valued involvement of family with scheduling and attending doctor’s appointments and providing information to support diabetes self-management.

Boise and White (2004) conducted a study that showed patients preferred to incorporate their family into the care delivery process. Additionally, studies have highlighted the value of family members supporting self-management needs and preferences of patients (Institute of Medicine, 2013). Pfaff and Markaki (2017) conducted a study that showed patients valued supportive human resources, such as family, as important partners in their care. The ADA and the American Geriatrics Society have emphasized the importance of including older adults’ family and other caregivers as partners involved in DSME/T to increase the likelihood of successful self-management behaviors (Kirkman et al., 2012; Suhl & Bonsignore, 2006).

Despite the evidence supporting the inclusion of older adults’ family and friends in processes of care, unfortunately, the older adults interviewed in this study did not identify social support through the inclusion of family and friends as a process of care they received from their health care providers.

This study’s finding of older adults with type 2 diabetes living in MUAs not identifying social support through the inclusion of their family and friends as a process of care elicited by their health care providers is consistent with a lack of health care providers involving family members in patient care
(Carmen et al., 2013). In addition, previous studies reported family member accompaniment to older adults’ medical visits occur approximately 20% to 60% of the time (Wolff & Roter, 2008, 2011). Other studies have also shown that family members lack clear instruction from providers on how they can participate in the care of their elderly loved one (Belanger, 2018; Li et al., 2000).

To the contrary of previous research, it is clear from this study that older adults with type 2 diabetes living in MUAs valued involving family members in care processes to help support with diabetes self-management. This finding is aligned with other studies that show a positive statistically significant association between good family support and improved diabetes self-management for people who live in urban areas, as well as improvements in HbA1c and other clinical outcomes (Ravi et al., 2018; Pamungkas et al., 2017).

Furthermore, approximately 30% of the older adults in this study reported financial strain, or the inability to pay for very basics like medical care or bills. Older adults living in MUAs in this study valued financial assistance they received with diabetes care costs from their health care providers, family or friends. For example, this study showed that older adults with type 2 diabetes living in MUAs valued receiving financial assistance with purchasing insulin and diabetes supplies.
Older adults with diabetes may experience increased financial burden and have lower economic resources compared to their middle-aged counterparts (DeNavas-Walt & Proctor, 2015). For example, it is estimated that nearly 15% of older adults in the US live below the federal poverty line (DeNavas-Walt & Proctor, 2015). According to the ADA (2018b), the average per person cost of health care for adults aged 65 or older with diabetes is $13,239 per year, which includes insulin and diabetes supplies. This is 50% more than the per person health care cost of younger people (ADA, 2018b).

The association between financial strain and diabetes processes of care and outcomes for older adults have been reported in the literature. Assari et al.’s (2017) studied showed no association between low socioeconomic status and glycemic control in urban adults. However, Walker et al. (2021) reported a significant relationship between experiencing increasing financial hardships with an increase in HbA1c for older adults with diabetes, which suggest that fewer financial hardships is associated with better glycemic control. Other studies showed a significant relationship between the increased cost of diabetes medication and medication non-adherence (Kang et al., 2018; Berkowitz et al., 2014).

These previous findings coupled with the findings of this study which show older adults’ living in MUAs value financial assistance with diabetes care cost should spur health care providers to identify structure and process strategies to address the ongoing financial strain of older adults with diabetes.
living in MUAs. This may aid this vulnerable population with achieving optimal diabetes control.

Lastly, older adults in this study discussed a range of community social services supports that they desire, prefer and value to address their SDoH – food and transportation – to support with diabetes self-care. The Donabedian Model of Care as originally constructed has served as a flexible framework that has been used to conceptualize the health care system. However, the framework does not take into consideration the SDoH beyond medical care (Institute of Medicine, 2001). Yet, previous research has described how care processes can be adapted to more effectively address the SDoH (Beck et al., 2016).

Furthermore, previous research has highlighted the value of identifying and addressing SDoH within care that meets patients’ needs, preferences, desires, and values (Pirhonen et al., 2017; Garg et al., 2013). However, according to a study published by Fraze et al. (2019), approximately 24% of U.S. hospitals and 16% of U.S. physician practices reported screening for SDoH, in view of the finding that 8.0% of hospitals and 33% of practices reported no screening. Screening for transportation needs and food insecurity occurred with 74.0% and 39.8% of hospitals and 35.4% and 29.6% of physician practices, respectively (Fraze et al., 2019). These screening results coupled with the findings from this study underscore the need to increase SDoH screening rates for older adults with type 2 diabetes living in MUAs.
Screening this vulnerable population for SDoH so that the proper social services support may be offered to address older adults with type 2 diabetes living in MUAs unmet social needs may improve diabetes outcomes.

For example, according to Schroeder et al.’s (2019) longitudinal cohort study of older adults with type 2 diabetes, those who were food secure were significantly less likely to have an emergency department visit or hospitalization compared to those who were food insecure. In addition, older adults who were food secure had lower HbA1c levels (Schroeder et al., 2019). Bergmans et al. (2019) conducted a study that examined the relationship between food insecurity and diabetic morbidity among older adults. When controlling for covariates, older adults who were food insecure had a 1.7 times higher odds of poor diabetes control compared to those who were food secure (Bergmans et al., 2019).

In addition, support for transportation access may prove beneficial for the diabetes outcomes of older adults, such as reducing rescheduled or missed appointments, delayed care, and missed or delayed medication use. For example, rural low-income older adults with diabetes who had access to transportation had significantly more diabetes care visits for routine care compared to low-income younger people (Thomas et al., 2018). Access to and use of adequate public transportation is associated with more routine chronic care visits compared to those who do not use public transportation (Arcury et al., 2005). In contrast, Tierney et al. (2000) found that primary care
visits and visits for medication refills declined when the state Medicaid payor restricted payments for transportation for low-income inner-city adults. Li et al. (2020) found no difference in the mode of transportation to primary care visits and the level of satisfaction with primary care among older adults.

The previous findings from the literature and the results from this study that show older adults with type 2 diabetes living in MUAs desire, prefer, and value receiving community assistance with social services to address their unmet social needs suggest that processes that support greater access to healthy and nutritious foods and transportation for this vulnerable population may improve diabetes self-management outcomes.

Older Adults’ Diabetes Self-Management Behavioral Strategies.
Lastly, older adults living in MUAs in this study identified a range of self-management behavioral strategies for diabetes control. All of the physical diabetes self-management behaviors that emerged from the interviews with the older adults in this study are a part of the AADE (2020) seven self-care behaviors essential for successful and effective diabetes self-management. Actions done by patients, such as self-management tasks, are processes of care (Donabedian, 1982). Self-management behavioral strategies for diabetes control are associated with improvements in patient-reported outcomes.

For example, older adults living in MUAs in this study discussed the importance of taking diabetes medication regularly. Adherence to diabetes
medications is associated with lower probability of hospitalization and emergency department visits, shorter length of stay in the hospital, improved glycemic control, and better perceived quality of life (Curtis et al., 2017; Capoccia et al., 2016; Krass et al., 2015; Khayyat et al., 2019). Furthermore, with a medication possession ratio (MPR) of ≥80% over the period of observation defined as optimal adherence, previous research has reported that MPR ≥80% for patients with diabetes have ranged from approximately 37% to 58% (Clifford et al., 2014; Farr et al., 2014; Cramer et al., 2008). In addition, Rogers et al. (2017) conducted a cross-sectional survey study that showed patient experiences with medication adherence self-management tasks (for example, organizing, taking and adjusting medications) were associated with patient-reported outcomes of lower diabetes distress, improved general physical and mental health, and medication adherence. The important concern to note here is that older adults with diabetes in underserved communities have long struggled with medication adherence and health care providers can assist this vulnerable population to become more adherent to their diabetes medication by encouraging mail order pharmacy use, providing coaching on problem-solving skills to manage daily barriers to medication adherence, addressing polypharmacy, linkages and referrals to address SDOH, building patient trust, or involving family and friends (Smaje et al., 2018; Bailey et al., 2012; Ramachandran et al., 2020;
Hill-Briggs, 2003; Yap et al., 2016; Zelko et al., 2016; Hill-Briggs et al., 2020; Polonsky & Henry, 2016).

Diabetes numeracy, or the ability to use math calculations to adjust medications based on one’s blood glucose readings, as cited by the older adults living in MUAs in this study, has important effects for diabetes outcomes. Nandyala et al. (2018) reported that for every 1-point increase in numeracy skills, adults with type 2 diabetes were 1.9 times significantly more likely to have optimal medication adherence. Turrin and Trujillo (2019) reported in their exploratory, observational, cross-sectional study that adults with lower Diabetes Numeracy Test (DNT-15) scores were more likely to have higher HbA1c scores compared to adults with higher DNT-15 scores (8.0% versus 7.5%, $p = 0.04$). In a similar cross-sectional study, higher diabetes-related numeracy was significantly associated with lower HbA1c levels (Osborn et al., 2009). Higher diabetes-related numeracy has also been reported to be associated with greater perceived self-efficacy for diabetes self-care and greater diabetes knowledge (Cavanaugh et al., 2008).

In addition to patients’ individual diabetes-related numeracy skills, health care providers and the educational setting has played a pivotal role in diabetes-related numeracy. Zaugg et al. (2014) reported that diabetic patients who received care from diabetologist/endocrinologists in a diabetes-focused center had statistically significant better numeracy scores on the Diabetes Numeracy Test compared to patients who received care from PCPs in
primary care facilities. Zaugg et al. (2014) further reported that taking diabetic pills rather than insulin may make a positive difference in diabetic numeracy levels for patients.

Conversely, there are several concerns to note about diabetes numeracy. In a study by Turrin and Trujillo (2019), older adults were significantly more likely to have lower DNT-15 scores. Osborn et al. (2009) reported that African Americans were significantly more likely to have lower DNT-15 scores compared to Whites. Other determinants of low DNT-15 scores included only attaining a high school diploma or GED or lower income (Osborn et al., 2009). Low health literacy in type 2 diabetic adults has also been reported to be associated with lower diabetes-related numeracy (Abdullah et al., 2019; Al Sayah et al., 2013; White et al., 2010; Cavanaugh et al., 2009). And finally, Zaugg et al. (2014) reported no association between higher numeracy scores and better glycemic control. Health care providers attention to diabetes numeracy in older adults living in MUAs may improve medication adherence for this vulnerable population.

Older adults living in MUAs in this study discussed the importance of regularly attending doctor visits as a strategy to manage their type 2 diabetes and build self-confidence to manage their diabetes. This finding is interesting in light of McCarlie et al.’s (2003) study that suggested adults age 70 years and older are more likely to miss their diabetes appointments compared to
younger people, but this has not been further substantiated in other studies (Diaz et al., 2017; Low et al., 2016).

Nevertheless, previous research has suggested that consistent visits to the doctors may lead to better glycemic control. For example, Karter et al. (2004) in their cross-sectional study reported that adults who attended all their outpatient appointments for primary care and HbA1c measurements during a 1-year period had significantly better adjusted mean HbA1c. Karter at al.’s (2004) study also reported that adults who missed less than 30% of their medical appointments were more likely to practice daily self-management of blood sugar and had better oral medication refill adherence. Other studies have reported a positive relationship between glycemic control and medical appointment attendance (Alvarez et al., 2018; Diaz et al., 2017).

Even in light of the positive effect regularly attending doctors’ visits has on diabetes glycemic control, whether or not someone attends their doctor’s appointment may be extraneous to other factors independent of appointment-keeping. For example, the literature has suggested that the following reasons for non-attendance to diabetes appointments: forgetfulness, long wait times, lack of continuity and coordination between providers, geographical location, financial difficulties, and a dislike of health care providers (Akhter et al., 2012; Ryu & Lee, 2017; Archibald & Gill, 1992; Campbell-Richards, 2016; Heydarabadi et al., 2017; Lawson et al., 2005).
Notwithstanding the extraneous factors that are associated with missed diabetes appointments and that must be acknowledged by health care providers, the older adults living in MUAs in this study discussed the importance of regularly attending doctor visits as a strategy to manage their type 2 diabetes and build self-confidence to manage their diabetes.

Older adults living in MUAs in this study also valued group-based training made up of their peers as a source for helping them to learn strategies to better control their blood glucose levels. Group-based peer self-management education trainings for people with uncontrolled and controlled diabetes has been explored previously and the results are promising for improving diabetes health outcomes and lowering risk of diabetes complications, albeit a few noteworthy extraneous factors to consider (Tay et al., 2021; Odgers-Jewell et al., 2017; Gatlin et al., 2017; Patil et al., 2016).

Debussche et al. (2018) conducted a randomized controlled trial of adults with type 2 diabetes in a low-income, low-resource setting that assessed the effects of a peer-led structured education group delivered in the community on the primary outcome of mean change in HbA1c from baseline to 12 months. Intervention group participants had a significant decrease in HbA1c levels compared to control group participants who received conventional care alone (percent change of -1.05% versus -0.15%, $p = 0.006$; Debussche et al., 2018). Intervention group participants’ diabetes knowledge (e.g., problem-solving, symptoms, treatment and hypoglycemia management)
scores improved slightly compared to the control group, although not significant (Debussche et al., 2018).

In Gambao Moreno et al.’s (2019) randomized controlled trial of adults, the researchers conducted a 2.5-hour peer-to-peer diabetes self-management program workshop, once a week for six consecutive weeks that showed no significant differences between intervention and control groups on HbA1c change at 24 months follow-up. However, Gambao Moreno et al.’s (2019) research did report a statistically significance increase in overall self-efficacy score for the intervention group. Intervention group participants also reported significantly lower medication consumption (number of drugs) and emergency department visits over the study period compared to the control group (Gambao Moreno et al., 2019).

In Patil et al.’s (2016) meta-analysis of diabetes self-management peer-to-peer educational interventions, the authors reported that significant improvements in HbA1c were observed in the intervention group in studies with predominantly minority participants. Patil et al. (2016) further highlighted some noteworthy yet cautioning factors when considering the effectiveness of diabetes self-management peer-to-peer educational interventions. For example, the authors underscored that the diabetes peer support curriculum should be culturally tailored to the needs, preferences, and values of the participants (Patil et al., 2016). The authors also reported that peer-to-peer diabetes management or group education sessions are most effective for
those having poor self-management skills, poor baseline diabetes support, and lower levels of health literacy (Patil et al., 2016).

A review of the literature demonstrated that group-based self-management education between peers may be effective in improving glycemic control for people with diabetes. Previous findings regarding group-based peer diabetes self-management education are encouraging in light of the older adults living in MUAs in this study valued this educational mechanism as a diabetes self-management behavioral strategy.

Another diabetes self-management behavioral strategy expressed by older adults living in MUAs in this study was prayer. Prayer for the older adults interviewed was an action valued that gave them hope for a better outcome, helped them to cope with their type 2 diabetes, and empowered them with the strength to gain greater internal control over their type 2 diabetes. Prayer has been identified as a complementary and alternative medical treatment among persons with diabetes (Yeh et al., 2002; Dham et al., 2006; Bell et al., 2006).

Most physicians believe prayers could promote healing and positive outcomes (Curlin et al., 2007; Larimore et al., 2002). In a related and separate study, most physicians believed they should pray with their patient (Monroe et al., 2003; Larimore et al., 2002). However, the researchers also reported that most physicians don't know if or when to engage their patients about prayer (Monroe et al., 2003; Larimore et al., 2002). In a more recent
study, approximately 21% of physicians reported praying with patients (Robinson et al., 2017). Yet, nurses in faith-based settings are highly likely to engage patients in prayer (Taylor et al., 2018).

Previous research has shown how prayer over one’s illness is associated with more improved patient well-being, happiness, hope, high self-esteem, and a greater sense of internal control over life (Koenig, 2012). Olver and Dutney (2012) conducted a randomized, blinded study that showed intercessory prayer was associated with a statistically significant improvement in spiritual well-being, as well as an improvement in emotional well-being. Hunt et al. (2000) conducted a qualitative study in which participants with type 2 diabetes said prayer influences health by reducing stress and anxiety, promoting disease management, and bringing healing power to medicines. When controlling for demographic, medical and depression variables, Ai et al. (2009) research showed that a one-unit increase in prayer frequency was associated with nearly 1.5 times the likelihood of no-complication following major heart surgery. Ai et al’s (2009) finding is consistent with other studies that showed certain positive effects of prayer on health outcomes (Miller & Thoresen, 2003; Masters & Spielmans, 2007). Consideration to patients’ spiritual needs through prayer and thus providing spiritual care can strengthen the patient-provider relationship (King & Bushwick, 1994; Phelps et al., 2012).
Roughly 19%-90% of adults would like their physician to speak with them about prayer, although in several studies it depended on the environment, for example, if it came during routine office visit, in a hospitalized setting, or in a near-death scenario (Behan et al., 2012; Mann et al., 2005; Masters & Spielmans, 2007; MacLean et al., 2003; Larimore et al., 2002).

Previous studies have highlighted how prayer is an important factor that positively influenced self-management of type 2 diabetes (Gupta & Anandarajah, 2014; Polzer & Miles, 2007; Samuel-Hodge et al., 2000). For older adults with type 2 diabetes living in MUAs in this study, turning to prayer was a source comfort in dealing with their diabetes and a source of strength in empowering them to achieve better self-management.

In conclusion, health care providers can engage adults in managing their care by discussing, explaining, supporting and building capacity for self-management and self-care (Mead & Bower, 2002). Health care provider’s instruction to the patient on characteristics of effective diabetes management and self-care is a category of interpersonal process of care (Donabedian, 1982). When health care providers engage patients on self-care behavioral strategies to better control their diabetes, they are more successful in carrying out self-management tasks (Mead & Bower, 2002).

Limitations
There are several limitations worth mentioning in interpreting these findings. The sample was recruited from four senior housing facilities, where the residents are close-knit, and the researcher’s ability to gain trust was an important factor in recruitment and getting the participants to open-up during the interviews. The researcher’s study was exploratory in nature in an under-studied population, and so the ending sample size was purposefully small.

A non-randomized sampling approach was used, and the results may not be generalizable. Although this study’s results are not generalizable to other environments, careful consideration was taken to achieve site triangulation by recruiting from four senior housing facilities across two geographical disparate locations. In addition, while generalizability may be a limitation in this study, in considering that the intent of this study was to fill a gap in the literature by providing a voice to older adults living in MUAs regarding their experiences, desires, preferences and values for type 2 diabetes treatment and management care received that may improve their diabetes self-care and outcomes. Therefore, the results of this study may only be applicable to similar populations who may share similar life experiences to the older adults in this study based on their background, socioeconomics or resources.

Furthermore, recruitment was voluntary, and recruitment may have selected participants that were more motivated to share their experiences or
engage in medical care. If this were the case, this research would most likely overestimate participants perspectives about the health care system.

This study relied on self-reported data where each individual gave their own perspectives on health care received that was not validated with the participants health care providers. Therefore, this study is limited in its effect to reflect how health care providers practicing in MUAs perceive the processes of diabetes care they deliver contributes to improving diabetes self-management and outcomes of older adults living in MUAs.

Finally, given the researcher’s lived experiences involving the plight that health disparities have on chronic disease outcomes in MUAs and potential opportunities to improve quality of care for this vulnerable population, this study may be limited due to social desirability tendencies in the nature of the researcher’s positive follow-up questions asked and responses given to participants’ responses that may be similar to the researcher’s own systems of values, attitudes, and beliefs in relationship to the phenomena under study. However, the researcher took steps to guard against social desirability bias prior to and throughout the interviews and analysis by developing a positionality statement to evaluate and guard against his own systems of values, attitudes, and beliefs in relationship to the phenomena under study. The researcher read and reflected on the positionality statement prior to the start of the first interview, throughout the course of the interviews, during data analysis, and writing the study’s results.
In addition, the researcher was proactive in asking participants to recall a personal experience with their health care provider that would expound upon the response given.

**Implications for Care**

Results from this qualitative study are a step in the right direction towards gaining a better understanding of older adults living in MUAs desires, preferences and values for individualized type 2 diabetes care that could achieve quality outcomes. To further center care on the needs, desires and preferences of older adults with type 2 diabetes living in MUAs, health care providers can act on lessons learned about what this population values in the treatment and management care they receive.

The older adults living in MUAs in this study reported that they value their family providing information for diabetes self-management. Thus, health care providers can ensure the inclusion of older adults living in MUAs perspectives in their clinical operations by involving family in self-management education and care. Delivering diabetes care with family support is an essential part of sustaining self-care behaviors and improving the health outcomes of older adults with type 2 diabetes living in MUAs. Future delivery of diabetes care and self-management education in MUAs should focus on older adults’ family engagement in care.

Additionally, the older adults living in MUAs in this study valued instrumental support received from family and friends with diabetes self-
management activities. However, there remains opportunities for improvement with assisting older adults in achieving the AADE 7 Self-Care Behaviors (2020). Individualized diabetes care plans should clarify and define caregiver roles within DSME/T based on the needs, preferences, desires and values of older adults living in MUAs.

For older adults living in MUAs that live in senior housing facilities, health care providers should take diabetes care, education classes and resources to their place of residence to ensure greater access to these services. Diabetes home health care services for older adults living in MUAs that live in senior housing facilities should be comprehensive, to include visitation from a nurse or medical assistant to administer medication, monitor blood glucose, blood pressure and general health, and other general/social services support as described by the older adults living in MUAs in this study. While home health care normally implies the delivery of medical care, as seen through this study, older adults living in MUAs valued in-home dietary assessments and guidance on meal planning from dietitians; home delivery of medicine and medical equipment; and home-delivered diabetic-friendly meals. This finding is important because the older adults living in MUAs in this study reported transportation problems with getting to the services they need, for example, doctors’ appointments or the grocery store. Bringing health care services into the homes of older adults living in MUAs may prove beneficial to
addressing transportation barriers to and from doctor’s appointments, food access, and medication access.

Furthermore, older adults living in MUAs with type 2 diabetes valued care that is affordable, available, and accessible. Health care providers can ensure their organizational structure is designed so that this population is able to get the right services at the right time. For example, providers can ensure they have the requisite resources, such as technology, to meet the needs of older adults. Providers can also encourage older adults living in MUAs to use trusted web-based platforms or social media sites that can enhance their diabetes self-management knowledge and behaviors. Additionally, systems of care can ensure their services are geographically accessible, by ensuring older adults in MUAs can physically reach the provider’s location with ease, or able to receive services within the comfort of their home, for example, medical care or home delivery of medications.

Funding and policies that provide greater access to DSME/T programs for older adults in MUAs is warranted. These programs should be tailored to the needs, preferences, and values of older adults living in MUAs. Bringing DSME/T programs close to the homes of older adults in MUAs, especially those that live in senior housing facilities, may help reduce transportation barriers that may be impediments to attendance. Health care provider referrals and linkages to DSME/T programs may help to increase uptake of
evidence-based self-management programs that improve behaviors that contribute to healthier outcomes among the elderly living in MUAs.

The older adults living in MUAs in this study provided keen insights into their diabetes self-management behavioral strategies. Older adults living in MUAs in this study were exhibiting several behavioral self-care strategies recommended by the AADE (2020). Health care providers can act on this information to better empower older adults living in MUAs with diabetes self-care. For example, identification of older adults living in MUAs with low diabetes numeracy may allow for the delivery of tailored diabetes education to meet the person’s needs that could help to improve glycemic control.

Older adults in this study valued the role of spirituality as an important strategy in their diabetes self-care and daily life. Health care providers can benefit from education and training in spiritual care as a way to integrate prayer into diabetes health care services that meet older adults living in MUAs’ needs, preferences and values.

Older adults living in MUAs in this study discussed the value of regularly attending doctor appointments as a strategy to manage their type 2 diabetes. Providers could focus on strategies to remind older adults living in MUAs about their appointments, such as through telephone calls or text messages, or using the electronic health record to identify patients with missed appointments that could be targeted for outreach. Additionally, health care providers simply asking older adults living in MUAs if they have family
that can support with taking them back and forth to doctor appointments for diabetes care may prove beneficial. For those older adults living in MUAs without family to assist with attending doctor appointments, health care providers should explore and link older adults to community medical assistance transportation. When older adults living in MUAs regularly attend their doctor appointments, not only does it build confidence to self-manage diabetes as highlighted in this study, but it may also give clinicians opportunities to evaluate medications and make appropriate adjustments, ensure timely treatment that delays diabetes complications, and fosters a trusting provider-patient relationship.

Health care providers should recognize the importance of peer-to-peer learning and reinforcement as opportunities for diabetes education and group interactions within the office setting and in the community near the homes of older adults living in MUAs. In resource strapped communities like MUAs where the health care system may have limited resources, group-based peer self-management education trainings might be an effective way of improving diabetes outcomes for older adults living in MUAs.

Health care providers also may aid older adults living in MUAs in addressing social issues by providing in-depth, intensive interventions through redesigned structures and processes of diabetes care or in-house programs. Others may take an aggressive approach by referring older adults with unmet HRSNs to public benefit programs or community-based resources
and closing the loop by following-up with patients to ensure their needs have been resolved. Other health care providers can provide financial assistance to older adults living in MUAs who are in need by proactively offering free diabetic supplies and medications. Some older adults living in MUAs may be hesitant to freely share their financial challenges with their health care providers, therefore, screening for financial strain as part of standard of care or in fact going-ahead to offer free diabetic supplies or medications may aid older adults living in MUAs with achieving improved diabetes self-management behaviors.

The findings from this study revealed a host of attributes of health care providers that older adults with type 2 diabetes living in MUAs value. Creating a culture where health care providers and their team exhibit compassion, honesty, trustworthiness, humor and healing in the care that they render can improve the patient experience and contribute to quality of diabetes care for older adults living in MUAs. Balancing trustworthiness and honesty especially when it may not be in the best interest of the health care provider can be a challenging decision. However, the findings from this study provide further justification of the importance that trustworthiness and honesty in the delivery of diabetes care has on the health outcomes of older adults living in MUAs. Further, a caring and compassionate health care provider as valued by the older adults in this study may help older adults living in MUAs become empowered in their diabetes self-care.
Health care providers can redesign service delivery processes that align with the type 2 diabetes care that older adults living in MUAs desire, prefer and value. For example, through this research the study results highlight the value of ensuring older adults living in MUAs see the same clinician in general practice as a matter of choice within a reasonable time. Yet, coordination by health care providers involved in diabetes treatment and management care across the care continuum is warranted as valued by the older adults living in MUAs in this study. Health care providers should include physical, psychological, social, emotional and spiritual well-being in comprehensive diabetes care planning for older adults living in MUAs.

It is clear from this study the older adults living in MUAs desired and valued a comprehensive, thorough checkup. Perhaps physicians should spend time communicating to older adults with type 2 diabetes living in MUAs why they are not examining their heart, kidneys, liver, or skin, instead of bypassing these body organs all together. Clinicians may benefit from including additional components into the physical exam of type 2 diabetic older adults in order to improve patient’s perceptions of their health care experience. Timely diagnosis and referrals to consulting specialist and diabetes educators is important for older adults living in MUAs. Matching older adults living in MUAs needs to existing community resources that can promote diabetes care is especially important for this vulnerable population and was valued by the older adults in this study. Providers can ensure
continuity by timely follow-up on referrals, tests, and examinations. Clear workflows should be established to ensure coordination of services across providers. Health care providers serving MUAs should ask their older adult patients with type 2 diabetes if they feel they are spending enough time with them.

Furthermore, older adults' perspectives can help in designing appropriate interventions to optimize medication evaluation and management. For example, several participants described their experiences with polypharmacy and the appreciation they had for their health care provider when he/she took the appropriate steps to reduce or eliminate medications. The avoidance of severe hypoglycemia, or rather the management of hypoglycemia by clinicians is prudent for older adults living in MUAs. Health care providers should consider a comprehensive medication review as the initial step to promote patient safety in older adults with diabetes living in MUAs. By focusing on medication excessive treatment or inadequate treatment of the diabetes quality continuum, health care providers can begin to improve quality of diabetes care, ensuring that older adults living in MUAs get the care they need while avoiding adverse effects. Effective treatment of diabetes for older adults living in MUAs requires a personalized approach based on individual risk and benefit.

Older adults with type 2 diabetes living in MUAs can also benefit from health care providers who gather information from them through active
listening. The elicitation of older adults living in MUAs perspectives about their health status allows clinicians and the person at the center of care to engage in meaningful conversations, thus, setting the groundwork for person-centered care and shared decision making. From there, providers can be proactive in sharing information that addresses the older adult’s needs, desires, preferences and values, the older adult’s health condition, and how their own health behaviors impact their condition. Where older adults are making the right decisions and self-managing well, health care providers should consider using praise to encourage continued good behaviors.

Older adults living MUAs in this study valued information sharing and provider communication such as the lessons learned on how to monitor their blood glucose from watching and speaking with their health care providers. Providers should consider being more proactive and explicit about instructions in diabetes self-management, while also considering the clinical and functional characteristics of older adults, their comorbidities, and the availability of supportive resources. Reminders on proper diabetes self-care while the older adult is in the provider’s office or away from the provider’s office may empower older adults living in MUAs to be in charge of their own health care and achieve glycemic control. This can be achieved through in-person health education by a member of the care team or through consistent telephone support.
Nearly all the older adults interviewed valued telephone communication with their health care providers. Providers can ensure their operations are organized in ways that meet the preferences of older adults, for example, by reviewing how telephone communications are handled. Telephone diabetes management, as highlighted by the older adults living in MUAs in this study, can be just as effective as other communication modalities of care in educating older adults with diabetes and empowering behaviors to achieve targeted HbA₁c levels.

This study offers insights to support the idea that relational communication and its associated benefits may be fostered by health care providers discussing things about diabetes care that interest older adults living in MUAs. This creates an atmosphere where older adults living in MUAs are encouraged to express concerns within the visit. Relational communication plays an important role in diabetes treatment and management care for older adults living in MUAs and should be a focus in building type 2 diabetes care delivery that is committed to supporting high quality communication that meets the desires, preferences and values of older adults living in MUAs.

A long-term doctor-person relationship was something desired, preferred and valued by the older adults living in MUAs in this study. Insurance and policies and programs are needed to reduce involuntarily changes in health care providers and increase the number of older adults
living in MUAs with consistent care. Where clinicians are leaving MUAs for organizational factors beyond their control, thus resulting in provider instability, health care organizations should work to correct these issues in an effort to ensure the desires and preferences for continuity in provider-person relationship is maintained for older adults with type 2 diabetes living in MUAs. When older adults living in MUAs are involuntarily assigned a new clinician, health care providers should be prompt and transparent with providing an explanation as to why. An expeditious and clear explanation may help to build a stronger and trusting relationship between the older adult and new provider. This could potentially be useful to patient adherence and improved diabetes self-management knowledge and skills.

Older adults in this study frequently used the terms preferences and values interchangeably, which suggest they may not fully understand the meaning of these terms. Health care providers can overcome this in their conversations with older adult patients by simply asking what is most important to them in their diabetes care. What is important to older adults with type 2 diabetes living in MUAs can also help health care providers to identify targeted outcomes. While health care providers may not always discuss desires, preferences, and values with their older adult patients, this research study underscores the importance of engaging in such a conversation.

Finally, health care providers should develop measures to monitor structures, processes and outcomes of diabetes care to ensure they meet
older adults living in MUAs needs, desires, preferences and values. Measurement approaches could include the use of patient experience surveys informed by qualitative studies such as this one, or patient complaints and complements.

**Future Research**

Based on the study results, there are several recommendations for future research. Qualitative studies often inform the development of concepts that turn into constructs in a survey. This is important, given the generalizability limitations described above. Now, with the findings of this study, the results could be generalizable to other populations of older adults through the development of a quantitative survey to examine associations among older adults’ values, desires and preferences for diabetes care and social care or diabetes related outcomes and other health outcomes.

The perspectives of health care providers (for example, primary care doctor, endocrinologist, nurse, health insurance company, pharmacist, eye doctor, or social worker) on the role of values, desires and preferences in type 2 diabetes care for older adults living in MUAs needs to be evaluated. Also, future studies are needed that explore older adults’ family and friends, specifically those who care for them, perspectives regarding their desires, preferences and values for health care received in treatment and management of diabetes care for their loved one.
Future studies should explore older adults with type 2 diabetes living in MUAs perspectives to better understand how financial hardship impacts health outcomes and possible solutions to address barriers. For those older adults with type 2 diabetes living in senior housing facilities, a qualitative study is needed to understand how the health and social care services at their place of residence can be strengthened and enhanced to better facilitate improved outcomes. Future studies should explore older adults living in MUAs perspectives on diabetes deintensification and medication management strategies.

Older adults in this study valued their physician engaging them with prayer. Future studies to explore the perspectives of other health care providers beyond the physician in engaging older adults living MUAs in prayer about their diabetes self-management is important. A quantitative study here may be valuable also given the limited literature in this area.

The findings from this study are exploratory and should be hypotheses tested. Future studies based on the results of this study should employ a quasi-experimental study design and a holistic approach that focuses on multilevel factors (access, clinical care, social support, health behaviors, provider characteristics, and provider-patient communication) to empower diabetes self-care in older adults living in MUAs and proactive collaboration between health care providers, older adults and their family to manage diabetes care.
Conclusion

This research study provides a greater understanding of older adults living in MUAs desires, preferences and values regarding health care received in the treatment and management of their type 2 diabetes. As underscored throughout this research study, older adults living in MUAs desired, preferred and valued type 2 diabetes care that is:

- Interdisciplinary, timely, safe, responsive, and thorough.
- Accessible in or close to home or online to ensure the right diabetes care at the right time.
- Communicative and recommendatory of empowering diabetes self-management information.
- Honest and trustworthy with a smile and humor when needed.
- Aware, competent and reactive to social circumstances. And,
- Engaged on self-care behavioral strategies to empower better control of blood sugar levels.

This research study provides a framework for health care providers striving to deliver type 2 diabetes treatment and management care to older adults living in MUAs that is holistic, respectful and individualized. Health care providers should be willing to embrace a cultural shift in the way that they provide care. Systems should be redesigned and restructured into innovative models of care that are conducive to the physical, cognitive, psychological,
spiritual and social needs, desires, preferences and values of older adults living in MUAs in order to improve quality type 2 diabetes care.

This research study gives older adults living in MUAs a voice that offers health care providers with a better understanding of what is important to this vulnerable population in treating and managing their type 2 diabetes. As underscored throughout the research, inquiring about older adults living in MUAs desires, preferences and values for type 2 diabetes treatment and management care are important steps towards improving quality of care for this vulnerable population. The themes and corresponding subthemes gleaned from the interviews with the older adults living in MUAs provides practical implications for care that when implemented in practice can improve patient participation, engagement, adherence, and self-management leading to improved health outcomes and health-related quality of life. This approach to holistic, collaborative diabetes care promotes health by supporting older adults in living a sustained quality of life over the course of their lifespan.

In conclusion, this research study collected rich and detailed information about the desires, preferences and values for type 2 diabetes treatment and management care received by older adults living in MUAs. The findings from this study could help health care providers prioritize structures and processes of individualized treatment and management care to empower and support older adults living in MUAs to achieve optimal type 2 diabetes outcomes.
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APPENDICES

Appendix A

Pre-Screening Questionnaire
PRE-SCREENING QUESTIONNAIRE

1. What is your age?
   _______________ [Enter Age in Years]

2. Has a doctor, nurse, or other health professional ever told you that you had type 2 diabetes?
   □ Yes
   □ No
   □ Don’t know / Not sure

3. Do you live in one of the following locations?
   □ Camden, New Jersey
   □ Garfield, New Jersey

4. Do you speak English?
   □ Yes
   □ No

5. Has a doctor, nurse, or other health professional ever told you that you had any of the following: Alzheimer’s disease, dementia, delirium, or other cognitive impairment disorder?
   □ Yes
   □ No
   □ Don’t know / Not sure

6. About how many times in the past 12 months have you seen a doctor, nurse, or other health professional for your type 2 diabetes?
   ___Number of times
   □ Don’t know / Not sure

Living Situation

7. What is your living situation today?
   □ I have a steady place to live
   □ I have a place to live today, but I am worried about losing it in the future
I do not have a steady place to live (I am temporarily staying with others, in a hotel, in a shelter, living outside on the street, on a beach, in a car, abandoned building, bus or train station, or in a park)

8. Think about the place you live. Do you have problems with any of the following?
   CHOOSE ALL THAT APPLY
   - Pests such as bugs, ants, or mice
   - Mold
   - Lead paint or pipes
   - Lack of heat
   - Oven or stove not working
   - Smoke detectors missing or not working
   - Water leaks
   - None of the above

Food

9. Within the past 12 months, you worried that your food would run out before you got money to buy more.
   - Often true
   - Sometimes true
   - Never true

10. Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.
    - Often true
    - Sometimes true
    - Never true

Transportation

11. In the past 12 months, has lack of reliable transportation kept you from medical appointments, meetings, work or from getting to things needed for daily living?
    - Yes
    - No
Utilities

12. In the past 12 months has the electric, gas, oil, or water company threatened to shut off services in your home?
   □ Yes
   □ No
   □ Already shut off

Financial Strain

13. How hard is it for you to pay for the very basics like food, housing, medical care, and heating? Would you say it is...
   □ Very hard
   □ Somewhat hard
   □ Not hard at all

Family and Community Support

14. If for any reason you need help with day-to-day activities such as bathing, preparing meals, shopping, caring for children or dependents, managing finances, etc., do you get the help you need?
   □ I don’t need any help
   □ I get all the help I need
   □ I could use a little more help
   □ I need a lot more help

15. How often do you feel lonely or isolated from those around you?
   □ Never
   □ Rarely
   □ Sometimes
   □ Often
   □ Always
THANK YOU!

Thank you very much for answering these questions.
Appendix B

Site Permission Letter (Template)
Dear Seton Hall IRB:

On behalf of Insert Name of Facility, I am writing to grant permission for Christopher Rogers, a doctoral student at Seton Hall University in the School of Health and Medical Sciences, to conduct his research titled, “Understanding Older Adults Living in Medically Underserved Areas Perspectives Regarding Type 2 Diabetes Care Received”. We understand that Christopher Rogers will post recruitment fliers and recruit up to 20 of our residents and conduct interviews at Insert Name of Facility during the period of October 2019 to May 2020. Individuals’ participation will be voluntary and at their own discretion. The Insert Name of Facility reserves the right to withdraw from the study at any time if our circumstances change. We are happy to participate in this study and contribute to this important research.

Sincerely,

Signature

Title
Appendix C

Seton Hall University IRB Approval
December 13, 2019

Re: Study ID# 2020-031

Dear Mr. Rogers,

Upon review of responses and changes made to your application entitled, “Understanding Older Adults Living in Medically Underserved Areas Perspectives Regarding Type 2 Diabetes Care Received” the Research Ethics Committee of the Seton Hall University Institutional Review Board has approved your study. This memo serves as official notice of the aforementioned study’s approval as exempt. Enclosed for your records are the stamped original Consent Form. You can make copies of this forms for your use.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol, informed consent form or study team must be reviewed and approved by the IRB prior to their implementation.

You will receive a communication from the Institutional Review Board at least 1 month prior to your expiration date requesting that you submit an Annual Progress Report to keep the study active, or a Final Review of Human Subjects Research form to close the study. In all future correspondence with the Institutional Review Board, please reference the ID# listed above.

Thank you for your cooperation.

Sincerely,

[Signature]

Mara C. Podvey, PhD, OT/B
Associate Professor
Co-Chair, Institutional Review Board

Office of the Institutional Review Board
Presidents Hall - 400 South Orange Avenue - South Orange, New Jersey 07079 - Tel: 973.275.4654 - Fax 973.275.2978 -
www.shu.edu

WHAT GREAT MINDS CAN DO
Appendix D

Recruitment Flyer
Are you an older adult with Type 2 Diabetes?

We'd like to hear about the type 2 diabetes health care experiences of older adults.

We are interested to hear your perspectives about what is important to you in type 2 diabetes care.

Residents will be asked to participate in:
- 1 interview for 60-90 minutes that asks questions about your experiences regarding health care received in the treatment and management of your type 2 diabetes
- Demographic and health status survey

You will receive:
- $15 gift card
- Snacks and refreshments

The Principal Investigator:
Christopher Rogers

Location
- All interviews will be at
  [Blank]

Are you eligible?
- 65 years of age or older
- Type 2 Diabetes
- English-speaking
- No identified cognitive diagnosis
- Living in Garfield, NJ
- One or more health-related social needs
- At least 1 visit in the past 12 months to a doctor, nurse, or other health professional for type 2 diabetes

To enroll in the study and to see if you are eligible, speak with the study investigator, Christopher Rogers, in the dining hall:
- October 22, 2019, 10am-2pm
- October 24, 2019, 10am-2pm

Participation in this study is strictly voluntary.
All participants will be given a code number to maintain their anonymity.
Your name will not be used in this research.
Data will be stored on a USB memory key, and kept in a locked, secure cabinet in the office of the Principal Investigator.
Appendix E

Demographic Survey
DEMOGRAPHICS

1. What is your sex?
   □ Male
   □ Female

2. Which one or more of the following would you say is your race/ethnicity?
   □ White
   □ Black or African American
   □ American Indian or Alaska Native
   □ Asian
   □ Pacific Islander
   □ Hispanic, Latino/a, or Spanish origin
   □ Don’t know / Not sure

3. Are you...
   □ Married
   □ Divorced
   □ Widowed
   □ Separated
   □ Never married
   □ A member of an unmarried couple

4. What is the highest grade or year of school you completed?
   □ Never attended school or only attended kindergarten
   □ Grades 1 through 8 (Elementary)
   □ Grades 9 through 11 (Some high school)
   □ Grade 12 or GED (High school graduate)
   □ College 1 year to 3 years (Some college or technical school)
   □ College 4 years or more (College graduate)

5. What is your present religion, if any?
   □ Christian (Catholic, Anglican, Methodist, Orthodox, etc.)
   □ Muslim (Sunni, Shia, etc.)
   □ Jewish
   □ Buddhist
   □ Hindu
   □ Atheist (do not believe in God)
   □ Agnostic (not sure if there is a God)
6. Would you say that in general your health is:
   - Excellent
   - Very good
   - Good
   - Fair
   - Poor

7. Have you ever experienced any of these health problems during the past 12 months?
   - Severe Arthritis, Rheumatism, or other Bone or Joint diseases
   - Severe Asthma, Bronchitis, Emphysema, Tuberculosis, or other Lung problems
   - HIV / AIDS
   - Blindness, Deafness, or Severe Visual or Hearing impairment
   - High Blood Pressure or Hypertension
   - Heart Attack or other Serious Heart trouble
   - Severe Hernia or Rupture
   - Severe Kidney or Liver disease
   - Lupus, Thyroid disease, or other Autoimmune disease
   - Multiple Sclerosis, Epilepsy, or other Neurological disorders
   - Chronic Stomach or Gall Bladder trouble
   - Stroke
   - Ulcer

8. How old were you when a doctor or other health professional first told you that you had diabetes or sugar diabetes?
   - _______________ [Enter Age in Years]
   - Less Than 1 Year
   - Don’t know / Not sure

9. Are you now taking insulin?
   - Yes
   - No
10. Are you now taking diabetic pills to lower your blood sugar? These are sometimes called oral agents or oral hypoglycemic agents.
   - Yes
   - No
   - Don't know / Not sure

11. What was your last A1C level?
   - _______._______ [Enter Value]
   - Don't know / Not sure
THANK YOU!

Thank you very much for answering these questions.
Appendix F

Interview Guide
Interview Guide

The purpose of this study is to understand your perspectives regarding health care received in the treatment and management of your type 2 diabetes.

In terms of this study, **treatment** is the use of medicine, therapy, or surgery to provide comfort and control or lessen the symptoms and complications of your type 2 diabetes. **Management** focuses on improving your quality of life, preventing the symptoms of type 2 diabetes, side effects caused by treatment of type 2 diabetes, and physical, mental, emotional, cultural, social, and spiritual problems related to type 2 diabetes.

Interview Questions

**Section A: Experience with care older adults receive**

1. Please tell me about your experience managing your type 2 diabetes? (Who did what, when, and how?)
2. Who is involved in managing your type 2 diabetes? (Who did what, when, and how?)
   - How did insert name/title of person involved participate physically, mentally, spiritually, economically, and socially?
   - How is your health care provider involved in your type 2 diabetes treatment and management care? (Who did what, when, and how?)
     o Probe: Health care provider (primary care doctor, endocrinologist, nurse, care coordinator, dietician, podiatrist, community health worker/navigator, other specialists, etc.), Health insurance company (nurse, care coordinator), Social worker, Behavioral health counselor, Pharmacist
3. Please comment on the resources you have available to you in support of your type 2 diabetes treatment and management care.
   - Please comment on the resources your health care provider has provided to you in support of your type 2 diabetes treatment and management care.
     o Probe: Material resources (Facilities/Offices/Environment; Equipment; Money; Information Technology); Human Resources (Number and qualifications of staff); Organizational structure (Administration; Programs [health promotion and prevention])
4. Please give examples of the kind of care you have received from your health care providers for your type 2 diabetes.
   - How has your health care provider:
     o included/involved/engaged you in your type 2 diabetes treatment and management care?
o listened to you in the treatment and management of your type 2 diabetes?
o communicated with you about the treatment and management of your type 2 diabetes?
o demonstrated respectful and compassionate care in the treatment and management of your type 2 diabetes?
o educated/informed you about the treatment and management of your type 2 diabetes?

Section B: Preferences regarding care older adults receive
5. Ideally, how would you like to work with your health care providers to treat and manage your type 2 diabetes?
   • For any preferences given, ask:
     o Why do you like that?
     o Why is it better for you?
     o How do you think it helps/would help you?

6. What types of support from health care professionals would you like to receive that would give you a better quality of life?

Section C: Desires that could improve treatment and management care in older adults
7. What could help you improve your type 2 diabetes treatment and management care?
   • What could health care professionals do to help you improve your type 2 diabetes treatment and management care?
     o How would this make you feel?
     o How would this improve your type 2 diabetes care?

Section D: Values regarding care older adults receive
8. Please tell me what you like the most about the care you receive from your health care providers for your type 2 diabetes.
   • What makes the care special?
   • How is it different?
9. Please describe how health care professionals have been interested in you as a person.
   • Probe:
     o How have health care professionals demonstrated that they care about you?
       a. How does this help with your type 2 diabetes management?
     o How have health care professionals demonstrated concern for the things that are important to you?
       b. How does this help with your type 2 diabetes management?
   • If not interested, ask:
     o How could they demonstrate interest?

Section E: Closing
10. Is there anything else you would like to share with me regarding your experience with your health care providers in treating and managing your type 2 diabetes?
Appendix G

Interview Protocol
Interview Protocol

I. Introduce myself
   a. Introduction: Hello and thank you for agreeing to be interviewed. My name is Christopher Rogers. I am a doctoral student at Seton Hall University in the School of Health and Medical Sciences. I am a health care professional, and I am completing this interview for my dissertation research study as part of my graduation requirements for my PhD in Health Sciences.

   My role is to talk to you about a number of important topics that I would like your input on. I am interested in your viewpoint. I am asking you because you are an older adult with type 2 diabetes living in [Camden, NJ or Garfield, NJ]. You are the expert and I am here to learn from you.

   Participation in this study is strictly voluntary. I will be audio recording what you say and taking notes so I don’t miss anything important and so that I can go back and revisit the information if I need to. If at any point in the interview you no longer want to continue, please let me know. There is no penalty if you decide you do not want to complete the study.

II. Introduce study
   a. With the rapid growth in the older adult population and the number of older adults with type 2 diabetes, recent efforts in health care have focused on initiatives to improve the quality of life and health among older adults with type 2 diabetes. Research is showing that incorporating the preferences, goals, desires, and values of people into the treatment and management of their type 2 diabetes could help them to better self-manage their condition.

   The purpose of this study is to understand your perspectives regarding health care received in the treatment and management of your type 2 diabetes. I am focusing on older adults with type 2 diabetes to understand what is important to them in treating and managing their type 2 diabetes.

III. Orient to interview
   a. This interview will be 1-1½ hours long.
   b. We will begin with a brief questionnaire.
   c. Then I will ask you some questions about your experiences with the care you have received for type 2 diabetes, your preferences regarding care, desires to improve your care, and your values regarding care.
d. I will be taking some notes as you talk and audio recording, but I will take out all information that would identify you or this housing facility.
e. If at any point in the interview you no longer want to continue please let me know. There is no penalty if you decide you do not want to complete the study.
f. Do you have any questions I can answer so far?

IV. Consent
   a. Give participant consent form and keep one for self to go over.
   b. Focus on providing the participant with the purpose of the study, the costs and benefits, confidentiality, that the study is voluntary and contact information for questions or concerns.
   c. Have participant sign one copy and keep this copy for my records. Have participant keep one copy for him/herself.

V. Give demographic survey
   a. Collect and file questionnaire

VI. Pseudonym
   a. “Would you like to add a pseudonym or pretend name for you, because I won’t use your name in the interview. I will use the pretend name when going back through your interview and during writing the manuscript.”
   b. Write pseudonym on the demographic survey, if applicable.

VII. Set up audio recorder
   a. Ensure that it is on and recording.
   b. Do I have your permission to continue with the interview and record it?
   c. Say, “thank you again for agreeing to be interviewed. This is [insert participant number and pseudonym if applicable] on [insert date and time].”
   d. Proceed with interview guide.

*Insert Interview Guide*

We have come to the end of our interview.

(turn off recorder)

**Post Interview Protocol**

I. Thank participant for their time
   a. Thank you so very much for your participation in my study.
   b. Do you have any questions you would like me to answer?

II. Payment
a. Ensure participant receives the $15 gift card  
b. Ensure the participant signs and dates Gift Card Distribution Log  
c. Sign and date the Gift Card Distribution Log  
d. File Gift Card Distribution Log  

III. Go over next steps for study  
  a. I will come back to share with you the research findings to ensure and improve accuracy. Would you be willing to be contacted to look over your transcript to ensure accuracy?  
  b. Confirm my contact information  
  c. Please feel free to contact me with questions or concerns  

IV. Thank the participant one final time and end conversation