VALIDATION OF THE SELF-CARE UTILITY
GERIATRIC AFRICAN AMERICAN RATING
(SUGAAR) FOR TYPE 2 DIABETES

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A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the School of Social Work
in the Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2013
ABSTRACT

The primary purpose of this study was to further develop the SUGAAR, an instrument designed to assess the self-care practices of older African American with type 2 diabetes. The instrument was initiated as a project for a research class and was further assessed, modified, and administered for this dissertation study. The secondary purpose of this study was to draw preliminary conclusions about diabetes self-care, health and functional status of a sample of community-dwelling African Americans 65 years and older with a self-reported diagnosis of type 2 diabetes. Purposive sampling was used to recruit 125 older African Americans across five counties in Alabama. Participants were interviewed in their homes or at a private location of their choosing.

Regarding the development of the instrument, findings from the cognitive interviews, pilot test, and earlier developmental work provided support for the face validity and content validity of the SUGAAR. The results from the KR-20 indicate that participants’ diabetes self-care is not a unidimensional concept. The results from the factor analysis did not support a stable factor structure for the SUGAAR. The inability to identify multidimensionality in the instrument may indicate that individuals with type 2 diabetes may not accomplish self-care practices in the same clusters of practices that make sense to health care practitioners and researchers. However, findings indicate content and convergent validity of the SUGAAR, which suggests it is a valid checklist for use among African Americans 65 years and older.

Regarding diabetes self-care, findings suggest differences between age groups regarding diabetes self-care. Middle-old participants are engaging in more diabetes self-care compared to
the youngest-old participants, which supports a trend in the data that suggests participants 75 to 84 years old are healthier than participants 65 to 74 years, except regarding the use or ownership of supportive devices. Overall, participants are receiving messages about the importance of diabetes self-care and health in late life, which they are trying to put into practice.
DEDICATION

This dissertation is dedicated to my late parents, Charles and Mary McCaskill; my late grandparents, Frederick and Mattie White and Coleman and Daisy McCaskill; all of my ancestors generations removed, who were denied an opportunity for an education solely because of the color of their skin; and the 125 African American elders throughout the five counties in Alabama who participated in this project.
LIST OF ABBREVIATIONS AND SYMBOLS

$df$  Degree(s) of freedom

$F$  A statistic for ratio of variance

KR-20  Kruder-Richardson 20

$M$  Median

$n$  Sample size

$p$  Probability value

$p$-value  The attained level of significance

$r$  Correlation coefficient

$r^2$  Coefficient of determination

$R^2$  Multiple correlation coefficient

$SD$  Standard deviation

$t$  Student’s $t$ variable

$\alpha$  Cronbach’s alpha

$=$  Equal to

$>$  Greater than

$<$  Less than

$\chi^2$  Chi-square distribution
ACKNOWLEDGEMENTS

I thank my Savior, Jesus Christ, for this incredible journey! I acknowledge that it was through Him that this dissertation was possible. I also acknowledge that it was my faith in Him that sustained me from the beginning to the end.

I thank my dissertation chair and committee for their support. I thank my dissertation chair, Dr. Kathleen A. Bolland, for her encouragement and support, especially when I wanted to walk away from my proposed study. I thank Dr. Cassandra Simon for her graciousness and willingness to let me go. I thank Dr. Michael Parker for always reminding me of “knee time.” I thank Dr. Rebecca Allen for her encouragement and support from across campus. I thank Dr. James Leeper for enduring my many questions and statistical analyses.

I thank the numerous faculty and staff from The University of Alabama School of Social Work, especially Dr. Lucinda L. Roff, Interim Dean, Dr. Wesley Church, Chair, Ph.D. Program; Dr. Ellen Csikai, Dr. Javonda Williams, Dr. Gaynell Simpson, Ms. Barbara Nichol, Ms. Fay Hobbs, Ms. Sandy Wilson, Ms. Gwen Montgomery, Ms. Vickie Whitfield, and Mr. Donald Lancaster. Many thanks to Dr. Karl Hamner and Rita “Eagle Eyes” Doughty for their support with my successful Hartford Doctoral Fellowship application.

I especially thank Camilla Anderson, M.D., for her perspective on the SUGAAR; Dr. Paul Mohr, Alabama Commission on Higher Education, Montgomery, Alabama, and Dr. Ansley Abraham, the Southern Regional Education Board, Atlanta, Georgia, for support beyond the five years. Many thanks to the John A. Hartford Foundation for the doctoral dissertation fellowship.

Special thanks to the following individuals and agencies for allowing me access to their
seniors: Barbara Shores and Eloise Staples, Office of Senior Citizens Services, Birmingham, Alabama; Ralph Ruggs, Tuscaloosa Housing Authority; Janet Zeannah and Sophia Mills, Focus on Senior Citizens, Tuscaloosa, Alabama; June Brown and La Quita Smith, Positive Maturity; and Mackie Horowitz, Shepherd Center East, Birmingham, Alabama. Many thanks to the congregations that gave me access to their senior congregants, especially Plum Grove Missionary Baptist Church.

Special thanks to my mentors: Dr. Cathryne Schmitz, University of North Carolina at Greensboro; Mildred “Mit” Joyner, West Chester University; Dr. Pamela Payne-Foster, The University of Alabama; Drs. Patricia Parmalee and Giyeon Kim, The University of Alabama; Dr. Cassandra Ford, The University of Alabama; Dr. Martha Crowther, The University of Alabama; Brenda Elliot, The University of Alabama; Dr. Michael Robinson, East Carolina University; and Dr. Hae Jung Shin, Gwangmyeong Social Welfare Center, South Korea. I also thank my Ph.D. student colleagues: Melissa Machac for coming up with “SUGAAR;” Michelle Walton, Jessica Pincham, Freda Coleman-Reed, Miesha Williams, Makayla Patton, Martina Thomas, Teresa Young, Leonard Marcel, and Guillermo Mejia for their support and many laughs. I also thank the amazing faculty and staff at the Amelia Gayle Gorgas Library, especially Yvonne Mixon, Barbara Dahlbach, Cornelia Davis, Brock Tyra, Glenda Sealey, Gabby Marcks, and Mike Pearce.

Finally, I thank my family and friends across the country, all of whom I do not have the space to mention; however, special thanks to my brother, Anthony McCaskill; my sister-in-law, Shirleen McCaskill; my niece, Tiffany King; my cousin, Bernard Freamon; my friends, Stanley R. Hale, Vernenci Samuels, Eva Sullivan, Deacon Milton and Sister Linda Tuck, and the Oak City Crew; and my Pastor, Tyshawn Gardner.
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CHAPTER 1

INTRODUCTION

Diabetes is a chronic health condition that affects the lives of millions of people (Centers for Disease Control & Prevention [CDC], 2011; National Diabetes Information Clearinghouse [NDIC], 2011). According to the latest estimates, approximately 26 million individuals (8.3% of the U.S. population; 18.8 million diagnosed and 7.0 million undiagnosed), have diabetes (CDC, 2011). In Alabama, approximately 435,000 individuals (12% of the population) report a diagnosis of diabetes and many others remain unaware that they have the disease (CDC, 2009). Type 2 diabetes, when the body does not produce enough insulin or when cells ignore insulin, is the most common form of the disease and accounts for 90–95% of newly diagnosed cases (American Diabetes Association [ADA], 2008; NDIC, 2011).

Poorly managed type 2 diabetes can negatively affect health and well-being, including psychological health, and result in numerous complications (NDIC, 2011). Some of the complications from poorly managed diabetes include heart disease, blindness, lower limb amputations, and end-stage renal disease (Federal Interagency Forum on Aging-Related Statistics [FIFA-RS], 2010; NDIC, 2011). In addition to the individual cost of diabetes, there is a financial cost to society. Recent estimates put the direct and indirect costs of diabetes in the United States at approximately $174 billion annually (ADA, 2008).

The prevalence rate for diabetes increases with age (CDC, 2011; FIFA-RS, 2010; Meneilly, 2011). In 2010, approximately 11 million (26.9%) adults 65 years and older had diabetes (CDC, 2011; NDIC, 2011). Type 2 diabetes, however, is particularly prevalent among
older African Americans. Thirty percent of non-Hispanic Blacks 65 years and older have diabetes compared to 16% for non-Hispanic Whites within the same age category (FIFA-RS, 2010). In Alabama, the highest prevalence rate for diabetes is among Blacks 65 years and older, with approximately 33% reporting a diagnosis of diabetes compared to approximately 18% of Whites 65 years and older (CDC, 2009).

Diabetes is one of the more complicated chronic diseases to self-manage. The management of diabetes is difficult because the individual with diabetes is responsible for the majority his or her care (Tang et al., 2005) and due to the complexity of the diabetes self-care regimen (Piette, Schillnger, Potter, & Heisler, 2003). Diabetes self-care, also known as diabetes self-management, refers to an array of tasks that an individual with diabetes must perform regularly in order to manage his or her diabetes (Glasgow & Eakin, 1998).

The ADA (2009, 2010, 2011, 2012) refers to established evidenced-based standards of care for the management of type 2 diabetes among older adults. The standards, which are updated annually based on evidenced-based approaches, provide individuals with diabetes, physicians, and other health care professionals with best practices in the diagnosis and management of diabetes. According to the ADA (2012), these “standards of care are intended to provide clinicians, patients, researchers, payers, and other interested individuals with the components of diabetes care, general treatment goals, and tools to evaluate the quality of care” (p. S11). Some of the recommendations incorporated in the standards of care include daily glucose self-monitoring, regular moderate physical exercise, influenza and pneumococcal vaccinations, and a diet low in saturated fats.
Scope of the Problem

Type 2 diabetes is difficult to manage at any age, but for many older African Americans, diabetes self-care is particularly challenging (Hill-Briggs & Gemmell, 2007; Leeman, Skelly, Burns, Carlson, & Soward, 2008; Samuel-Hodge, Skelly, Headen, & Carter-Edwards, 2005). Some factors that may influence diabetes self-care among older African Americans include culture (Sankofa & Johnson-Taylor, 2007), education and literacy (Mechanic, 2005), and socioeconomic status (Schoenberg, Traywick, Jacobs-Lawson, & Kart, 2008). Many of the diabetes-related instruments, however, were not designed to measure the diabetes self-care practices of African Americans 65 years and older, nor were they assessed on this population of older adults. Given the projected growth in the population of older African Americans with type 2 diabetes (Boyle, Thompson, Gregg, Barker, & Williamson, 2010; Honeycutt et al., 2003), there is a critical need for a diabetes self-care instrument for older African Americans that incorporates the ADA’s standards of care, and is culturally sensitive, psychometrically sound, and practical.

Purposes of this Study

The primary purpose of this study was to further develop the Self-care Utility Geriatric African American Rating (SUGAAR) for type 2 diabetes (see Appendix A), which began as a research class project. The secondary purpose of this study was to draw preliminary conclusions about the health and functional status of 125 community-dwelling African Americans 65 years and older with a self-reported diagnosis of type 2 diabetes.

Specific Aims

The specific aims of the proposed dissertation study are as follows:

1. To further develop the SUGAAR.
2. To evaluate the internal consistency of
3. To evaluate the factor structure of the SUGAAR.

4. To evaluate the convergent validity of the SUGAAR.

5. To assess the diabetes self-care practices, health, and functional status of participants.

**Research Questions**

The research questions for this study were:

1. Is the SUGAAR internally consistent?

2. What is the factor structure of the SUGAAR?

3. Is the SUGAAR valid for this population?

4. What is the level of diabetes self-care, health, and functional status of participants?

**Significance to Social Work**

Social work is a profession guided by the National Association of Social Workers’ (NASW) *Code of Ethics* (2008). The *Code* serves as a guide of conduct for all social workers (NASW, 2008). The *Code* and its basic values, ethical principles, and standards serve to remind social workers to advocate on behalf of underserved populations. Given the *Code*’s values, ethical principles, and standards, this study is significant to social work for at least four reasons.

First, social justice is a core value of the social work profession. Because older African Americans with type 2 diabetes bear a disproportionate burden of the negative health outcomes associated with diabetes and are more likely to die prematurely from the disease than older White Americans (CDC, 2009; FIFS-RS, 2010; Strayhorn, 2009), this study is significant to social work. The focus on older African Americans with type 2 diabetes is an attempt to improve their quality of life and well-being. The older adult, his or her caregiver, social worker, physician, and other health care providers can use the SUGAAR to assess diabetes self-care.
Second, this study is significant to social work because it incorporates the core values of cultural competence and social diversity embedded in the Code of Ethics. In keeping with that value, I sought assistance with the development of the SUGAAR from members of African American communities. Furthermore, the SUGAAR is culturally sensitive and reflects language familiar to many older African Americans. Although there are other diabetes-related instruments, many have not been tailored for older African Americans. Researchers have noted the importance of assessing instruments on older adults because instruments that perform well on younger population may not demonstrate merit among older populations (Lubben, 1988). Nevertheless, more often than not, in their research with minority older adults, researchers use instruments that have not been assessed for validity and reliability among minority older adult populations, which can lead to biased results (Ramírez, Ford, Stewart, & Teresi, 2005; Stewart & Nápoles-Springer, 2003).

Third, this study is significant to social work because many social workers serve as members of interdisciplinary teams in health care settings (NASW, 2005). In 2009, approximately 54% of social work positions were in health care and social assistance sectors (U.S. Bureau of Labor Statistics [BLS], 2011). As opportunities for health care social workers expand well into 2018 (BLS, 2011), it is likely that social workers will increasingly encounter older African Americans with diabetes and their caregivers in need of assistance with managing the disease, coordinating diabetes-related services, and coping with disabilities from the complications of poorly managed diabetes (Bertera, 2003; DeCoster & Dabelko, 2008). An assessment tool, such as the SUGAAR, that is culturally sensitive, practical, and psychometrically sound could be incorporated into the case management processes of social
workers, physicians, and other health care providers who work with older African Americans with type 2 diabetes.

Fourth, this study is significant to social work because social workers, as part of interdisciplinary teams of medicine, nursing, and public health, will increasingly be asked to design effective community-based interventions for the management of type 2 diabetes among older African Americans. The social worker and other members of the interdisciplinary team could use the SUGAAR throughout the course of the intervention to assess diabetes self-care among participants. Social workers at the macro-level of practice could use the results from research interventions that incorporate the SUGAAR to advocate for additional funding for access to physicians, diabetes educators, podiatrists, and other health care providers.

Diabetes is relevant to social work practice, research, and policy. The SUGAAR could be used by older African Americans, their caregivers, social workers, physicians, and other health care providers to identify additional areas for diabetes education, intervention, and support, which may reduce the personal, financial, and social costs associated with poorly managed type 2 diabetes.
CHAPTER 2
LITERATURE REVIEW

Theoretical Considerations

It is difficult to assign causality to the complex nature of diabetes self-care among older African Americans because of the numerous factors that can influence care. The discussion of diabetes and diabetes self-care among older African Americans requires an understanding of the history and life experiences of African Americans in the United States.

The cohort of older adults 65 years and older that is the focus of this study came of age during a period of intense racism and discrimination, which may have predisposed the cohort to belief systems that directly influence health behaviors. For example, many members of this cohort may live with the memories of the Tuskegee Syphilis Experiment that was conducted in Macon County, Alabama, to examine the progression of untreated syphilis among African American men (Jones, 1993). The mistreatment of African American men in this study may have contributed to the legacy of mistrust for doctors and researchers in African American communities throughout the United States (Freedman, 1998; Gamble, 1997).

The Institute of Medicine (IOM) (2003) and others (Krieger, 2000, 2003; Krieger & Sidney, 1996; Paradies, 2006) have documented the effects of racism and racial discrimination on the health of African Americans. The IOM (2003), in its groundbreaking report on access to care, found startling disparities in health care among Black and White Medicare beneficiaries, but the differences could not be accounted for after controlling for health status and comorbidity.
This finding led the IOM to confront for the first time the racism and racial discrimination within the U.S. health care system.

The history of racism and discrimination in the United States and their effects on the overall health of older African Americans is complex. Given this history, however, the life course epidemiology perspective (Ben-Shlomo & Kuh, 2002) is appropriate for examining the diabetes self-care practices of older African Americans because it considers the health of the population from in utero to old age.

**Life course epidemiology perspective.** During the late 1980s and the 1990s, the life course epidemiology approach to chronic disease in later life challenged the existing paradigm, which focused considerable attention on adult lifestyle choices (Kuh & Ben-Shlomo, 2004). It was determined that lifestyle was not the only contributing factor to chronic disease in later life and that social factors had considerable influence. Ben-Shlomo and Kuh (2002) introduced the life course epidemiology approach to examine the effects of early life exposures to chronic disease outcomes in later life. Life course epidemiology is “the study of long-term effects on chronic disease risk of physical and social exposures during gestation, childhood, adolescence, young adulthood and later adult life” (Ben-Shlomo & Kuh, 2002, p. 285). This approach also considers the “biological, behavioural and psychosocial pathways that operate across an individual’s life course, as well as across generations, to influence the development of chronic disease” (p. 283). A life course epidemiology perspective incorporates a multidisciplinary framework to understand the importance of time and timing in associations between exposures and outcomes at the individual and population levels. Such an approach to chronic diseases is enriched by specifications of the particular way that time and timing in relation to physical growth, reproduction, infection, social
mobility, and behavioral transitions, etc., influence various adult chronic diseases in different ways, and more ambitiously by how these temporal processes are interconnected and manifested in population-level disease trends. (Lynch & Smith, 2005, p. 1)

Four models associated with life course epidemiology elucidate the pathways through which exposures across the life course contribute to health and disease in later life. The models are: (a) the critical period model; (b) the critical period model with later effect modifiers; (c) the accumulation of risk model; and (d) the chain of risk model (Kuh & Ben-Shlomo, 2004). (See Figure 1.)

*The critical period model.* As shown in Model A, the critical period model (i.e., the latency model; Hertzman, 1994), indicates “an exposure acting during a specific period has lasting or lifelong effects on the structure or function of organs, tissues, and body systems that are not modified in any dramatic way by later experience” (Kuh & Ben-Shlomo, 2004, p. 9). This process of exposure gives rise to the development of later life chronic diseases (Kuh & Ben-Shlomo, 2004; Hertzman, 1994). It is possible because of the social and political climate of the early 20th century, many older African Americans may have been exposed to social and environmental stressors during (a) gestation, (b) infancy, and (c) childhood that may have contributed to the development of diabetes in later life. Environmental exposures during the critical period to foods poor in nutritional values and high in sodium and saturated fats, such as “soul food,” which have been popularized in African American culture (Sankofa & Johnson-Taylor, 2007), may have contributed to the development of health behaviors at an early age that contribute to diabetes self-care behaviors in later life.
The critical period model with later effect modifiers. As shown in Model B, the critical period model with later effect modifiers is an extension of the critical period model because the period of exposure is extended to include exposure in later life. Modifiers can be positive or negative. Examples of positive modifiers that can occur in later life include (a) adopting an
exercise program, (b) a low-fat diet, (c) and weight reduction, which result in a positive effect on diabetes self-care and outcomes. Examples of negative modifiers that can occur in later life include (a) a sedentary lifestyle, (b) a diet high in fat, and (c) obesity, which would have a negative effect on diabetes self-care and outcomes.

The accumulation of risk model. As shown in Model C, the accumulation of risk model assumes that over time risks to health accumulate gradually (Kuh & Ben-Shlomo, 2004). Thus, as the accumulation of risk increases, which can occur independently or cluster, the “number, duration, and severity of exposures increase” (p. 9–10). It is the cumulative damage that eventually results in negative effects on biological systems (Kuh & Ben-Shlomo, 2004). For example, the risks to health of many older African Americans with diabetes include (a) the historic lack of access to quality health care (IOM, 2003), (b) low education and literacy (Mechanic, 2005), and (c) low socioeconomic status (Schoenberg et al., 2008), all of which can influence diabetes self-care. The increased risk of social factors that negatively influence diabetes self-care among many older African Americans may have a cumulative effect on their biological systems, which is evident in the shorter life expectancy of older African Americans with diabetes compared to older White Americans with diabetes (CDC, 2009; FIFA-RS, 2010).

The chain of risks model. As shown in Model D, the chain of risks model, which is associated with the accumulation model because of the effect of multiple exposures on health (Ben-Shlomo & Kuh, 2002) refers “to a sequence of linked exposures that lead to impaired function and increased disease risk because one bad experience or exposure leads to another and so on” (Ben-Shlomo & Kuh, 2002, p. 10). Some of the linked exposures include (a) low education and literacy (Mechanic, 2005), (b) low socioeconomic status (Schoenberg et al., 2008), and (c) geographic location (Smith et al., 2006). Each exposure of risk in the chain (i.e., an
additive effect) increases the risk of subsequent exposures, which may influence health and disease in later life. There is also a trigger effect, which indicates health is under the influence of the last exposure. When the trigger effect, such as racism and discrimination experienced in the health care system by older African Americans (IOM, 2003) is added to the equation, it may result in negative attitudes about health care providers and the under-utilization of health care services by this population, which in turn may affect their diabetes self-care and diabetes outcomes.

Although the purpose of life course epidemiology is to “build and test theoretical models that postulate pathways linking exposures across the life course to later life health outcomes” (Kuh et al., 2003, p. 778), this study is framed by the model, but is not a test of the model. The model is useful for identifying variables to consider for the examination of diabetes self-care among older African Americans.

It is possible to apply a modified version of the accumulation of risk model with risk clustering (Kuh & Ben-Shlomo, 2004, p. 9) to this exploratory study of diabetes self-care among older African Americans. The modification of this model was guided by the ADA’s approach to diabetes self-care (ADA, 2009, 2010, 2011, 2012), which acknowledges the multidimensionality of diabetes self-care.

The accumulation of risk model with risk clustering is important to the conceptualization of diabetes self-care among older African Americans because the risk of negative exposures (e.g., racism and discrimination) experienced by this population (IOM, 2003) and low education and literacy (Mechanic, 2005) tend to form socially patterned clusters that are often associated with health (Kuh et al., 2003). Figure 2 illustrates the clustering of factors related to diabetes self-care among older African Americans.
The modified framework demonstrates how factors contribute to diabetes self-care, which in turn influences diabetes outcomes. The macro-level exposures, such as racial discrimination, and Medicare policies, form pathway \(a\) from macro-level exposures to diabetes self-care to cluster at diabetes self-care; mezzo-level exposures, such as culture, religiosity, spirituality, and diet and nutrition, form pathway \(b\) to cluster at diabetes self-care; and micro-level exposures, such as age, functional disability, financial barriers, and education and literacy, cluster to form pathway \(c\). The framework indicates that macro-, mezzo-, and micro-level factors form clusters that have an additive effect on health, and, at some point in the life course, as demonstrated by the time arrow, influence diabetes self-care practices and diabetes outcomes.

Diabetes self-care among older African Americans is complex. Although the factors represented in the modified accumulation of risk model with risk clustering are not exhaustive, they provide some insight into diabetes self-care of older African Americans and extend the examination beyond the micro-level factors that are often the focus of prevention efforts aimed at reducing racial disparities in health (Webster, 2010).

**Factor Influencing Diabetes Self-care among Older African Americans**

The factors discussed in this section in provide insight into the various ways macro-, mezzo-, and micro-levels factors influence the diabetes self-care among older African Americans.

**Macro-level factors.** In recent years, the influence of macro-level factors on health outcomes have gained considerable attention in the research literature because these factors extend the examination beyond the micro- or individual level, which has been the primary focus of epidemiologists and others interested in population health since the 1950s (Ben-Shlomo & Kuh, 2002; Kuh & Ben-Shlomo, 2004). Macro-level factors exist at the highest levels of society
and have great influence at the population level (Oakes & Kaufman, 2006; Story, Kaphingst, Robinson-O’Brien, & Glanz, 2008; Subramanian, Belli, & Kawachi; 2002). Some macro-level factors documented as having an influence on the diabetes self-care practices of older African Americans include Medicare policies (Webster, 2010) and racial discrimination (IOM, 2003; Krieger, 2000, 2003; Paradies, 2006).

**Figure 2. Conceptual Framework of Diabetes Self-care among Older African Americans**

Medicare policies. Medicare is the primary insurance for the majority of older adults (U.S. Department of Health & Human Services [HHS], 2008). Enacted in 1965 by President Lyndon B. Johnson, Medicare is a macro-level factor that has been documented as a direct influence on older adult health (Webster, 2010). An examination of Medicare coverage benefits
for diabetes supplies and related services indicate a complex benefit structure with deductibles, coinsurance, and copayments. Benefits under Medicare are limited with coverage for diabetes-related supplies and services covered under various parts of Medicare (HHS, 2008). Because diabetes-related supplies and services are not covered at 100%, Medicare creates a financial barrier to services for many older African Americans who rely on Social Security as the primary source of their income (AARP Policy Initiative, 2009). Although the Patient Protection and Affordable Care Act (HR 3590) provided some improvements in Medicare coverage of diabetes benefits, such as additional coverage through Medicare Advantage plans and the focus on preventive benefits (HHS, 2012), the effects of the new legislation on improving access to diabetes-related supplies and services for older African Americans with type 2 diabetes is unknown at this time.

**Racism and racial discrimination.** In addition to Medicare policies, racial discrimination is another macro-level factor that can influence diabetes self-care among older African Americans. The IOM (2003) and Webster (2010) examine the effects of racial discrimination on health care utilization among Medicare beneficiaries. The IOM (2003) found racial disparities in health care utilization of African American Medicare beneficiaries and White American Medicare beneficiaries when controlling for sociodemographics and comorbidities. The findings indicate physicians’ attitudes about race may influence referral patterns and the quality of care received by older African Americans (IOM, 2003).

A more recent study that examined access to care among Medicare beneficiaries found that racial disparities continue in health care utilization among Medicare beneficiaries. African Americans were less likely than Whites to have seen a specialist or to have received surgery
(Webster, 2010). The disparity was particularly significant for Medicare fee-for-service beneficiaries who were African American, chronically ill, and poor (Webster, 2010).

**Mezzo-level factors.** Much like macro-level factors, mezzo-level factors can have considerable influence on older African Americans’ diabetes self-care practices. Mezzo-level factors can best be described as factors that interact with an individual, which includes, but is not limited to, interactions with family, friends, and community (Lau, Scandrett, Jarzebowski, Holman, & Emanuel, 2007). Mezzo-level factors also include health and social-service agencies, as well as structural elements of the individual’s home and neighborhood (Lau et al., 2007).

**Culture.** Culture is perhaps one of the most influential factors that distinguish the diabetes self-care practices of older African Americans from those of older White Americans. Culture is often defined as “a learned set of values, beliefs, norms and patterns of behavior” (Tripp-Reimer, Choi, Kelley, & Enslein, 2001, p. 14). Using this definition, culture could be classified as micro-level, mezzo-level, or macro-level of influence, or all three levels simultaneously; however, the focus of this discussion is on the mezzo-level level influence of culture. For many older African Americans, culture influences religious and spiritual practices (Armstrong & Crowther, 2002), diet and nutrition (Sankofa & Johnson, 2007), and health beliefs (Becker, Gates, & Newsom, 2004; Ford & Hatchett, 2002).

**Religiosity and spirituality.** The cultural influences of religiosity and spirituality in the lives of many African Americans, especially older African Americans, are noted throughout the research literature (Armstrong & Crowther, 2002; Chatters, Taylor, Bullard, & Jackson, 2008; Gallant, Spitze, & Prohaska, 2007; Polzer & Miles, 2007). Although the importance of both constructs have been known to have considerable influence on the lives of older adults in general, the levels of religiosity and spirituality found among older African Americans have been
documented to far exceed the levels of influence found among older White Americans (Taylor, Chatters, & Jackson, 2007). Because of the importance of religiosity and spirituality in the lives of older adults, there has been growing interest in the influence of religiosity and spirituality on chronic health conditions (Holt et al., 2009; Leach & Schoenberg, 2008; Polzer & Miles, 2007).

There is some evidence that indicates religiosity and spirituality may have both negative and positive influences on the diabetes self-care practices of older African Americans (Leach & Schoenberg, 2008; Polzer & Miles, 2007). For example, research indicates that some African Americans may manage their diabetes based on their relationship with “God” and may sacrifice their diabetes self-care practices to “God” as a measure of their faith, which could negatively affect their health (Polzer & Miles, 2007). However, other research found differences in faith orientations had a positive effect among Black adults with multiple chronic conditions (Leach & Schoenberg, 2008). In contrast to their White counterparts, Black participants reported religiosity and spirituality through prayer, support from “God”, and the church as positive factors in the overall management of their health (Leach & Schoenberg, 2008).

**Diet and nutrition.** The cultural influences on the diet and nutritional choices of African Americans have been well documented (Anderson-Loftin et al., 2005; Hargreaves, Schlundt, & Buchowski, 2002; Rankins, Wortham, & Brown, 2007; Sankofa & Johnson-Taylor, 2007). The “Sunday dinner” and “soul food,” which are popular among many African Americans, especially in the South (Anderson-Loftin et al., 2005), consist of foods high in fat and salt (Rankins et al., 2007). A healthy diet is an essential component to the successful management of diabetes (ADA, 2009, 2010, 2011, 2012); however, the cultural beliefs of many older African Americans towards food may contribute to the difficulty of adopting healthy dietary behaviors.
Micro-level factors. Micro-level factors (i.e., individual factors) are biological and physiological characteristics, such as “attitude, knowledge, health-risk behaviors, and mental, physical, and functional health” (Lau et al., 2007, p. 833), and can also include demographic factors such as financial resources (Story et al., 2008).

Age-related challenges. In old age, diabetes is particularly challenging to manage because of physiological changes that obscure the signs and symptoms, as well as complications of diabetes (Spollett, 2006). The clinical presentations of diabetes often found among younger adults, such as frequent urination and unexplained loss of weight, are rare among older adults (Meneilly & Tessier, 2001; Sclater, 2003; Spollett, 2006). For older adults, diabetes symptoms can resemble changes in behavior and functional status, such as confusion, agitation, and failure to thrive (Hornick & Aron, 2008; Meneilly & Tessier, 2001; Sclater, 2003).

Hyperglycemia, also known as high blood sugar, is less common among older adults with diabetes because of possible age-related changes that occur in the kidneys (Meneilly, 2001; Spollett, 2006). Polydipsia, or excessive thirst, is a common symptom of high blood sugar in young adults; however, it is less common among older adults with diabetes because of age-related changes in thirst (Meneilly, 2011; Spollett, 2006).

Hypoglycemia, also known as low blood sugar, is more common in older adults with diabetes and can lead to sudden death (Meneilly, 2009; Spollett, 2006). Unfortunately, many older adults with diabetes fail to recognize its symptoms (Zammitt & Frier, 2005). For older adults with diabetes, hypoglycemia can appear suddenly because of hormonal imbalance, irregular food intake, drug interactions, and slowed intestinal absorption (Spollett, 2006).

Functional disability. Functional disability is another age-related challenge to diabetes self-care. Age-related changes in vision (Crews, Jones, & Kim, 2006; Schoenberg & Drungle, 2006).
2001) and decreases in manual dexterity (Cole, Cook, Hynes, & Darling, 2010) are common among older adults and considered a normal part of aging (FIFA-RS, 2010). However, adequate vision and manual dexterity are important to the management of diabetes because both are necessary for medication adherence, such as measuring the correct dosage of insulin, using blood glucose monitors properly, and food preparation, such as slicing fresh fruits and vegetables and opening cans or jars. Research on older adults with diabetes found visual impairment as a barrier to participation in a diabetes self-care intervention (Sarkisian, Steers, Brown, & Anderson, 2005) and diabetes self-care, in general (Schoenberg & Drungle, 2001). Manual dexterity issues, such as arthritis, have also been reported as a challenge to care (Gregg & Caspersen, 2005; Leeman et al., 2008; Morrow, Haidet, Skinner, & Naik, 2008). Older adults with diabetes are two to three times as likely to experience mobility issues and problems performing activities of daily living as older adults without diabetes (Gregg & Caspersen, 2005).

**Financial barriers.** Many older African Americans rely on Social Security as their primary source of income (AARP Policy Initiative, 2009) and are more likely than older Whites to live in poverty (FIFA-RS, 2010). However, diabetes is a costly disease to manage and many older African Americans with diabetes lack adequate income and financial resources to manage their health (Schoenberg & Drungle, 2001; Utz et al., 2008). For many older African American women, managing the financial aspects of diabetes is particularly challenging. A study on older women with non-insulin dependent diabetes found African American women more likely than White women to report inadequate financial resources as a barrier to care (Schoenberg & Drungle, 2001). Research on rural African Americans indicates a lack of financial resources to purchase diabetes medication and diabetes-related supplies, such as test strips used for daily self-monitoring of blood glucose (Utz et al., 2008). Financial barriers have also been reported as a

**Education and literacy.** The effective management of diabetes requires a reasonable degree of education (Ntiri & Stewart, 2009) and an adequate level of literacy (Nath, 2007; Rothman et al., 2005), including health literacy (Kim, Love, Quistberg, & Shea 2004; Mbaezue et al., 2010), because of the complexity of a diabetes self-care regimen. However, many older African Americans in the United States have low educational attainment and have inadequate levels of literacy (Rothman et al., 2005), due possibly to school segregation during their formative years (Allaire & Whitfield, 2004). Although research in the area of education and literacy among older African Americans with diabetes is limited, research indicates the introduction of diabetes education to adults with low literacy improves diabetes outcomes (Kim et al., 2004).

**Diabetes-Related Instruments**

Numerous instruments are available for assessing aspects of diabetes self-care; however, the majority of extant instruments have not been normed and validated on African Americans 65 years and older. Lubben (1988) and others (Fox, Sidani, & Streiner, 2007; Magwood, Jenkins, & Zapka, 2009) have noted the importance of assessing instruments specifically on older adults because instruments that perform well on younger populations may not be useful among older populations. Research on the use of standardized surveys on older adults indicates that older adults encountered difficulty responding to standardized questions on instruments validated on younger adults (Fox et al., 2007). Problems encountered by older adults included challenges with comprehension (e.g., responding to negative items), retrieval of information about previous health conditions, judgment, and responding to five-point responses.
Researchers have also noted the importance of attending to possible differences in and between groups when developing instruments (Lubben et al., 2006; Skinner, Teresi, Holmes, Stahl, & Stewart, 2002; Stewart & Nápoles-Springer, 2000). More often than not, however, researchers have used instruments that have not been assessed for validity and reliability among minority older adult populations. The use of such instruments, however, can lead to biased results (Skinner et al., 2002). For example, Magwood et al. (2009) found older African Americans had difficulty answering questions on two frequently used health-related quality of life instruments that previously demonstrated validity amongst a broader population.

Given the paucity of instruments for assessing diabetes self-care among older African Americans, there is a need for a valid and reliable instrument for assessing diabetes self-care among this group. In addition, although the ADA has established an extensive list of recommendations for diabetes self-care (ADA, 2009, 2010, 2011, 2012), many of the diabetes-related instruments in the research literature have not been updated to reflect current ADA standards. Table 1 provides a summary of some of the existing instruments that measure various aspects of diabetes self-care.

**The SUGAAR.** The SUGAAR is a brief self-care assessment tool designed to measure the diabetes self-care practices of older African Americans (see Appendix A). The SUGAAR reads approximately at a fifth-grade readability level, which is appropriate given the low education (Allaire & Whitfield, 2004) and literacy (Rothman et al., 2005) among older African Americans. The SUGAAR is different from other instruments for assessing diabetes self-care because it was developed primarily from ADA standards of care (ADA, 2009, 2010, 2011). The SUGAAR also differs from other instruments because it reflects language familiar to many older African Americans with type 2 diabetes in Alabama and the type is easy to read for older adults.
experiencing age-related visual changes. The SUGAAR can be self-administered or administered by social workers, physicians, or other health care providers.
<table>
<thead>
<tr>
<th>Year</th>
<th>Instrument</th>
<th>Author(s)</th>
<th>Year(s)</th>
<th>Origin</th>
<th>Construct Measured</th>
<th>Mean Age</th>
<th>African American Ethnicity</th>
<th>Type of Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Audit of Diabetes-Dependent Quality of Life</td>
<td>Bradley, Todd, Gordon, Symonds, Martin, &amp; Plowright</td>
<td>1999</td>
<td>UK</td>
<td>The impact of diabetes and diabetes treatments on quality of life</td>
<td>61.6</td>
<td>Not reported</td>
<td>NIDDM/IDDM</td>
</tr>
<tr>
<td>2008</td>
<td>Brief Diabetes Distress Screening Instrument</td>
<td>Fisher, Glasgow, Mullain, Skaff, &amp; Polonsky</td>
<td>2008</td>
<td>USA</td>
<td>Diabetes distress</td>
<td>57.8</td>
<td>20.5%</td>
<td>Type II</td>
</tr>
<tr>
<td>1997</td>
<td>Diabetes 39 Questionnaire</td>
<td>Boyer &amp; Earp</td>
<td>1997</td>
<td>USA</td>
<td>Quality of life</td>
<td>61/55.3</td>
<td>0%/54.4%</td>
<td>Type II</td>
</tr>
<tr>
<td>1996</td>
<td>Diabetes Care Profile</td>
<td>Fitzgerald, Davis, Connell, Hess, Funnell, &amp; Hiss</td>
<td>1996</td>
<td>USA</td>
<td>Social and psychological factors related to diabetes and diabetes treatments</td>
<td>61/54</td>
<td>Not reported</td>
<td>NIDDM/IDDM</td>
</tr>
<tr>
<td>1998</td>
<td>Diabetes Care Profile for African Americans</td>
<td>Fitzgerald, Anderson, Gruppen, Davis, Aman, Jacober, &amp; Grubergar</td>
<td>1998</td>
<td>USA</td>
<td>Social and psychological factors related to diabetes and diabetes treatments</td>
<td>61</td>
<td>68.5%</td>
<td>Type II</td>
</tr>
<tr>
<td>Instrument</td>
<td>Year</td>
<td>Author(s)</td>
<td>Origin</td>
<td>Construct Measured</td>
<td>Mean Age</td>
<td>African American Ethnicity</td>
<td>Type of Diabetes</td>
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<tr>
<td>Diabetes Distress Scale</td>
<td>2005</td>
<td>Polonsky, Fisher, Earles, Dudi, Lees, Mullan, &amp; Jackson</td>
<td>USA</td>
<td>Diabetes-related emotional distress</td>
<td>56.3</td>
<td>13.2%</td>
<td>Type I/II</td>
<td></td>
</tr>
<tr>
<td>Diabetes Empowerment Scale</td>
<td>2000</td>
<td>Anderson, Funnell, Fitzgerald, &amp; Marrero</td>
<td>USA</td>
<td>Diabetes-related psychosocial self-efficacy</td>
<td>50.4</td>
<td>Not reported</td>
<td>Type I/II</td>
<td></td>
</tr>
<tr>
<td>Diabetes Impact Measurement Scale</td>
<td>1992</td>
<td>Hammond &amp; Aoki</td>
<td>USA</td>
<td>Diabetes specific symptoms, nonspecific symptoms, well-being, diabetes-related morale, and social role fulfillment</td>
<td>45</td>
<td>Not reported</td>
<td>Type I/II</td>
<td></td>
</tr>
<tr>
<td>Diabetes Problem-Solving Scale</td>
<td>2007</td>
<td>Hill-Briggs, Yeh, Gary, Batts-Turner, D’Zurilla, &amp; Brancati</td>
<td>USA</td>
<td>Diabetes problem solving</td>
<td>60.5</td>
<td>100%</td>
<td>Type II</td>
<td></td>
</tr>
<tr>
<td>Diabetes-Specific Quality of Life Scale</td>
<td>1998</td>
<td>Bott, Mühlhauser, Overmann, &amp; Berger</td>
<td>Germany</td>
<td>Diabetes treatment goals</td>
<td>36</td>
<td>0%</td>
<td>Type I</td>
<td></td>
</tr>
<tr>
<td>Instrument</td>
<td>Year</td>
<td>Author(s)</td>
<td>Origin</td>
<td>Construct Measured</td>
<td>Mean Age</td>
<td>African American Ethnicity</td>
<td>Type of Diabetes</td>
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<tr>
<td>Health Status Measure for Older African-American Women with Type 2 Diabetes</td>
<td>2000</td>
<td>Elasy, Samuel-Hodge, DeVeilis, Skelly, Amerman, &amp; Keyserling</td>
<td>USA</td>
<td>Diabetes-specific health status measure</td>
<td>59</td>
<td>100%</td>
<td>Type II</td>
<td></td>
</tr>
<tr>
<td>Problem Areas in Diabetes Scale</td>
<td>1997</td>
<td>Welch, Jacobson, &amp; Polonsky</td>
<td>USA</td>
<td>Diabetes emotional distress</td>
<td>52.3</td>
<td>Not reported</td>
<td>NIDDM/IDDM</td>
<td></td>
</tr>
<tr>
<td>Self-Care Inventory-Revised with Adults</td>
<td>2005</td>
<td>Weinger, Butler, Welch, &amp; La Greca</td>
<td>USA</td>
<td>Diabetes self-care</td>
<td>51, 47, 31</td>
<td>Not reported</td>
<td>Type I/II</td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy Scale for Patients with Type 2 Diabetes Mellitus</td>
<td>1999</td>
<td>Bijl van der, Poelgeest-Eeltink van, &amp; Shortridge-Baggett</td>
<td>Netherlands &amp; Belgium</td>
<td>Diabetes self-efficacy</td>
<td>64</td>
<td>0%</td>
<td>Type II</td>
<td></td>
</tr>
<tr>
<td>Summary of Diabetes Self-Care Activities Measure - Revised</td>
<td>2000</td>
<td>Toobert, Hampson, &amp; Glasgow</td>
<td>USA</td>
<td>Brief self-report of diabetes self-management</td>
<td>45-67</td>
<td>Not reported</td>
<td>Type I/II</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 3

RESEARCH METHODS

I conducted this study in two phases: first, a project in a research methods class in the spring of 2009, and then, in the spring of 2012, as my dissertation study. The first phase of the study consisted of two rounds of cognitive interviews. The second phase consisted of a small pilot study and the larger SUGAAR study.

Construction of the SUGAAR

In the spring of 2009, I developed the SUGAAR as a research class assignment (McCaskill, 2009). I developed the SUGAAR to measure some of the aspects of diabetes self-care reflected in the ADA’s (2009) standards of care (2009), including. The dimension include: (a) physician and provider actions; (b) medication and self-monitoring blood glucose; (c) other self-care behaviors; (d) risk behaviors; and (e) psychosocial support and well-being (see Figure 3).

In order to ensure content validity, I sought suggestions for developing the SUGAAR from three physicians and a diabetes nurse educator, as well as colleagues and mentors from the University of Alabama School of Social Work and Department of Psychology.

Cognitive interviews. Cognitive interviewing is an approach to survey development by which researchers can reduce the likelihood of response error and measurement bias (Collins, 2003; Nápoles-Springer, Santoyo-Olson, O’Brien, & Stewart, 2006; Presser et al., 2006; Tourangeau, 2003; U.S. Bureau of Census, 2004), reduce the financial cost associated with the pilot testing of instruments (Collins, 2003), and aid in the development of questionnaires for
diverse populations (Jobe & Mingay, 1990; Nápoles-Springer et al., 2006; Warnecke et al., 1997).

Figure 3. The Multiple Aspects of Diabetes Self-care

I used the “think-aloud” approach with verbal probes for this study. In this approach, the participants read questions aloud and the interviewer asks questions about participants’ responses to the survey items (Willis, 2005). The information obtained during the course of cognitive interviews allows researchers to identify problematic issues with survey items prior to costly pilot tests (Collins, 2003; Willis, 2005).
Cognitive Interviews Study I

Upon approval from the University of Alabama’s Institutional Review Board (IRB), I used convenience sampling to recruit five community-dwelling older African Americans with a self-reported diagnosis of type 2 diabetes from a small church in Tuscaloosa City, Alabama. Although it was a convenience sample, I selected participants from the target population.

The first version of the SUGAAR consisted of 52 questions with dichotomous responses that read at a Flesch-Kincaid readability level of 5.6 (see Appendix B). I initially developed the SUGAAR-52 according to the ADA’s standards of medical care for older adults with type 2 diabetes (ADA, 2009).

I contacted a pastor of an African American church regarding the study. The pastor allowed me to make an announcement about the study in front of the congregation. Flyers with pictures of older African Americans were distributed. The pastor of the congregation endorsed the study and encouraged congregants to participate. Appointments for eligibility screening were arranged at the convenience of the prospective participants. Prior to conducting each interview, I used the Saint Louis Mental Status (SLUMS) exam (Tariq, Tumosa, Chibnall, Perry, & Morley, 2006) to screen participants for cognitive impairment prior to reading the informed consent (see Appendix C).

In accordance with the concurrent think-aloud approach and verbal probing (Willis, 2005), I asked participants to read the questions aloud. The first participant was asked to read the instructions along with the first 12 questions. The other four participants were asked to read 10 different questions from the instrument. I conducted the interviews in the homes of participants. I asked participants to select a pseudonym to protect their identity. I audio-recorded all interviews. At the end of each interview, I gave each participant $15 for participating in the study.
Cognitive Interviews Study II

Upon approval from the IRB, I used purposive sampling to recruit 10 community-dwelling African Americans 65 years and older with a self-reported diagnosis of type 2 diabetes from Tuscaloosa, Jefferson, Greene, and Hale counties in Alabama.

I recruited participants from churches, Area Agency on Aging agencies, physicians’ offices, and local Black-owned businesses. I distributed flyers with information about the study throughout the recruitment areas.

I screened all prospective participants for eligibility and cognitive impairment over the telephone. I administered a brief, six-item cognitive screener (Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002) to all prospective participants (see Appendix D). I chose this screener because it has demonstrated validity and reliability among older African Americans when administered over the telephone. The screener was designed to screen for moderate to severe cognitive impairment. Prospective participants who missed three or more answers on the cognitive screener were not allowed to participate in the study.

I administered a modified version of the SUGAAR. For this second round of cognitive interviews, I again used the think-aloud approach and verbal probes. For the second round of cognitive interviews, however, I asked participants to read the instructions aloud and all 25 questions on the SUGAAR. I asked participants to select pseudonyms to protect their identity. I audio-recorded all interviews after I administered the informed consent. I conducted all interviews in the homes of participants. At the end of the interviews, I gave each participant $15 for participating in the study.


**Pilot Study**

Upon approval from the Institutional Review Board at The University of Alabama, I used purposive sampling to recruit 15 African American 65 years and older with a self-reported diagnosis of type 2 diabetes from Tuscaloosa City and Alberta City in Tuscaloosa County, Greene and Perry Counties in Alabama. Because the cognitive interview studies included only the SUGAAR, I conducted a small pilot study to gain insight on the administration of the SUGAAR along with the other instruments prior to conducting the larger study. A detailed description of the instruments used can be found under the proceeding section.

With the exception of the cognitive screener, I administered all instruments in an interview format in the homes of participants. I read instructions and questions aloud to each participant. Questions were printed individually with responses directly below questions. I gave participants a 3-ring binder that contained all of the instruments, except for the cognitive screener. I gave participants the option to read the questions during the course of the interview. At the end of each interview, participants were given $15 for participating in the study.

**SUGAAR Study**

Upon approval from the IRB, I used purposive sampling to recruit an additional 115 community-dwelling African Americans 65 years and older with a self-reported diagnosis of type 2 diabetes. I recruited prospective participants from Tuscaloosa, Jefferson, Greene, Hale, and Perry counties.

Recruitment. I recruited participants from Black local churches, community-based organizations that provide services to older adults, and Black-owned businesses. I placed a weekly advertisement for one month in *The Greene County Democrat*, Eutaw, Alabama, which is the local Black press for the rural county. I also sought permission to access low-income
senior housing in Tuscaloosa City in Tuscaloosa County and Birmingham City, Jefferson
County, Alabama. I used a toll-free number (855-33-SUGAR), which allowed prospective
participants to inquire about the study and for screening purposes.

**Eligibility.** I used the same eligibility requirements and screening procedures that I used
for the cognitive interview II study and the pilot study for this final phase of the study. I
administered the brief six-item cognitive screener (Callahan et al., 2002) over the telephone to all
prospective participants. Prospective participants who missed three or more answers on the
cognitive screener were not allowed to participate in the study.

**Instruments.** The SUGAAR, modified in response to information elicited during the
cognitive interviews, was the primary instrument for this study. In addition to the SUGAAR and
the brief cognitive screener, the other instruments I administered during the course of this study
were: (a) questions from the Diabetes Care Profile (DCP), which was developed by Fitzgerald et
al. (1996) to assess various aspects of diabetes self-care (see Appendix E); (b) questions from the
Duke Older Americans Resources and Services (OARS) Multidimensional Functional
Assessment Questionnaire, which was developed by Fillenbaum (1988) to assess the health,
functional status, and service use of older adults (see Appendix F); and (c) demographic
questions from section I of the DCP (Fitzgerald et al., 1996), which were administered at the end
of the study (see Appendix G).

The DCP is an instrument of 234 items, divided into seven sections, that measures social
and psychological factors associated with diabetes and its management (Fitzgerald et al., 1996).
The DCP has demonstrated a low, but statistically significant, correlation with glycosylated
hemoglobin (Fitzgerald et al., 1996). The DCP has also demonstrated validity and reliability
among older African Americans (Fitzgerald et al., 1998). However, the length of the DCP makes
it inappropriate for practical use. More important, the DCP was developed in 1996, which means it does not reflect current ADA standards of care (ADA, 2009, 2010, 2011); however, some of the questions were appropriate for use because of results from previous reliability and validity studies (Fitzgerald et al., 1998; Fitzgerald et al., 1996). Fourteen questions from the DCP that were most related to diabetes self-care were administered to participants. The DCP questions included (a) question 1, Section VI (Control Problem) and (b) questions 1–11, Section VIII (Attitudes toward Diabetes Scale), which included positive and negative attitudes, care ability, importance of care, and self-care adherence items.

To assess the health and functional status of participants, I administered 19 questions from the mental health, physical health, and supportive devices and prostheses sections of the OARS (questions 31–49).

**Administration of the instruments.** With the exception of the cognitive screener, I administered all instruments in an interview format in the homes of participants or a private location of their choosing. I read the instructions and questions aloud to each participant. Questions were printed individually with responses directly below questions. I gave participants a three-ring binder that contained all of the instruments except the cognitive screener. I gave participants the option of reading the questions during the course of the interview. At the end of each interview, I gave each participant $15 for participating in the study. Following the end of each interview, I also gave each participant a flyer with information about the study. I asked participants to share the information with family and friends.

**Scoring of instruments.** The SUGAAR contained 25 dichotomous items. A score of 0 was given for each negative diabetes self-care practice and a score of 1 was given for each positive self-care practice endorsed. Total scores ranged from 0 to 25. A high score indicated a
participant followed several diabetes self-care practices, whereas a low score indicated a participant followed few diabetes self-care practices. The total scores on the DCP items (Fitzgerald et al., 1996) ranged from 1 to 5. DCP questions Q1–Q10 relate to negative attitudes toward diabetes self-care. Total scores on these items ranged from 10 to 50. A high score indicated poor attitude towards diabetes self-care. DCP questions Q11, a–d relate to positive diabetes self-care. Total scores on these items ranged from 4 to 20. A high score indicated good diabetes self-care. Total scores from DCP control problems question Q1 ranged from 1 to 5 with a high score indicating poor blood sugar control.

The OARS (Fillenbaum, 1988) has a variety of types of response items, including “yes/no” responses, frequency of occurrence items, scale of satisfaction items, and checklists. I used the scoring protocol provided by the OARS developer, which included adjusting the scoring so a low score would indicate relatively poor functional status and a high score would indicate relatively good functional status.

**Social Desirability**

In survey development, the issue of social desirability should not be taken lightly because it can be a source of measurement error and therefore reduce the validity of subjective responses (Fowler, 1995). To address the issue of social desirability, I adopted Fowler’s (1995) recommendations, such as making sure that an interviewer should avoid passing judgment on the interviewee. I exercised caution through the use of value-free wording in promotional materials and with discussions involving prospective participants. I emphasized confidentiality throughout the recruitment process and during the informed consent, which is another way to reduce the likelihood of social desirability (Fowler, 1995). To further reduce the influence of social
desirability, I took advantage of race matching and conducted all interviews, which is an effective approach to reducing socially desirable patterns in responses (Krysan & Couper, 2003).
CHAPTER 4
RESULTS

The primary focus of this dissertation was the further development and validation of the SUGAAR. Two rounds of cognitive interviews and a pilot study were conducted to complete the first version of the SUGAAR. Results of those efforts are provided first. Then the revised SUGAAR was administered, along with the DCP (Fitzgerald et al., 1996) the OARS (Fillenbaum, 1988). For the main study, the administration of instruments took approximately 50 minutes. The demographic characteristics of the sample are described, followed by the results on internal consistency, factor structure, and convergent validity of the SUGAAR. The secondary focus of this dissertation was an examination of the diabetes self-care practices, health, and functional status of the participants. The results of assessments, including the mean scores and variances for the SUGAAR, DCP, and OARS, are provided at the end of this chapter.

Cognitive Interviews Study I

The purpose of a cognitive interview is to identify problems participants may encounter understanding survey questions (Willis, 2005). Because generalization is not a goal of cognitive interviews, it is standard practice to use a modest sample size of 5–15 participants and at least two rounds of interviews (Willis, 2005).

The first round of cognitive interviews was conducted to identify difficulties participants might have with the SUGAAR. Three females and two males were interviewed. The interviews were recorded and the audiotapes were transcribed verbatim. The mean age of participants was 67.2 years ($SD = 6.87$). Four of the five participants were married. The education level of
participants ranged from high school graduate to master degree. Four of the participants earned less than $30,000 a year. Participants had been diagnosed with diabetes from 5 to 30 years.

Participants were asked to read selected questions aloud and to think aloud while they answered the questions. Participants were probed and asked to provide suggestions regarding the wording of the questions. For data analysis, I used some of Willis’s (2005) recommendations, which included identifying problems with items, incorporating suggestions, and devising solutions to problematic items. Five items were modified as a result of the interviews.

**SUGAAR 2.** “In the past 12 months, I have seen an eye doctor.” This question proved a little difficult for the first participant to answer because he visits two physicians for his eyes. The ophthalmologist he sees for his diabetes treats him for glaucoma. He also sees a “regular eye doctor”, for routine eye examinations. This question was modified to focus on pupil dilation.

**SUGAAR 23.** “In the past three months, I have had the special two-month blood sugar test (Hb1Ac).” The third participant thought this question did not make sense. The participant was perplexed about the wording and time frame. Initially, this question reflected the ADA’s standards of six months for an individual with good control (ADA, 2009, 2010, 2011, 2012); however, the question was changed based on feedback from a primary care physician. After feedback from the participant, this question was modified to reflect the ADA standards of medical care recommendation of three months for individual not in control of blood sugar (ADA, 2009, 2010, 2011, 2012).

**SUGAAR 30.** “I do resistance training with bands or weights three times a week.” The third participant had difficulty with the wording of this question. She also thought that other participants might have difficulty understanding the word “resistance.” This question was modified by replacing “resistance training” with “strength training.”
SUGAAR 35. “I take a pressure/blood pressure pill/medicine.” The fourth participant had difficulty with this question because of the use of multiple word choices. The participant offered a suggestion that would make the question clearer. Participant also experienced problems interpreting the slashes. This question was modified to “I take blood pressure medicine.” The slashes were removed to avoid confusion.

SUGAAR 52. “I sometimes feel down (sad, blue, depressed, stressed, worried, or nervous) about my health.” The fifth participant experienced difficulty with this question. The participant suggested that, given the focus of this study, I should include two separate questions: one about diabetes health and one about general health. In response, the question was modified to include the participant’s suggestion about wording the question specifically about diabetes mental health. After further thought, question 52 was modified to focus on diabetes, which eliminated the need for question 51.

In addition to the modifications to the SUGAAR based on the results from the first round of cognitive interviews, the number of items was reduced. Because the primary focus of the SUGAAR was to make it a practical instrument for assessing diabetes self-care, additional questions were eliminated. The items that were eliminated were either not directly related to diabetes or they did not add to the overall purpose of the SUGAAR. For example, questions related to transportation and financial barriers to diabetes self-care were deleted because they were not the focus of the SUGAAR. As a result of the changes, the SUGAAR was reduced from 52 items to 25 items.

Cognitive Interviews Study II

For the second round of cognitive interviews, the revised SUGAAR was administered to 10 participants. This time, participants completed the entire instrument, incorporating the think-
aloud process and verbal probing approach used in the first round of cognitive interviews. Seven females and three males were interviewed. The interviews were recorded and the audiotapes were transcribed verbatim. Participants were older ($M = 72.4$ years, $SD = 6.15$) than participants in the first round of cognitive interviews ($M = 67.2$ years, $SD = 6.87$). Three participants were married, three participants were separated, and three participants were divorced. Only one participant had never married. The education level of participants was some high school (10%), high school graduate or general equivalency diploma (GED) (30%), some college or technical school (30%), and graduate degree (30%). The majority of participants were retired (60%), some worked part-time, less than 35 hours a week (20%), one reported disability (10%), and one reported performing volunteer work (10%). Participants reported a diagnosis of diabetes of approximately 14 years ($M = 13.6$ years, $SD = 11.1$).

For data analysis, the approach used in the first cognitive interview study was incorporated into the second study. Three questions were modified as a result of the cognitive interviews.

**SUGAAR 9.** “I take medicine to control my sugar diabetes as instructed by my doctor.” A participant that does not take medication to manage diabetes suggested expanding the responses to include diet and exercise. This question was modified to include diet and exercise along with medication.

**SUGAAR 17.** “I do aerobic exercise for 30 minutes at least five times a week.” Participants had difficulty with comprehending the word “aerobic,” which they associated with Jane Fonda. This question was modified to include examples of aerobic activities (e.g., walking).

**SUGAAR 24.** “I need help with my sugar diabetes.” Participants did not understand from whom they would receive help. This question was modified to include family and friends.
The second round of cognitive interviews resulted in only minimal suggestions for improving the SUGAAR. The problems participants encountered with the SUGAAR were related to word comprehension and item limitations. Because only minimal modifications were made to the SUGAAR based on the second round of cognitive interviews, an additional round of cognitive interviews was not conducted.

Pilot Study

A pilot study was conducted to identify potential problems with the administration of the package of instruments and to identify how long the process would take. Fifteen participants were recruited through purposive sampling. The majority of participants were recruited through snowball sampling in the city of Tuscaloosa, Alabama. Participants ranged in age from 67 to 83 years, with a mean age of 74.6 (SD = 5.76). The mean length of time participants had been diagnosed with diabetes was 16.1 years (SD = 15.8). Participants were older, had more education, and had higher incomes than participants in the cognitive interview studies (see Table 2).

Prior to participating in the study, prospective participants were screened over the telephone for cognitive impairment using a six-item screener (Callahan et al., 2002). All interviews were conducted in the participants’ homes. After administering the informed consent, the questions were read aloud to participants. Participants were given a binder with the instruments so they could follow along. Participants were asked to respond to the 25-item SUGAAR by responding “yes” or “no” to each question.

Participants were able to answer questions from SUGAAR with relative ease. Some problems were encountered with the Likert-type responses questions on the DCP (Fitzgerald et al., 1996). However, the problems did not require remedial action other than providing additional
time for participants to respond to the questions. Participants did not encounter any difficulty responding to questions from the OARS (Fillenbaum, 1988) or the demographic questions from the DCP (Fitzgerald et al., 1996).

Table 2. Demographic Characteristics of Pilot Study Sample (n = 15)

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>80.0</td>
</tr>
<tr>
<td>Male</td>
<td>20.0</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>8th grade education or less</td>
<td>6.7</td>
</tr>
<tr>
<td>High school graduate or GED</td>
<td>26.7</td>
</tr>
<tr>
<td>Some college or technical school</td>
<td>46.7</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>20.0</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
</tr>
<tr>
<td>Working full-time, 35 hours or more a week</td>
<td>6.7</td>
</tr>
<tr>
<td>Working part-time, less than 35 hours a week</td>
<td>13.3</td>
</tr>
<tr>
<td>Retired</td>
<td>40.0</td>
</tr>
<tr>
<td>Disabled, not able to work</td>
<td>6.7</td>
</tr>
<tr>
<td>Something else, volunteer</td>
<td>33.3</td>
</tr>
<tr>
<td>Annual household income</td>
<td></td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>6.7</td>
</tr>
<tr>
<td>$5,000–9,999</td>
<td>6.7</td>
</tr>
<tr>
<td>$10,000–14,999</td>
<td>20.0</td>
</tr>
<tr>
<td>$15,000–19,999</td>
<td>26.7</td>
</tr>
<tr>
<td>$20,000–29,999</td>
<td>13.3</td>
</tr>
<tr>
<td>$30,000–39,999</td>
<td>13.3</td>
</tr>
<tr>
<td>$50,000–59,999</td>
<td>6.7</td>
</tr>
<tr>
<td>$60,000–69,999</td>
<td>6.7</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>6.7</td>
</tr>
<tr>
<td>Married</td>
<td>13.3</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>26.7</td>
</tr>
<tr>
<td>Widowed</td>
<td>53.3</td>
</tr>
</tbody>
</table>
Main Dissertation Study

Recruitment. One-hundred and fifty-eight prospective participants were screened from five Alabama counties before reaching the recruitment goal of 125 (see Table 3). The majority of participants were recruited as a result of snowball sampling from the urban areas of Tuscaloosa City and Birmingham and their surrounding areas (see Figure 4). Tuscaloosa’s surrounding areas included Holt, Alberta, and Northport. Birmingham’s surrounding areas included Hueytown, Midfield, and Fairfield. Recruitment activities began in August 2011 and ended in April 2012.

Figure 4. Recruitment Areas

Sample demographics. The mean age of participants was 72.8 years ($SD = 5.71$) and the number of years living with a type 2 diabetes diagnosis was 13.6 years ($SD = 11.1$). The majority of participants were female (81%), widowed (45%), lived alone (48%), and earned less than $15,000 annually (57%). The cognitive scores ranged from 4 to 7 ($M = 6.66, SD = .708$). For additional demographic information, see Table 4 and Figures 4–6.
Table 3. Results of Recruitment

<table>
<thead>
<tr>
<th>Category</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refused to participate</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Cognitive impaired</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Relocated to a residential care facility</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Unable to reestablish contact</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Unable to reschedule interview</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Too young</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Borderline diabetes</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No type 2 diabetes</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Agreed to participate</td>
<td>101</td>
<td>24</td>
</tr>
<tr>
<td>Total potential participants screened</td>
<td>158</td>
<td></td>
</tr>
</tbody>
</table>
Figure 5. Recruitment Sites

![Bar graph showing recruitment sites](image)

**Employment status.** All participants were at least the traditional retirement age of 65 years old. However, a sizeable number of participants decided to remain in the workforce full-time (8%), part-time (15%), or as a volunteer (14%).

Figure 6. Employment Status

![Bar graph showing employment status](image)
Insurance status. Overall, participants reported adequate health insurance benefits either through Medicare alone (16%), Medicare and supplemental coverage through Medicaid (31%), Medicare and a supplemental through the federal government (10%), Medicare and a supplemental through an individual policy (10%), or Medicare and a secondary policy through an employer group policy (38%). Although participants were eligible for Medicare based on their age, two participants reported that they were not eligible for Medicare and were currently employed to accumulate hours towards eligibility.

Household status. The majority of participants reported living alone (48%). However, 40% of participants reported living with one person. A small number of participants reported living with two or more people: two people (6.4%), three people (3.2%), four people (1.6%), and five or more (0.8%).

Procedures. Prior to participating in this study, prospective participants were screened over the telephone for cognitive impairment using the six-item screener (Callahan et al., 2002). Participants were given the option of being interviewed in their home or a private location of their choosing. The majority of interviews were conducted in the homes of participants (84.0%). A small number of participants elected to interview at their senior center (15.2%) and one participant (0.008%) elected to interview in his office.

Administration of instruments. All questions were read aloud to participants. Participants were given a three-ring binder with the instruments so they could read along. Participants were asked to respond to the 25-item SUGAAR by responding either yes or no to each of the questions.
Table 4. Demographic Characteristics of SUGAAR Study Sample ($n = 125$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>81.0</td>
</tr>
<tr>
<td>Male</td>
<td>19.0</td>
</tr>
<tr>
<td><strong>Age groups</strong></td>
<td></td>
</tr>
<tr>
<td>Young-old (65–74 years)</td>
<td>64.8</td>
</tr>
<tr>
<td>Middle-old (75–84 years)</td>
<td>32.8</td>
</tr>
<tr>
<td>Oldest-old (85 years and older)</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>6.4</td>
</tr>
<tr>
<td>Married</td>
<td>23.2</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>25.6</td>
</tr>
<tr>
<td>Widowed</td>
<td>44.8</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>8th grade education or less</td>
<td>4.8</td>
</tr>
<tr>
<td>Some high school</td>
<td>21.6</td>
</tr>
<tr>
<td>High school graduate or GED</td>
<td>28.8</td>
</tr>
<tr>
<td>Some college or technical school</td>
<td>36.0</td>
</tr>
<tr>
<td>College graduate</td>
<td>3.2</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Annual household income</strong></td>
<td></td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>8.8</td>
</tr>
<tr>
<td>$5,000–9,999</td>
<td>24.0</td>
</tr>
<tr>
<td>$10,000–14,999</td>
<td>24.0</td>
</tr>
<tr>
<td>$15,000–19,999</td>
<td>13.6</td>
</tr>
<tr>
<td>$20,000–29,999</td>
<td>8.8</td>
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<td>$30,000–39,999</td>
<td>5.6</td>
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<td>$40,000–49,999</td>
<td>5.6</td>
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<tr>
<td>$50,000–59,999</td>
<td>6.4</td>
</tr>
<tr>
<td>$60,000–69,999</td>
<td>0.8</td>
</tr>
<tr>
<td>$70,000 and over</td>
<td>2.4</td>
</tr>
</tbody>
</table>
**Recoding demographic variables.** For the purposes of data analysis, before beginning analyses for significance, some of the demographic variables were recoded due to the small number of participants in some categories, which reduced the number of categories for marital status, income, education, and age. Marital status was recoded from four categories to three: (1) not married, (2) married, and (3) widowed. The “not married” variable was recoded to include “never married” and “separated/divorced.” Education was recoded from six categories to two: (1) high school education or less and (2) more than high school education. Income was recoded from 10 variables to 2: (1) under $15,000 and (2) $15,000 and over. The income categories were chosen based on current poverty guidelines for two adults, which was $15,130 (HHS, 2012). Age was recoded into three categories: (1) young-old, (2) middle-old, and (3) oldest-old; however, because only three participants were represented in the oldest-old category, this group has been eliminated from additional analyses on age groups, except where indicated.

**Internal consistency.** Internal consistency of the SUGAAR was conducted in *Stata* (Statacorp, 2012) because of the dichotomous variables of the SUGAAR. Items 1, 9, and 10 were excluded because SUG items 1, 9, and 10 were not included in the analyses because all participants answered “yes” to those items. Results indicate a modest internal consistency (KR-20 = 0.23). The internal consistency was also assessed for the five aspects of diabetes self-care. The results indicate low reliability for each of the aspects: physician provider actions (0.26), medication adherence and self-monitoring of blood glucose (0.34), other self-care behaviors (0.36), risk behaviors (0.23), and psychosocial support and well-being (-0.15).

**Factor structure of the SUGAAR.** Factor analysis is a category of analytic techniques that can be used to examine a set of variables to determine the number of latent variables that measure a construct or constructs of interest (DeVellis, 2012; Kim & Mueller, 1978). EFA,
which is considered an appropriate first step in factor analysis when the factor structure is unknown (Pett, Lackey, & Sullivan, 2003), was conducted using Mplus version 6.0 (Muthén & Muthén, 2012). Before conducting the EFA, the 25 variables of the SUGAAR were examined to gain an understanding of the relationship of the variables with each other. Stata (Statacorp, 2012) was used to examine the tetrachoric correlations for multicollinearity. SUG items 1, 9, and 10 were not included in the analyses because all participants answered yes to those items. SUG21 was dropped from the analysis because it had a low negative item-rest correlation and multicollinearity with SUGAAR items 6, 7, 8, and 11.

In order to conduct a categorical EFA, the four steps in Mplus, as suggested by Muthén and Muthén (2009), were conducted. The four steps were an iterative process that included (1) choosing an estimator method, (2) determining the number of factors, (3) selecting a rotation, and (4) interpreting the solution.

**Step 1. Choosing an estimator method.** In an attempt to fit models to a matrix of tetrachoric correlations, weighted least square mean was chosen because it is generally considered the best estimation procedure for dichotomous variables (Muthén & Muthén, 2009).

**Step 2. Determine the number of factors.** To determine the number of factors based on the model test of fit, descriptive values were examined, which are the eigenvalues in a scree plot, residual variances, and model test of fit indices, which provided the root mean square error of approximation, comparative fit index, and Tucker-Lewis Index.

Initially, one factor appeared to account for the majority of the variance; however, further review of the data revealed issues with the model. After conducting the first EFA, SUG16 was dropped because of empty cells. Therefore, additional factor analyses were conducted, which included setting the number of factors to retain based on the preliminary results of the analysis.
This approach was not helpful because some factors did not converge, such as in the case of setting the number of factors to three. Also, attempts to determine the number of factors to retain was difficult because the scree plots were not interpretable. In addition, some of the models had negative residual variances, which automatically rendered some models invalid because of Heywood cases (Floyd & Widaman, 1995; Muthén & Muthén, 2009).

**Step 3. Select a rotation.** Factor rotation is essential to factor analysis because it allows for simplification and clarification of the data structure (Costello & Osborne, 2005). Because of correlation among the SUGAAR items, the GEOMIN (oblique) rotation (the default rotation in *Mplus*) was chosen. As a last attempt at factor rotation, a PROMAX rotation, which is also used on correlated variables, was also attempted; however, this rotation did not significantly improve the overall model of one factor.

**Step 4. Interpret solution.** Interpreting the solution was difficult, because it involved examining factor loadings for possible solutions and determining if the factors supported the theory (Muthén & Muthén, 2009). Because of theories related to factor analysis of behavioral variables (Costello & Osborne, 2005) and the multiple dimensions of diabetes self-care (Hill-Briggs & Gemmell, 2007), the expectation was that the SUGAAR would load on more than one factor; however, the result was one factor that demonstrated a poor test of model fit. Therefore, no adequate model fit was found.

**Convergent validity.** Convergent validity is a measure of the degree of which measures reportedly similar converge on each other. To assess the convergent validity of the SUGAAR, EFA was conducted in *Mplus* (Muthén & Muthén, 2012); however, the items of the SUGAAR failed to converge; thus, a good model of fit could not be found. However, correlations analyses
are another way to assess convergent validity. Therefore, SPSS (IBM, 2011) was also used to assess the convergent validity of the SUGAAR and selected items from the DCP (Fitzgerald et al., 1996). This approach was chosen because DCP developers scored and summed the items separately (Fitzgerald et al., 1996). SUGAAR questions were summed and categorized to correspond to the selected DCP items.

**Care ability.** For care ability, SUGAAR questions 11–22 and 25 were selected and summed to a new variable (NEWSUGCARE) because these questions were similar to the DCP care ability questions, which included questions Q11a–d. The results indicate the care ability items were not correlated when contrasted to the DCP care ability items ($r = .066, p > .05$).

**Negative attitudes towards diabetes.** The negative items on the SUGAAR included questions 23 and 24. The questions were chosen because they were similar to the DCP negative attitudes towards diabetes questions, which included DCP questions 1, 2, 3, 5, and 7. The results indicates a statistically significant modest negative correlation for the SUGAAR when contrasted to the DCP negative attitudes towards diabetes ($r = -.508, p < .001$).

**Test blood sugar.** “Test blood sugar” (SUG11) was contrasted to the DCP profile demographic form (Fitzgerald et al., 1996) question “test blood sugar” (Q12). The results indicate a statistically significant modest correlation for SUG11 when contrasted to the DCP demographic question 12 ($r = .368, p < .001$).

**Keep records of blood sugar.** “Keep records of blood sugar” (SUG12) was contrasted to the DCP profile demographic form (Fitzgerald et al., 1996) question keep record of blood sugar (Q12c). The results indicate a statistically significant modest correlation for SUG12 when contrasted to the DCP demographic question 12c ($r = .440, p < .001$).
**SUGAAR scores and variances.** The SUGAAR scores of participants based on the three age groups were compared using analysis of variance (ANOVA). Scores range from 0 to 25. A low score indicates poor diabetes self-care whereas a high score indicates excellent diabetes self-care. Participants’ SUGAAR scores ranged from 12 to 24 ($M = 18.12, SD = 2.17$). Results indicate a significant difference in SUGAAR scores ($F(2,122) = 3.38, p = .037$). The oldest-old participants had the lowest mean SUGAAR score based on age groups ($M = 17.66, SD = 1.52$). The middle-old participants had the highest SUGAAR score ($M = 18.82, SD = 1.93$). The youngest-old participants had a SUGAAR score of 17.77 ($SD = 2.23$).

Independent samples $t$-tests were conducted to compare participants’ SUGAAR score to demographic variables: age (young-old and middle-old), gender, education, income, and insurance status (i.e., dually eligible for Medicare and Medicaid).

**Age.** Young-old participants had a lower SUGAAR score ($M = 17.77, SD = 2.23$) than middle-old participants ($M = 18.82, SD = 1.93$). Results indicate a significant difference in SUGAAR scores between young-old participants and middle-old participants ($t = -2.68, df = 91.44, p = .009$).

**Gender.** Female participants had a lower SUGAAR score ($M = 18.1, SD = 0.21$) than male participants ($M = 18.2, SD = 0.47$); however, there was no significant difference between the SUGAAR scores of female and male participants.

**Education.** Participants with a high school education or less had a lower SUGAAR score ($M = 18.1, SD = 2.4$) than participants with more than a high school education ($M = 18.2, SD = 0.25$), although there was no significant difference between the SUGAAR scores of participants with high school education or less and participants with more than high school education.
**Income.** Participants who reported annual earnings of $15,000 or more had lower SUGAAR scores ($M = 18.01, SD = 2.31$) than participants who reported annual earnings of less than $15,000 ($M = 18.19, SD = 2.06$). However, there was no significant difference between the SUGAAR scores of participants with annual earnings of $15,000 or more and participants with annual earnings under $15,000.

**Dual eligibility.** Participants who reported not having dual eligibility for Medicare and Medicaid had lower SUGAAR scores ($M = 18.08, SD = 2.26$) than participants who reported dual eligibility ($M = 18.15, SD = 2.03$). However, there was no significant difference between the SUGAAR scores of participants without dual eligibility and those with dual eligibility.

**Marital status.** Participants’ SUGAAR scores based on marital status were compared using ANOVA. No significant difference was found ($F(2, 2.59) = .546, p > .05$). The SUGAAR mean scores of participants did not differ significantly. Widowed participants had the highest SUGAAR scores ($M = 18.32, SD = 2.21$). Participants who were not married, which included participants who were never married, separated, or divorced, had the lowest SUGAAR mean score ($M = 17.85, SD = 1.87$). Married participants had a SUGAAR score of $18.10$ ($SD = 2.48$).

**Participants’ responses to the SUGAAR.** Participants’ responses to the SUGAAR questions are provided according to the five aspects of diabetes self-care: (a) physician and provider actions, (b) medication and self-monitoring blood glucose, (c) other self-care behaviors, (d) risk behaviors, and (e) psychosocial support and well-being.

**Physician and provider actions.** SUGAAR questions 2–6 are actions related to diabetes self-care that should fall under the responsibility of primary care physicians (see Table 5). Chi-square tests of independence were performed to examine the relationships among each of the SUGAAR items and the following demographic variables: age, gender, education, income,
marital status, and dual eligibility. No significant relationships were found for age, gender, education, marital status, or dual eligibility on any of the physician and provider actions. However, income was significantly related to pupil dilation ($X^2 = 4.47, df = 1, p = .034$).

Participants reporting annual earnings of $15,000 or more were more likely to report having their pupils dilated in the past 12 months (92.6%) than participants reporting annual earnings of less than $15,000 (78.9%).

**Table 5. Participants’ Responses to Physician and Provider Actions**

<table>
<thead>
<tr>
<th>Questions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUGAAR2. “In the past 12 months, I had my pupils dilated.”</td>
<td>84.8</td>
</tr>
<tr>
<td>SUGAAR3. “In the past 12 months, I have seen a foot doctor.”</td>
<td>65.6</td>
</tr>
<tr>
<td>SUGAAR4. “In the past 12 months, I had diabetes self-management education.”</td>
<td>29.6</td>
</tr>
<tr>
<td>SUGAAR5. “In the past 12 months, I have seen a registered dietitian.”</td>
<td>42.4</td>
</tr>
<tr>
<td>SUGAAR6. “In the past months, I had the -month blood sugar test (HbA1c).”</td>
<td>91.2</td>
</tr>
</tbody>
</table>

To further examine the results of the chi-square analysis on income and pupil dilation, a logistic regression was conducted to predict participants’ self-report of having their pupils dilated in the past 12 months. The number of years with diabetes and age (continuous) were added along with income as predictors. Although diabetes and age were not significant in the chi-square analyses, both were added to model because they are known to influence diabetes self-care. The test of the full model against a constant only model was not statistically significant. Further examination of the Wald criterion demonstrated that income did not make a significant contribution to prediction ($p = .063$) when controlling for years of diabetes and age.
Medication and self-monitoring of blood glucose. SUGAAR questions 9, 11, and 12 measure medication and self-monitoring of blood glucose (see Table 6). Chi-square tests of independence on SUGAAR questions 11 and 12 were performed to examine the relationship between each of the following demographic variables: age, gender, education, income, marital status, and dual eligibility. SUGAAR question 9 was not included in the analysis because all participants answered “yes” to “I take medicine, diet or exercise to control my sugar diabetes as instructed by my doctor.” Significance relationships were found for gender and “test blood sugar” and dual eligibility and “test blood sugar.” However, given the small sample size of male participants and dually eligible participants, the Fisher’s Exact Test (FET) p-value was used to analyze the results.

Table 6. Participants’ Responses to Medication and Self-Monitoring of Blood Glucose

<table>
<thead>
<tr>
<th>Questions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUGAAR9. “I take medicine, diet or exercise to control my sugar diabetes as instructed by my doctor.”</td>
<td>100.0</td>
</tr>
<tr>
<td>SUGAAR11. “I test my blood sugar as instructed by my doctor.”</td>
<td>88.8</td>
</tr>
<tr>
<td>SUGAAR12. “I keep records of my blood sugar readings.”</td>
<td>88.8</td>
</tr>
</tbody>
</table>

Gender. The FET was used to analyze the relationship between gender and “test blood sugar” because one cell (25.0%) had an expected count of less than five. The results of the FET indicate a significant relationship between gender and “test blood sugar” (p = < .001). Females were more likely to self-report testing their blood sugar (88.1%) than males (54.2%).

Dual eligibility. The FET was used to analyze the relationship between dual eligibility and “test blood sugar” because one cell (25.0%) had an expected count of less than five. The results of FET indicate a significant relationship between dual eligibility and “test blood sugar”
(\(p = .037\)). Participants who self-report dual eligibility were more likely to self-report testing their blood sugar (97.4%) than participants who self-report no dual eligibility (84.5%).

To further examine the results from the chi-square analyses on “test blood sugar,” a logistic regression was conducted to predict self-report of testing blood sugar using gender, dual eligibility, and years of diabetes as predictors. Gender and dual eligibility were added to the model because of their significance. Years of diabetes was added to the model to control for its effect on testing blood sugar.

A test of the full model against a constant only model was statistically significant (\(X^2 = 10.534, \text{df} = 3, p = .015\)). Further examination of the full model revealed a Nagelkerke’s \(R^2\) of .162, which indicates a weak relationship between the predictors and having “test blood sugar.” Prediction success overall was 88.8% (0% of those who do not test blood sugar and 100% of those who test blood sugar), which did not improve and remained the same as the constant only model. However, the Wald criterion demonstrated that gender made a significant contribution to prediction (\(p = .024\)). The odds ratio (4.10) with 95% confidence [1.20, 14.80] indicates female participants were four times as likely to report having “test blood sugar” than male participants after controlling for years of diabetes and dual eligibility.

**Other self-care behaviors.** SUGAAR questions 1, 7, 8, 10, and 13–20 consist of prevention and management of diabetes complications through physical activity, medication management, nutrition, and immunizations (see Table 7). SUGAAR questions 1 and 10 were not included in the analyses because all participants answered “yes” to both questions. Chi-square tests of independence were performed on 10 of the 12 other self-care behaviors questions to examine the relationship between each of the following demographic variables: age (young-old and middle-old), gender, education, income, marital status, and dual eligibility.
No statistically significant relationships were found for marital status and dual eligibility. However, age was significantly related to strength training and trying to lose weight; gender was significantly related to “check feet” and “doctor has told me to lose some weight,” and “trying to lose weight”; education was significantly related to strength training; and income was significantly related to having a low-fat diet.

**Age and strength training.** The chi-square test of independence comparing age and strength training was significant ($X^2 = 3.98, df = 1, p = .046$). Young-old participants were more likely to report strength training (70.8%) than middle-old participants (29.2%).

To further examine the results from chi-square test of independence, a logistic regression was conducted to predict self-report of strength training using age and years of diabetes as predictors. Age was added as a predictor because of its significance. Years of diabetes was added to control for strength training.

A test of the full model against the constant only model was not statistically significant ($X^2 = 3.83, df = 2, p = .147$). Therefore, age is no longer a significant after controlling for years of diabetes.

**Age and trying to lose weight.** Age was significantly related with “trying to lose weight” ($X^2 = 9.52, df = 1, p = .002$). Young-old participants were more likely to report trying to lose weight (76.5%) than middle-old participants (48.8%).

To further examine the results from chi-square test of independence, a logistic regression was conducted to predict self-report of “trying to lose weight” using age and years of diabetes as predictors. Because age was a significant predictor of “trying to lose weight,” it was added to the model. Years of diabetes was also added to control for trying to lose weight.
Table 7. Participants’ Self-Report of Other Self-Care Behaviors

<table>
<thead>
<tr>
<th>Questions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUGAR1. “In the past 12 months, I have visited my primary care doctor for my sugar diabetes.”</td>
<td>100.0</td>
</tr>
<tr>
<td>SUGAAR7. “I had the flu shot for this year.”</td>
<td>66.4</td>
</tr>
<tr>
<td>SUGAAR8. “I had a pneumonia shot after my 65th birthday.”</td>
<td>71.2</td>
</tr>
<tr>
<td>SUGAAR10. “I take other medicine as instructed by my doctor.”</td>
<td>100.0</td>
</tr>
<tr>
<td>SUGAAR13. “I check my feet every day.”</td>
<td>81.6</td>
</tr>
<tr>
<td>SUGAAR14. “My doctor has told me to lose some weight.”</td>
<td>56.0</td>
</tr>
<tr>
<td>SUGAAR15. “I am trying to lose some weight.”</td>
<td>67.2</td>
</tr>
<tr>
<td>SUGAAR16. “I do strength training with bands or weights three times a week.”</td>
<td>21.6</td>
</tr>
<tr>
<td>SUGAAR17. “I walk or do other aerobic exercise for 30 minutes at least five times a week.”</td>
<td>46.4</td>
</tr>
<tr>
<td>SUGAAR18. “I limit the amount of fat in my diet.”</td>
<td>88.0</td>
</tr>
<tr>
<td>SUGAAR19. “I limit carbohydrates and starches in my diet.”</td>
<td>85.6</td>
</tr>
<tr>
<td>SUGAAR20. “I use sugar substitutes or sweeteners.”</td>
<td>82.4</td>
</tr>
</tbody>
</table>

A test of the full model against the constant only model was statistically significant ($X^2 = 9.32$, $df = 3$, $p = .009$). Further examination of the full model revealed a Nagelkerke’s $R^2$ of .102, which indicates a weak relationship between the predictors and “trying to lose weight.” Prediction success overall was 68.0% (52.5% of those not trying to lose weight and 75.6% of those trying to lose weight), which did slightly improve over the constant only model of 81.6% (0% of those not trying to lose weight and 100% of those trying to lose weight). The Wald criterion demonstrated that age made a significant contribution to prediction ($p = .003$). The odds ratio (3.41) with 95% confidence [1.51, 7.70] indicates youngest-old participants were
approximately three times as likely to report trying to lose weight than middle-old participants after controlling for years of diagnosed diabetes.

*Gender and check feet.* The FET was used to analyze the relationship between gender and “check feet” because one cell (25%) had an expected count less than five. However, the FET was statistically significant ($p = < .001$). Females were more likely to report checking feet (88.1%) than males (54.2%). Because gender was a significant predictor of checking feet, it was added to the model along with years of diabetes to control for checking feet.

To further examine the results from FET, a logistic regression was conducted to predict self-report of checking feet using gender and years of diabetes as predictors. A test of the full model against a constant only model was statistically significant ($X^2 = 13.687, df = 2, p = .001$). Further examination of the full model revealed a Nagelkerke’s $R^2$ of .169, which indicates a weak relationship between the predictors and checking feet. Prediction success overall was 82.4% (21.7% of those who do not check feet and 96.1% of those who do check feet), which did slightly improve the full model than the prediction of the model of 81.6% (0% of those who do not check feet and 100% of those who do check feet). The Wald criterion demonstrated that gender made a significant contribution to prediction ($p = < .001$). The odds ratio (6.67) with 95% confidence [2.36, 18.18] indicates were almost seven times as likely to report checking their feet than male participants after controlling for years of diabetes. However, given the results of the confidence intervals, this finding should be interpreted with caution.

*Gender and lose weight.* Gender was significantly related with “doctor has told me to lose weight” ($X^2 = 6.193, df = 1, p = .013$). Females were more likely to report that a doctor told them to lose some weight (61.4%) than male participants (33.3%).
To further examine the results from chi-square test of independence, a logistic regression was conducted to predict self-report of “doctor has told me to lose some weight” using gender and years of diabetes as predictors. A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between participants who self-report their doctor told them to lose some weight and participants who self-report their doctor had not told them to lose some weight ($X^2 = 6.23, df = 2, p = .044$). However, the Nagelkerke’s $R^2$ of .065 indicated a weak relationship between gender and having been told by their doctor to lose some weight. Prediction success overall was 62.4 (88.6 of those who were told to lose some weight and 29.1 of those who were not told to lose some weight). The Wald criterion demonstrated that gender was a significant predictor ($p = .015$). The Wald criterion demonstrated that female participants were less likely than male participants to have been told by their doctors to lose some weight with 95% confidence [1.24, 8.17]. The odds ratio (3.19) indicates female participants were more than three times as likely as male participants to have been told by their doctors to lose some weight after controlling for years of diabetes.

**Gender and trying to lose some weight.** Gender was significantly related to “trying to lose some weight” ($X^2 = 8.78, df = 1, p = .003$). Female participants were more likely to report “trying to lose some weight” (73.3%) than male participants (41.7%). To further examine the results from chi-square test of independence, a logistic regression was conducted to predict self-report of “trying to lose some weight” using gender and years of diabetes as predictors. Because gender was significant it was added to the model as a predictor and was added to control for “trying to lose some weight.”

A test of the full model against a constant only model was statistically significant ($X^2 = 8.78, df = 1, p = .003$). Further examination of the full model revealed a Nagelkerke’s $R^2$ of .094,
which indicated a weak relationship between the predictors and “trying to lose weight.”

Prediction success overall was 70.4% (88.1% of those who were trying to lose weight and 34.1% of those who were not trying to lose weight), which was a slight improvement over the constant only model of 67.2% (100% of those who were trying to lose weight and 0% of those who were not trying to lose weight). The Wald criterion demonstrated that gender made a significant contribution to prediction ($p = 0.005$) with 95% confidence [1.50, 9.61]. The odds ratio (3.80) indicates male participants were approximately four times (3.80) as likely as female participants to try losing weight after controlling for years of diabetes.

*Education and strength training.* Education was significantly related to strength training ($X^2 = 4.96, df = 1, p = .026$). Participants with high school education or less were more likely to report strength training (29.0%) than participants with more than a high school education (12.5%).

To further examine the results from chi-square test of independence, a logistic regression was conducted to predict self-report of strength training using education and age as predictors. Age as a predictor was chosen over years of diabetes because strength training is an activity that may become more difficult with age and therefore more likely than years of diabetes to influence self-care.

A test of the full model against a constant only model was statistically significant ($X^2 = 10.30, df = 2, p = .006$). Further examination of the full model revealed a Nagelkerke’s $R^2$ of .122, which indicates a weak relationship between the predictors and strength training. Prediction success overall was 78.4% (97 of those who self-reported no strength training and 26 of those who self-reported strength training), which was a slight improvement over the constant only model in terms of predicting who would self-report “no strength training” or “strength training.”
However, the overall percentage for prediction remained the same as 78.4%. The Wald criterion demonstrated that education made a significant contribution to prediction \((p = .043)\) with 95% confidence \([1.03, 7.10]\). The odds ratio \((2.70)\) indicates participants who self-reported a high school education or less were approximately three times as likely as participants who self-reported a high school education or more to report strength training after controlling for age.

**Income and low-fat diet.** Income was significantly related to a low-fat diet \((X^2 = 3.82, df = 1, p = .050)\). Participants who reported annual earnings of under $15,000 were more likely to report a low-fat diet (93.0%) than participants who reported annual earnings of $15,000 and more (81.5%).

To further examine the results of the chi-square analysis, a logistic regression was conducted to predict self-report of a low-fat diet among participants using income and years of diabetes as predictors. Income was added as to the model as a predictor because it was significant. Years of diabetes was added to the model to control for years of diabetes on a low-fat diet. A test of the full model against a constant only model was not statistically significant \((X^2 = 4.51, df = 2, p = .105)\).

**Risk behaviors.** Risk behaviors were assessed with SUGAAR questions 21 and 22 (see Table 8). The chi-square test of independence using age, gender, income, education, marital status, and dual eligibility were conducted. The results indicate no statistically significant relationship between the risk behaviors and gender, income, education, marital status, or dual eligibility.
**Table 8. Participants’ Responses to Risk Behaviors**

<table>
<thead>
<tr>
<th>Questions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUGAAR21. “I smoke cigarettes, a pipe a cigar, chew tobacco, or dip snuff.”</td>
<td>91.2</td>
</tr>
<tr>
<td>SUGAAR22. “I sometimes drink beer, wine, or alcohol.”</td>
<td>80.0</td>
</tr>
</tbody>
</table>

**Psychosocial support and well-being.** Psychosocial support and well-being were assessed with SUGAAR questions 23–25 (see Table 9). No statistically significant relationships were found for age, income, education, marital status, or dual eligibility. However, a statistically significant relationship was found for gender and negative attitudes towards diabetes ($X^2 = 4.17$, $df = 1, p = .041$). Female participants were more likely to report negative attitudes towards diabetes (33.7%) than male participants (12.5%).

To further examine the results of the chi-square analysis, a logistic regression was conducted to predict negative attitudes towards diabetes using gender and years of diabetes as predictors. Gender was added to the model because it was significant. Years of diabetes was added to the model to control for negative attitudes towards diabetes.

A test of the full model against a constant only model was statistically significant ($X^2 = 7.40$, $df = 2, p = .025$). Further examination of the full model revealed a Nagelkerke’s $R^2$ of .082, which indicates a weak relationship between the predictors and psychosocial well-being. Prediction success overall was 71.2% (5.4% of those who self-reported negative feelings toward diabetes and 98.9% of those who self-reported no negative feelings toward diabetes), which was a slight improvement over the constant only model of 70.4% (0% of those who self-reported negative feelings toward diabetes and 100% of those who self-reported no negative feelings toward diabetes). The Wald criterion demonstrated that gender made a significant contribution to prediction ($p = .043$) with 95% confidence [.071, .959]. The odds ratio (.261) indicates male
participants were less than three tenths as likely as female participants to self-report negative feelings toward diabetes compared to female participants after controlling for years of diabetes.

**Table 9. Participants’ Responses to Psychosocial Support and Well-Being**

<table>
<thead>
<tr>
<th>Questions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUGAAR23. “I sometimes feel down, sad, blue, depressed, stressed, worried, or nervous about my sugar diabetes.”</td>
<td>29.6</td>
</tr>
<tr>
<td>SUGAAR24. “I need help with my sugar diabetes from my family and friends.”</td>
<td>19.2</td>
</tr>
<tr>
<td>SUGAAR25. “I get help with my sugar diabetes from my family and friends.”</td>
<td>78.4</td>
</tr>
</tbody>
</table>

**Diabetes Care Profile**

Fifteen questions from three sections of the DCP (Fitzgerald et al., 1996) were administered to participants, which included frequency of low blood sugar episodes, positive and negative attitudes toward diabetes and life, and diabetes care ability.

Frequencies were examined to determine the rate at which participants self-reported diabetes control, positive attitudes about life, and negative attitudes towards diabetes. Chi-square tests of independence were performed to examine the relationship between self-report of blood sugar control and demographic variables: age, gender, education, income, marital status, and dual eligibility. The chi-square tests of independence revealed no statistically significant relationships between self-report of blood sugar control and age, gender, education, income, marital status, or dual eligibility.

**Blood sugar control.** DCP control was recoded from six to two categories: control and no control. This recoding was necessary because of the limited number of responses in some of the categories. Participants who reported one or more days of low blood sugar were considered not in control. The majority of participants (56.0%) reported good control of their blood sugar in
the last month. The chi-square tests of independence revealed no statistically significant relationships between self-report of blood sugar control and age, gender, education, income, marital status, or dual eligibility.

**Positive attitudes about life.** Participants were asked a set of five Likert-type questions related to positive attitudes about life. The answers were summed with a possible maximum score of 25 and a possible minimum score of 5. A high score indicates high positive attitudes. Participants had a mean score of 20.16 (SD = 2.87), which indicated good positive attitudes about life. Individual examination of each of the questions revealed additional information about participants’ attitudes about life. The majority of participants reported feeling satisfied with their lives (81.6%), the ability to do just about anything they set out to do (88%), diabetes not affecting their lives at all (52.8%), being well off all things considered (88.8%), and things are going very well for right now (91.2%).

Independent samples *t*-test were conducted to compare participants’ positive attitudes mean score to demographic variables: age, gender, education, income, and dual eligibility; ANOVA was conducted to examine marital status.

**Age.** Young-old participants had a lower positive attitudes score (*M* = 19.70, *SD* = 2.72) than middle-old participants (*M* = 21.07, *SD* = 3.06). Results indicate a significant difference in positive attitudes scores between young-old participants and middle-old participants (*t* = -2.42, *df* = 72.62, *p* = .018).

**Gender.** Male participants had a higher positive attitudes scores (*M* = 20.20, *SD* = 2.48) than female participants (*M* = 20.15, *SD* = 2.18); however, the difference in positive attitude scores between male and females was not significant.
**Education.** Participants who had a more than a high school education had lower positive attitudes scores ($M = 20.16, SD = 2.75$) than participants who had a high school education or less ($M = 20.17, SD = 2.98$). However, there was no significant difference in positive attitudes scores between participants who had a high education or less and those participants who had more than a high school education.

**Income.** Participants who self-reported annual earnings of under $15,000 or more had lower positive attitudes scores ($M = 20.04, SD = 2.99$) than participants who reported annual earnings of $15,000 or more ($M = 20.33, SD = 2.71$). However, there was no significant difference in positive attitudes scores between participants who reported annual earnings of less than $15,000 and participants who reported annual earnings of $15,000 and more.

**Dual eligibility.** Participants who reported dual eligibility had lower positive attitude scores ($M = 19.61, SD = 3.18$) than participants who reported no dual eligibility ($M = 20.38, SD = 2.71$). However, there was no significant difference in positive attitudes scores between participants who reported dual eligibility and participants who reported no dual eligibility.

**Marital status.** The positive attitude scores of participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, .122) = .195, p > .05$). Participants from the three marital status groups positive attitude scores did not differ significantly. Widowed participants had the highest positive attitudes score of 20.50 ($SD = 2.81$). Participants who were not married, which included participants who had never married, separated, or been divorced, had the lowest positive attitudes score of 19.50 ($SD = 3.09$). Married participants had a positive attitudes score of 20.44 ($SD = 2.57$).

**Negative attitudes towards diabetes.** Participants were asked a set of five Likert-type questions related to negative attitudes toward diabetes. The answers were summed with a
possible maximum score of 25 and a possible minimum score of 5. A low score indicates high
negative attitudes toward diabetes. Participants had a negative attitudes mean score of 10.12 (SD = 3.63), which indicated high negative attitudes towards diabetes.

Sixty-eight percent of participants reported being afraid of their diabetes; 64% reported
they find it hard to believe that they really have diabetes; approximately 78% reported they feel
unhappy and depressed because of diabetes; 80% reported they do not feel as good as others
because of diabetes; and 71% reported they find it hard to do all the things they have to do for
their diabetes.

Independent samples t-test were conducted to compare participants’ mean score on
negative attitudes towards diabetes to the demographic variables age, gender, education, income,
and dual eligibility. ANOVA was conducted to examine marital status.

Age. Young-old participants had a higher negative attitudes toward diabetes score (M =
10.24, SD = 3.72) than middle-old participants (M = 9.80, SD = 3.55). However, the differences
in negative attitudes toward diabetes scores between young-old and middle-old participants was
not significant.

Gender. Female participants had lower negative attitudes toward diabetes scores (M =
10.09, SD = 3.51) than male participants (M = 10.20, SD = 4.18). However, there was no
significant difference in negative attitudes toward diabetes scores between females and males.

Education. Participants who reported more than a high school education had lower
negative attitudes toward diabetes mean scores (M = 9.82, SD = 3.23) than participants who had
a high school education or less (M = 10.36, SD = 3.92). However, there was no significant
difference in negative attitudes toward diabetes scores between participants who had a high
education or less and those participants who had more than a high school education.
**Income.** Participants who self-reported annual earnings of $15,000 or more had lower negative attitudes toward diabetes scores ($M = 9.66, SD = 3.04$) than participants who had annual earnings of under $15,000 ($M = 10.46, SD = 4.00$). However, there was no significant difference in negative attitudes toward diabetes scores between participants who earned $15,000 and more and participants who earned under $15,000.

**Dual eligibility.** Participants who reported no dual eligibility had lower negative attitudes toward diabetes scores ($M = 9.90, SD = 3.55$) than participants who reported dual eligibility ($M = 10.76, SD = 3.76$). However, there was no significant difference in negative attitudes toward diabetes scores between participants who reported no dual eligibility and participants who reported dual eligibility.

**Marital status.** Participants’ mean scores participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, 1.25) = .882, p > .05$). Scores of participants from the three marital groups did not differ significantly. Married participants had the lowest score ($M = 9.82, SD = 3.52$). Participants who were not married, which included participants who had never been married, separated, or divorced, had the highest score ($M = 10.25, SD = 4.03$). Widowed participants had a mean score of 10.17 ($SD = 3.43$).

**Diabetes care ability.** Participants were asked a set of four Likert-type questions about their ability to perform basic diabetes self-care behaviors, such as weight management. The answers were summed with a possible maximum score of 20 and a possible minimum score of 4. A high score indicates good care ability and a low score indicates poor care ability. Participants had a mean score of 16.23 ($SD = 2.16$), which indicated good diabetes care ability.

Individual examination of each of the four Likert-type questions revealed additional insights about the care ability of participants. Eighty percent of participants reported control of
their blood glucose; 61% of participants reported control of their weight; approximately 97% of
participants reported the ability to do the things they need to do for their diabetes, including diet,
medicine, and exercise; and approximately 93% reported they handle their feelings, including
fear, worry, and anger, about their diabetes.

Independent samples t-test were conducted to compare participants’ care ability mean score to the demographic variables age, gender, education, income, marital status, and dual eligibility. ANOVA was conducted to examine marital status.

**Age.** Young-old participants had a lower care ability score (\(M = 15.92, SD = 2.18\)) than middle-old participants (\(M = 16.82, SD = 2.09\)). Results indicate a significant difference in scores between young-old participants and middle-old participants (\(t = -2.21, df = 83.62, p = .030\)).

**Gender.** Female participants had a lower care ability score (\(M = 16.08, SD = 2.14\)) than male participants (\(M = 16.83, SD = 2.18\)). However, there was no significant difference in care ability mean scores between females and males.

**Education.** Participants who reported more than an education had lower care ability scores (\(M = 15.94, SD = 2.16\)) than participants who had a high school education or less (\(M = 16.46, SD = 2.15\)). However, there was no significant difference in mean scores between participants who had more than a high school education and those who had a high education or less.

**Income.** Participants who self-reported annual earnings of $15,000 or more had lower care ability scores (\(M = 16.20, SD = 2.19\)) than participants who had annual earnings of under $15,000 (\(M = 16.25, SD = 2.16\)). However, there was no significant difference in scores between participants who earned $15,000 or more and participants who earned less than $15,000.
Dual eligibility. Participants who reported dual eligibility had lower care ability scores ($M = 16.07, SD = 2.27$) than participants who reported no dual eligibility ($M = 16.28, SD = 2.14$). However, there was no significant difference in scores between participants who reported dual eligibility and those who reported no dual eligibility.

Marital status. The care ability mean scores of participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, .215) = .806, p > .05$). The mean scores of participants from the three marital groups did not differ significantly. Widowed participants had the highest score ($16.35; SD = 2.21$). Married participants had the lowest score ($M = 16.03; SD = 1.70$). Participants who were not married, which included participants who had never been married, separated, or divorced, had a score of 16.20 ($SD = 2.43$).

The Multidimensional Functional Assessment of Older Adults (OARS)

The OARS (Fillenbaum, 1988) was administered to participants to assess their mental health, physical health, and functional status. There was a total of 81 questions, which were a combination of Likert-type, open-ended, and dichotomous questions.

Participants’ self-report of mental health. Participants were asked 20 questions related to mental health from the OARS (Fillenbaum, 1988). Five questions were Likert-type and 15 questions were dichotomous.

The majority of participants reported they hardly ever worry about things (56%). However, approximately 35% of participants reported worrying about things fairly often (34.4%), and 10% of participants reported worrying very often (9.60%).
Participants were asked if they found life exciting, pretty routine, or dull. The majority of participants (52.8%) reported they found life pretty routine (see Figure 7). Participants were also asked about their satisfaction with life and their mental health (see Figures 8–10).

**Participants’ self-report of general well-being.** Participants were asked 15 dichotomous mental health questions from the OARS (Fillenbaum, 1988) concerning general well-being. Responses for the dichotomous general well-being questions ranged from 0 to 15, with a high score indicating poor general well-being (see Table 10). The majority of participants reported good general well-being. However, a sizeable number of participants reported some difficulties.

The general well-being mean score was 5.12 (SD = 1.89). Independent samples t-tests were conducted to compare participants’ mean score to the demographic variables age, gender, education, income, marital status, and dual eligibility. ANOVA was conducted to examine marital status.

**Age.** Young-old participants had a higher general well-being score (M = 5.24, SD = 2.01) than middle-old participants (M = 4.87, SD = 1.64). However, there was no significant difference in mean scores between young-old and middle-old participants.

**Gender.** Male participants had lower general well-being scores (M = 4.83, SD = 1.37) than female participants (M = 5.18, SD = 1.99). However, there was no significant difference in scores between females and males.

**Education.** Participants who reported more than a high school education had lower general well-being scores (M = 4.87, SD = 1.89) than participants who had a high school education or less (M = 5.31, SD = 1.87). However, there was no significant difference in general
well-being mean scores between participants who had a high education or less and those who had more than a high school education.

Figure 7. Participants’ General Feelings towards Life

Figure 8. Participants’ Satisfaction with Life
**Income.** There was a significant difference between the general well-being scores of the two income groups ($t(122) = 2.61, p = .010$). Participants who reported annual earnings of $15,000 or more had a significantly lower score ($M = 4.65, SD = 1.44$) than participants who reported annual earnings of less than $15,000 ($M = 5.48, SD = 2.11$).

**Dual eligibility.** Participants who reported no dual eligibility had lower general well-being score mean scores ($M = 4.94, SD = 1.65$) than participants who reported dual eligibility ($M = 5.56, SD = 2.31$). However, there was no significant difference in mean scores between participants who reported no dual eligibility and those participants who reported dual eligibility.

**Marital status.** The general well-being mean scores of participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, .405) = .668, p > .05$). The scores of participants from the three marital groups did not differ significantly. Married participants had the lowest mean score (4.86; $SD = 1.59$). Participants who were not married, which included participants who had never been married, separated, or divorced, had the highest mean score (5.27; $SD = 1.90$). Widowed participants had a mean score of 5.14 ($SD = 1.96$).

A general linear model (GLM) was conducted to further examine the relationship of income on general well-being. Years of diabetes and age were added to the model as covariates ($r = .265, p = .003$) to control their effect on general well-being. The results of the analysis indicate no significant relationship between income and general well-being among participants.
Figure 9. Participants’ Mental Health Rating

![Bar chart showing mental health ratings.](image)

Figure 10. Participants’ Mental Health Compared to Five Years Ago

![Bar chart showing mental health changes.](image)
<table>
<thead>
<tr>
<th>Questions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you wake up fresh and rested most mornings?</td>
<td>76.0</td>
</tr>
<tr>
<td>Is your daily life full of things that keep your interested?</td>
<td>88.8</td>
</tr>
<tr>
<td>Have you, at times, very much wanted to leave home?</td>
<td>7.20</td>
</tr>
<tr>
<td>Does it seem that no one understands you?</td>
<td>18.4</td>
</tr>
<tr>
<td>Have you had periods of days, weeks, or months when you couldn’t “get going”?</td>
<td>22.40</td>
</tr>
<tr>
<td>Is your sleep fitful and disturbed?</td>
<td>37.6</td>
</tr>
<tr>
<td>Are you happy most of the time?</td>
<td>92.8</td>
</tr>
<tr>
<td>Are you being plotted against?</td>
<td>2.40</td>
</tr>
<tr>
<td>Do you feel useless at times?</td>
<td>12.0</td>
</tr>
<tr>
<td>During the past few years, have you been well most of the time?</td>
<td>84.0</td>
</tr>
<tr>
<td>Do you feel weak all over much of the time?</td>
<td>9.60</td>
</tr>
<tr>
<td>Are you troubled by headaches?</td>
<td>12.0</td>
</tr>
<tr>
<td>Have you had difficulty in keeping your balance in walking?</td>
<td>26.4</td>
</tr>
<tr>
<td>Are you troubled by your heart pounding and by a shortness of breath?</td>
<td>16.8</td>
</tr>
<tr>
<td>Even when you are with people, do you feel lonely much of the time?</td>
<td>5.60</td>
</tr>
</tbody>
</table>
Physical health. Participants were asked a series of questions about health care utilization, chronic illnesses, prescription usage, and physical ability. The questions were Likert-type, open-ended, and dichotomous.

Health care utilization. Participants were asked about their health care utilization over the past six months. Independent samples t-tests were conducted to compare utilization mean scores to the demographic variables age, gender, education, income, and dual eligibility. ANOVA was conducted to examine marital status.

Age. Young-old participants reported visiting the doctor less (M = 3.43, SD = 1.74) than middle-old participants (M = 3.85, SD = 2.13). There were no significant differences in the number of doctor visits between young-old participants and middle-old participants. Young-old participants reported longer hospital stays in the last six months (M = 1.20, SD = 2.64) than middle-old participants (M = .512, SD = 2.66). However, there were no significant difference in hospital stays between young-old and middle-old participants.

Young-old participants reported fewer days in rehabilitation (M = .382, SD = 2.57) than middle-old participants (M = .512, SD = 3.27). However, there was no significant difference in the number of rehabilitation days between young-old and middle-old participants.

Gender. Participants reported visiting the doctor approximately four times with female participants reporting slightly more doctor visits (M = 3.65, SD = 1.97) than male participants (M = 3.16, SD = 1.57). Female participants also reported slightly longer hospital stays (M = .97, SD = 2.66) and rehabilitation days (M = .51, SD = 3.09) than male participants (M = .91, SD = 2.58; M = 0, SD = 0). However, there were no significant differences in utilization scores between female and male participants.
Education. Participants with more than a high school education reported more doctor visits ($M = 3.92$, $SD = 2.07$) compared to those with a high school education or less ($M = 3.26$, $SD = 1.71$). However, the difference in the number of doctor visits was not statistically significant, but approached significance at the .05 level ($p = 0.56$).

Income. Participants who self-reported annual incomes over $15,000 reported more doctor visits ($M = 3.57$, $SD = 1.79$) compared to participants who self-reported incomes of $15,000 or less ($M = 3.54$, $SD = 1.99$). However, there were no significant differences in the number of doctor visits between participants who self-reported annual incomes over $15,000 and those who self-reported annual income of $15,000 or less.

Dual eligibility. Participants who self-reported dual eligibility reported fewer doctor visits ($M = 3.56$, $SD = 1.80$) compared to participants who did not self-report dual eligibility ($M = 3.59$, $SD = 1.80$). However, there were no significant differences in the number of doctor visits between participants who self-reported dual eligibility and those who did not self-report dual eligibility.

Marital status. The number of doctor visits in past six months was compared based on marital status using ANOVA. No significant differences were found ($F(2, .413) = .663$, $p > .05$). Scores of participants from the three marital groups did not differ significantly. Married participants had the highest number of doctor visits ($M = 3.75$, $SD = 2.24$). Widowed participants had the lowest number of doctor visits in the past six months ($M = 3.39$, $SD = 1.80$). Participants who were not married, which included participants who had never been married, separated, or divorced, had 3.65 ($SD = 1.80$) doctor visits in the past six months.

Days sick in the past six months. Participants were asked to report the number of sick days spent at home in a Likert-type question. This variable was recoded into two categories
 (“yes”/“no”) because of limited responses in some categories. Female participants reported a higher percent of illness in the past six months (25.7%) than male participants (16.7%); however, the difference was not significant. There was a significant difference between young-old and middle-old participants \( (X^2 = 9.93, df = 1, p = .002) \). Young-old participants reported more sick days at home (33.3%) than middle-old participants (7.3%). There were no significant differences for education, income, marital status, and dual eligibility.

To further examine the results from the chi-square analysis on categorical age groups and days sick in the past six months, a logistic regression was conducted to predict participants’ self-report of days sick. Age was added as a predictor because of significance. The number of years with diabetes was added as a predictor to control for the number of days sick in the past six months.

A test of the full model against a constant only model was statistically significant \( (X^2 = 9.93, df = 1, p = .002) \). Further examination of the full model revealed a Nagelkerke’s \( R^2 \) of .134, which indicates a modest relationship between the predictors and days sick at home in the past six months. The Wald criterion demonstrated that age made a significant contribution to prediction \( (p = .005) \) with 95% confidence [1.75, 22.34]. The odds ratio (6.26) indicates young-old participants were a little more than six times as likely to report more sick days at home in the past six months as middle-old participants after controlling for years of diabetes. However, given the results of the odds ratio confidence interval, this finding should be interpreted with caution.

**In need of more care.** Participants were asked a dichotomous question about needing more medical care or treatment beyond the care they were currently receiving. A small percentage of participants (12.8%) reported needing additional medical care. Female participants reported needing more care at a higher rate (14.9%) than male participants (4.2%). Participants
with a high school education or less reported needing more care at a higher rate (13.0%) than participants with more than a high school education (12.5%). Participants who reported annual earnings of under $15,000 reported needing more care at a higher rate (14.1%) than participants who reported annual earnings of $15,000 or more (11.1%). Married participants reported needing more medical care at a higher rate (17.2%) than widowed participants (8.9%), or participants who were not married (15.0%).

Chi-square tests of independence were conducted to examine the relationship of needing more care with each of the demographic variables: age, gender, education, income, marital status, and dual eligibility. The chi-square tests of independence revealed no significant relationships between needing more care and the demographic variables.

**Chronic illnesses.** Participants were asked to self-report current illnesses from a list of 26 chronic conditions and how much the illnesses interfere with their activities (see Table 11). Participants reported on chronic conditions according to a range of 1 to 11 ($M = 4.90, SD = 2.07$). The majority of participants (59.2%) reported that arthritis interfered with their activities. None of the participants reported epilepsy, cerebral palsy, multiple sclerosis, muscular dystrophy, or the effects of polio.

Independent sample t-tests were conducted to compare participants’ mean number of chronic illnesses to demographic variables: age, gender, education, income, and dual eligibility. ANOVA was conducted to examine marital status.

**Age.** Young-old participants had higher chronic illness scores ($M = 5.02, SD = 2.03$) than middle-old participants ($M = 4.56, SD = 2.11$). However, there were no significant differences in mean scores between young-old and middle-old participants.
**Gender.** Female participants had higher chronic illness scores ($M = 5.01, SD = 2.07$) than male participants ($M = 4.45, SD = 2.06$); however, there was no significant difference in mean scores between female and male participants.

**Education.** Participants who reported a high school education or less had higher chronic illness scores ($M = 4.95, SD = 1.95$) than participants who had more than a high school education ($M = 4.83, SD = 2.23$); however, there was no significant difference in mean scores between participants who had more than a high school education and those who had a high school education or less.

**Income.** Participants who reported annual earnings of under $15,000 had higher chronic illness scores ($M = 5.19, SD = 2.14$) than participants who reported annual earnings of $15,000 or more ($M = 4.50, SD = 1.93$); however, there was no significant difference in scores between participants who reported annual earnings of under $15,000 and those who reported annual earnings of $15,000 and more.

**Dual eligibility.** Participants who reported dual eligibility had higher chronic illness scores ($M = 5.25, SD = 2.32$) than participants who reported no dual eligibility ($M = 4.77, SD = 1.95$); however, there was no significant difference in mean scores between participants who reported dual eligibility and those who reported no dual eligibility.

**Marital status.** The chronic illness mean scores of participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, 4.65) = .1079, p > .05$). Participants who were not married, which included participants who had never been married, separated, or divorced, had the highest mean score ($M = 5.25, SD = 2.23$). Married participants had the lowest mean score ($M = 4.51, SD = 2.01$). Widowed participants had a mean score of 4.85 ($SD = 1.99$).
Prescription drug usage. Participants were asked to report if they had taken any prescriptions in the past month. Participants reported taking 1–14 prescription drugs in the past month ($M = 5.91, SD = 2.52$). Independent sample $t$-tests were conducted to compare participants’ number of prescription drugs to demographic variables: age, gender, education, income, and dual eligibility. ANOVA was conducted to examine marital status. Table 13 provides a summary of the prescription drugs taken as reported by participants.

Age. Young-old participants had a higher prescription drug usage scores ($M = 6.01, SD = 2.53$) than middle-old participants ($M = 5.65, SD = 2.48$); however, there were no significant differences in prescription drug usage between young-old and middle-old participants.

Gender. Female participants had higher prescription drug usage scores ($M = 6.12, SD = 2.52$) than male participants ($M = 5.00, SD = 2.30$). Results indicate a significant difference in mean scores between female participants and male participants ($t (37.36) = -2.11, p = .041$).

Education. Participants who reported more than a high school education had a lower scores ($M = 5.76, SD = 2.53$) than participants who had a high school education or less ($M = 6.02, SD = 2.51$). However, there was no significant difference in mean scores between participants who had a high education or less and those who had more than a high school education.

Income. Participants who reported annual earnings of $15,000 or more showed a significant difference in prescription drug usage compared to participants who reported annual earnings of under $15,000 ($t(117.17) = 2.84, p = .005$). Participants who reported annual earnings of $15,000 or more had significantly lower mean scores ($M = 5.20, SD = 2.37$) than those who reported annual earnings of less than $15,000 ($M = 6.45, SD = 2.50$).
Table 11. Participants Self-Report of Illnesses that Interfere with Their Activities

<table>
<thead>
<tr>
<th>Chronic Illness</th>
<th>Not at all</th>
<th>A little</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis or rheumatism</td>
<td>15.2</td>
<td>38.4</td>
<td>20.8</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>5.6</td>
<td>14.4</td>
<td>7.2</td>
</tr>
<tr>
<td>Asthma</td>
<td>4.0</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Emphysema or chronic bronchitis</td>
<td>4.0</td>
<td>5.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>1.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>68</td>
<td>21.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Heart trouble</td>
<td>22.4</td>
<td>10.4</td>
<td>4.8</td>
</tr>
<tr>
<td>Circulation trouble in arms or legs</td>
<td>9.6</td>
<td>12.0</td>
<td>10.4</td>
</tr>
<tr>
<td>Ulcers of the digestive system</td>
<td>2.0</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Other stomach or intestinal disorders or gall bladder problems</td>
<td>16.0</td>
<td>20.0</td>
<td>6.4</td>
</tr>
<tr>
<td>Kidney disease</td>
<td>5.0</td>
<td>0.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Other urinary tract disorders (including prostate trouble)</td>
<td>2.4</td>
<td>2.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Cancer or Leukemia</td>
<td>6.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Anemia</td>
<td>3.2</td>
<td>4.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Effects of stroke</td>
<td>0.8</td>
<td>5.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Thyroid or other glandular disorders</td>
<td>8.8</td>
<td>4.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Skin disorders such as pressure sores, leg ulcers, or severe burns</td>
<td>2.4</td>
<td>0.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Speech impediment or impairment</td>
<td>1.6</td>
<td>0.8</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Table 12. Participants’ Self-Report of Prescription Drugs in the Past Month

<table>
<thead>
<tr>
<th>Type of Prescription Drugs</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis medication</td>
<td>28.8</td>
</tr>
<tr>
<td>Prescription pain killer</td>
<td>31.2</td>
</tr>
<tr>
<td>High blood pressure medicine</td>
<td>89.6</td>
</tr>
<tr>
<td>Pills to make you lose water or salt</td>
<td>60.0</td>
</tr>
<tr>
<td>Digitalis pills for the heart</td>
<td>20.0</td>
</tr>
<tr>
<td>Nitroglycerin for chest pain</td>
<td>4.0</td>
</tr>
<tr>
<td>Blood thinner medicine</td>
<td>17.6</td>
</tr>
<tr>
<td>Drugs to improve circulation</td>
<td>12.0</td>
</tr>
<tr>
<td>Insulin injections for diabetes</td>
<td>31.2</td>
</tr>
<tr>
<td>Pills for diabetes</td>
<td>76.8</td>
</tr>
<tr>
<td>Prescription ulcer medicine</td>
<td>4.0</td>
</tr>
<tr>
<td>Seizure medication</td>
<td>0.0</td>
</tr>
<tr>
<td>Thyroid pills</td>
<td>9.6</td>
</tr>
<tr>
<td>Cortisone pills or injections</td>
<td>8.0</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>16.8</td>
</tr>
<tr>
<td>Tranquilizers or nerve medicine</td>
<td>8.8</td>
</tr>
<tr>
<td>Prescription sleeping pills</td>
<td>8.0</td>
</tr>
<tr>
<td>Hormones (male or female)</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Table 13. Participants’ Self-Report of Additional Prescription Drugs in the Past Month

<table>
<thead>
<tr>
<th>List of Additional Prescriptions</th>
<th>% Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol medicine</td>
<td>56.8</td>
</tr>
<tr>
<td>Gastrointestinal reflux medicine</td>
<td>33.6</td>
</tr>
<tr>
<td>Eye drops</td>
<td>29.6</td>
</tr>
<tr>
<td>Gout medicine</td>
<td>1.6</td>
</tr>
<tr>
<td>Additional hypertension medicine</td>
<td>2.4</td>
</tr>
<tr>
<td>Osteoporosis medicine</td>
<td>3.2</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>1.6</td>
</tr>
<tr>
<td>Asthma or COPD medicine</td>
<td>8.0</td>
</tr>
<tr>
<td>Additional asthma or COPD medicine</td>
<td>2.4</td>
</tr>
<tr>
<td>Allergy or sinus medicine</td>
<td>5.6</td>
</tr>
<tr>
<td>Potassium injections</td>
<td>4.8</td>
</tr>
</tbody>
</table>

*Dual eligibility.* Participants who reported no dual eligibility had lower general prescription drug usage scores ($M = 5.79, SD = 2.58$) than participants who reported dual eligibility ($M = 6.23, SD = 2.38$); however, there was no significant difference in mean scores between participants who reported no dual eligibility and those who reported dual eligibility.

*Marital status.* The prescription drug usage mean scores of participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, .194) = .824, p > .05$). Married participants had the lowest mean score ($M = 5.65, SD = 1.59$). Participants who were not married, which included participants who were never married, separated, or divorced,
had the highest mean score ($M = 6.00, SD = 2.42$). Widowed participants had a mean score of $5.98 (SD = 2.70)$.

A GLM was conducted to examine the relationship of gender and income with prescription drug usage. Gender and income were added to the model because of their significance. Years of diabetes and age were added to the model as covariates to control for the effect of prescription drug use. The results from the analysis indicate no significant relationship between gender and income and prescription drug usage among participants after controlling for the covariates.

In addition to the list of prescription medications (see Table 12), participants were asked if they were taking any other prescription medications that were not on the list. The majority of participants ($n = 102$) reported taking additional prescription medications (see Table 14). An additional 24 participants also reported taking additional medications that exceeded the other participants. Some of the medications included anti-rejection medication for a kidney transplant, an anti-cancer pill, and medication for psoriasis.

*Physical disabilities.* Participants were asked about physical disabilities, which included total or partial paralysis, missing or nonfunctional limbs, or broken bones. Four participants (3.2%) reported some form of physical disability. One participant had a missing lower limb (0.8%), two had total paralysis (1.6%), and two had partial paralysis from a stroke (1.6%).

*Eyesight and hearing.* Participants were asked about their vision with glasses or contacts and their hearing without hearing aids. The majority of participants reported good eyesight and good hearing (see Figures 11–12).

*Supportive devices and prostheses.* Participants were asked about the use or ownership of supportive devices and prostheses. The majority of participants reported not using any
supportive devices; however, some reported owning and using wheelchairs (17.6%), walkers (26.4%), and canes (46.4%). A few participants reported the use of a back brace (5.6%), a leg brace (3.2%), and a small number (0.8%) reported using an artificial limb. Independent sample t-tests were conducted to compare the participants’ mean number of supportive devices to demographic variables: age, gender, education, income, and dual eligibility. ANOVA was conducted to examine marital status.

**Age.** Young-old participants had lower supportive devices scores ($M = .814, SD = 1.13$) than middle-old participants ($M = 1.29, SD = 1.34$). The results indicate the difference between young-old and middle-old participants approached significance ($t = -1.95, df = 69.23, p = .055$).

**Gender.** The supportive device score based on gender was the same for both female and male participants ($M = 1, SD = 1.16, 1.47$).

**Education.** Participants who reported a high school education or less had higher supportive devices scores ($M = 1.17, SD = 1.32$) than those who had more than a high school education ($M = .785, SD = 1.05$); however, there was no significant difference in supportive devices mean scores between participants who had more than a high school education and those who had a high school education or less.

**Income.** Participants who reported annual earnings of under $15,000 had a higher supportive devices mean score ($M = 1.18, SD = 1.25$) than those who reported annual earnings of $15,000 or more ($M = .759, SD = 1.14$); however, there was no significant difference in mean scores between participants who reported annual earnings of under $15,000 and those who reported annual earnings of $15,000 and more.

**Dual eligibility.** Participants who reported dual eligibility had higher supportive devices scores ($M = 1.41, SD = 1.44$) than those who reported no dual eligibility ($M = .833, SD = 1.07$).
Results indicate a significant difference in mean scores between participants who reported dual eligibility and those who reported no dual eligibility ($t(58.20) = -2.22, p = .030$).

Figure 11. Participants’ Self-Report of Eyesight

![Figure 11](image1)

Figure 12. Participants’ Self-Report of Hearing

![Figure 12](image2)
**Marital status.** The supportive devices scores of participants based on marital status were compared using ANOVA. No significant differences were found ($F(2, 1.26) = .287, p > .05$). Participants from the three marital groups’ mean scores did not differ significantly. Widowed participants had the highest supportive devices mean score ($M = 1.12, SD = 1.32$). Married participants had the lowest mean score ($M = .689, SD = 1.03$). Participants who were not married, which included participants who had never been married, separated, or divorced, had a mean score of 1.05 ($SD = 1.19$).

To further examine the relationship of dual eligibility and age (categorical) with on the use of supportive devices, a GLM was conducted. The number of supportive devices was the outcome variable with dual eligibility and age (categorical) as predictors and years of diabetes as a covariate.

The results of the model indicate a significant main effect for the number of years with diabetes on the number of supportive devices ($Adjusted R^2 = .126$). Years of diabetes was significant ($p = .007$), $F(1,113) = 7.62$. Participants who did not have dual eligibility had a lower estimated marginal mean ($M = .838, SE = .131$) with 95% confidence [CI = .580, 1.09] than those who had dual eligibility ($M = 1.65, SE = .230$) with 95% confidence [CI = 1.19, 2.10]. Young-old participants had a lower estimated marginal mean ($M = .925, SE = .134$) with 95% confidence [CI = .660, 1.19] than middle-old participants ($M = 1.56, SE = .230$) with 95% confidence [CI = 1.10, 2.02]. However, the findings indicate the number of years a participant had diabetes was more likely to influence the use or ownership of supportive devices, not age ($p = .13$) or dual eligibility ($p = .23$).
**Diabetes self-care, health, and functional status.** In order to gain insight into diabetes self-care practices, and the health and functional status of participants, additional variables were created and a series of analyses were conducted.

**Age and the SUGAAR.** Independent sample t-tests were conducted to compare the continuous age variable with 22 of the 25 SUGAAR items. SUGAAR items 1, 9, and 10 were excluded from the analyses because participants answered “yes” to all three questions. Results indicate a statistically significant difference in mean age between participants who reported strength training and those who did not ($t(123) = -2.51, p = .013$). Participants who reported regular strength training were older ($M = 75.14$ years, $SD = 6.70$) than participants who did not ($M = 72.09$, $SD = 5.26$). There were no significant differences for age and the other SUGAAR items.

**Years of diabetes and the SUGAAR.** Independent sample $t$-tests were conducted to compare the mean years of diabetes with 22 of the 25 SUGAAR items. SUGAAR items 1, 9, and 10 were excluded from the analyses because all participants answered “yes” to the three questions. Results indicate a statistically significant difference between mean years of diagnosis for participants who reported having seen a foot doctor in the past 12 months and the mean years of diagnosis for participants who did not report having seen a foot doctor in the past 12 months ($t = -2.82$, $df = 111.54$, $p = .006$). Participants who had diabetes for a longer period of time ($M = 15.4$ years, $SD = 11.88$) were more likely to report having seen a foot doctor in the past 12 months than participants who had diabetes for a short period of time ($M = 10.18$, $SD = 8.49$). There were no significant differences for mean years of diabetes and the other SUGAAR items.

**Diabetes control and the SUGAAR.** To extend the examination of diabetes self-care, a GLM analysis was conducted with the SUGAAR score as the outcome variable and diabetes
control as the predictor variable. A diabetes control variable was created (i.e., control and no control). Control was determined by self-report of the number of low blood sugar episodes in a month. Any participant reporting one or more low blood sugar episodes in a month was considered “no control.” The years of diabetes and number of doctor visits in the past six months were entered into the model as covariates.

The results of the model indicate a weak (Adjusted $R^2 = .020$) but significant main effect on participants’ self-reports of diabetes control and total SUGAAR score controlling for age of participant, years of diabetes, and the number of doctor visits. There was a significant main effect for diabetes control ($p = .011$), $F(1, 118) = 6.72$. Participants who reported diabetes control had a lower estimated marginal SUGAAR score ($M = 18.02, SE = .261$) with 95% confidence [CI = 17.50, 18.54] than participants who reported no control ($M = 18.27, SE = .290$) with 95% confidence [CI = 17.69, 18.84]. There was also a significant two-way interaction between diabetes control and doctor visits ($p = .022$), $F(1, 118) = 5.34$. For those participants who reported diabetes control, as the number of doctor visits increased, their SUGAAR score increased by approximately three points whereas those participants who self-reported no control, as the number of doctor visits increased, their SUGAAR score decreased by approximately three points. Further examination of SUGAAR scores and diabetes control revealed a negative, but not statistically significant, relationship ($r = -.055$), which suggests that the findings were not influenced by a relationship between the two variables.

*Diabetes control, mental health, and the SUGAAR.* To extend the examination of diabetes self-care, a GLM analysis was conducted with the SUGAAR score as the outcome variable and self-reported diabetes control as a predictor controlling for the number of doctor visits, the OARS mental health score, and years of diabetes as covariates.
The results of the model indicate significant main effects for diabetes control and SUGAAR (Adjusted $R^2 = .131$). Diabetes control was significant ($p = .028$), $F(1, 114) = 4.96$. Participants who reported diabetes control had a lower estimated marginal mean ($M = 17.76$, $SE = .257$) with 95% confidence [CI = 17.25, 18.27] than participants who reported no diabetes control ($M = 18.36$, $SE = .287$) with 95% confidence [CI = 17.79, 18.93]. The model demonstrated a significant main effect for doctor visits ($p = .036$), $F(1, 114) = 4.52$. The OARS mental health score also demonstrated a significant main effect ($p = .002$), $F(1, 114) = 10.06$.

There were two significant two-way interactions: diabetes control and doctor visits ($p = .004$), $F(1, 114) = 8.67$ and the OARS mental health and doctor visits ($p = .014$), $F(1, 114) = 6.24$. For those participants who reported diabetes control and for those who reported no diabetes control, SUGAAR scores decreased and the OARS mental health score increased along with increased doctor visits. This finding indicates that as the number of doctor visits increased, participants’ diabetes care decreased and their overall mental health declined. Further examination of SUGAAR scores and OARS mental health revealed a weak, but significant, negative relationship at the .01 level ($r = -.267$). However, this negative correlation was not strong enough to influence the results.
Table 14. Results from Independent Samples $t$-Tests on Select Items by Age Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$-value</th>
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<tr>
<td>SUGAAR Score</td>
<td>-2.68</td>
<td>91.44</td>
<td>.009*</td>
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<td></td>
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<td>2.23</td>
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<tr>
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<td>1.93</td>
<td></td>
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<tr>
<td>Positive attitudes about life</td>
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<td>72.62</td>
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<td>19.70</td>
<td>2.72</td>
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<td></td>
</tr>
<tr>
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<td></td>
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<tr>
<td>Care ability</td>
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<td>83.62</td>
<td>.030*</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>2.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle-old</td>
<td>16.82</td>
<td>2.09</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Supportive devices</td>
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<td>69.23</td>
<td>.055*</td>
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<tr>
<td>Youngest-old</td>
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<td>Middle-old</td>
<td>1.29</td>
<td>1.34</td>
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</tbody>
</table>

*p < .05.
CHAPTER 5
DISCUSSION

The primary purpose of this study was to continue my development of the SUGAAR, an instrument designed to assess the self-care practices of older African American adults with type 2 diabetes. The instrument was initiated as a project for a research class and was further assessed, modified, and administered for this dissertation study. The secondary purpose of this study was to draw preliminary conclusions about the diabetes self-care, health, and functional status of 125 community-dwelling African Americans 65 years and older with a self-reported diagnosis of type 2 diabetes.

The instrument development began with two rounds of cognitive interviews, followed by a pilot study, and then administration to the dissertation study sample. Additional instruments were administered during the final phase, both to assess health and functional status of the study participants and to provide data for one aspect of validation of the SUGAAR.

Cognitive Interviews and Pilot Test

The cognitive interviews and the pilot test that I conducted as part of the development of the SUGAAR were important to the overall study. The cognitive interviews were conducted to ensure that the participants understood the instrument the same way I did and that the participants could complete the instrument. The first round of cognitive interviews resulted in substantial changes to the SUGAAR that improved the readability and utility of the instrument. As a result of the changes made following the first round of cognitive interviews, the second round of cognitive interviews resulted in minimal changes. Findings from the two rounds of
cognitive interviews allowed me to make changes to the instrument prior to pilot testing. Most important, the findings suggest that the SUGAAR measures the construct of diabetes self-care practices, for which it was developed. Both the SUGAAR and the additional instruments were administered for the pilot test. Results confirmed that participants could complete all the instruments in a reasonable time frame.

**Internal Consistency**

It was also important to assess the internal consistency of the SUGAAR. The modest results from the KR-20 (0.23), a measure of internal consistency suitable for dichotomous data, indicate that participants’ diabetes self-care is not a unidimensional concept. Because the SUGAAR was not found to be a unidimensional scale, one should sum the items with caution, understanding that a larger score indicates an individual who practices more diabetes self-care and an individual with a lower score practices less. It was still possible that the SUGAAR was a multidimensional instrument, so a factor analysis was the next step in the psychometric analysis.

**Factor Analysis**

Based on theory and research, I proposed the SUGAAR as a multidimensional scale (see Figure 3), but the results from the factor analysis did not support a stable factor structure for the SUGAAR. A single-factor structure would have indicated that the SUGAAR measured a unidimensional construct. Identification of multiple factors would have indicated that participants perceived diabetes self-care practices in clusters of similar practices.

The inability to identify multidimensionality in the instrument may indicate that individuals with type 2 diabetes may not accomplish self-care practices in the same clusters of practices that make sense to health care practitioners and researchers. It is also possible that the SUGAAR is indeed a multidimensional instrument, even though this study did not reveal
multidimensionality. In order to make the SUGAAR more practical, I reduced the size of the instrument from its original length of 52 items to 25. It is possible that my attempts at practicality may have compromised factorability (Mislevy, 1986). It is also possible that the sample size for this study may have compromised factorability (Costello & Osborne, 2005; DeCoster, 1998; Mislevy, 1986). Although I adopted the 5:1 approach (i.e., five participants for every one question) as recommended by Floyd and Widaman (1995), others have recommended larger samples for EFA (Costello & Osborne, 2005; DeCoster, 1998; Mislevy, 1986).

Results of the psychometric analysis of the SUGAAR indicate that it is neither a unidimensional nor multidimensional scale. Although an overall score can be obtained by summing responses to all the items, and subscores can be obtained by summing responses to clusters of items, those scores serve to indicate whether participants accomplished more or fewer self-care practices. The SUGAAR serves as a checklist rather than as a scale of latent constructs. Because the items for the SUGAAR were based on ADA standards and earlier work support the content validity, it was appropriate to continue the validation process by assessing the convergent validity of the SUGAAR.

**Convergent Validity**

The SUGAAR was developed primarily from the ADA’s (2009, 2010, 2011) standards of care for the management of type 2 diabetes among older adults, which supports the content validity of the instrument. Moreover, prior to conducting this study, the SUGAAR was reviewed for content by a panel of experts familiar with diabetes care among older adults. Another reason the SUGAR could be used as a valid checklist is because it incorporates the majority of diabetes care activities targeted by the ADA (2009, 2010, 2011), Alabama Department of Public Health (ADPH) (2010a), and Healthy People 2020 (HHS, n.d.).
Given the findings from the factor analysis, if the results supported a unidimensional structure of the SUGAAR, the expected result would have been high correlations between SUGAAR scores and scores on other assessments of diabetes self-care. If multiple dimensions had been identified, one similarly would expect high correlations between subscores of the SUGAAR and corresponding subscores from other instruments. Because the SUGAAR is best described as a checklist, such high correlations were not expected. Still, it made sense to assess the degree to which clusters of SUGAAR items (clustered from the perspective of health care practitioners and researchers) correlated with clusters of related items from the DCP.

Modest correlations between SUGAAR and DCP items were obtained, which suggest there was a degree of similarity across selected items of both instruments. Taken together, the results of the convergent validity assessment, along with results from the content validity assessments, suggest that the SUGAAR is a promising, practical instrument for assessing the diabetes self-care practices of older African Americans.

**Diabetes Self-care Practices, Health, and Functional Status**

The ADA (2012) recommends aggressive care in the management of type 2 diabetes in older adults, particularly for older adults without cognitive and functional impairments who have significant years of life expectancy. The SUGAAR, which was developed primarily from the ADA’s standards (ADA, 2009, 2010, 2011), reflects 8 of 10 of the recommended diabetes care standards.

Overall, responses indicate that participants are receiving information about diabetes self-care, which the majority of participants are putting into practice. Although much attention in the research literature focuses on the heterogeneity of older African Americans (Reed, Foley, Hatch, & Mutran, 2003; Stanford, 1990; Taylor et al., 2007), findings from this study indicate
participants did not fall into groups regarding their diabetes self-care practices. Education, income, dual eligibility for Medicare and Medicaid, and marital status had no statistically significant relationship to diabetes self-care. Age group, youngest-old versus middle-old, was the only significant variable that influenced diabetes self-care. There were some interesting differences based on gender, however, given the limited number of male participants in this study, those findings should be interpreted with caution.

Based on SUGAAR scores, findings suggest differences between age groups when it comes to diabetes self-care ($p = .009$). Middle-old participants are engaging in more diabetes self-care ($M = 18.82, S = 1.93$) compared to the youngest-old participants ($M = 17.77, SD = 2.23$). This finding may seem surprising, but it supports the trend in the data that suggests participants in the age range of 75–84 are healthier than participants in the age range of 65–74, except in the use or ownership of supportive devices. Youngest-old participants had a statistically significant lower positive attitude scores about life ($M = 19.70, SD = 2.72$) than middle-old participants ($M = 21.07, SD = 2.72$). Youngest-old participants also had a statistically significant lower diabetes-care ability scores ($M = 15.92, SD = 2.18$) than middle-old participants ($M = 16.82, SD = 2.09$). The mean differences between age groups were very small, although statistically significant, so these findings may be of little practical significance. However, it is likely that participants in the youngest-old category contained the largest proportion of participants newly diagnosed with type 2 diabetes. It is also likely that the youngest-old participants were sicker entering this study than the middle-old, as they had perhaps not been engaging in diabetes self-care practices prior to receiving the diagnosis. Given the results related to age group suggest statistically significant differences between groups, but with little practical significance, I will further explore age group differences.
There were interesting results in regard to gender. Female participants were more likely to report testing their blood sugar (88.1%) than were male participants (54.2%). Female participants were more likely to report being told to lose weight by their doctor (61.4%) and to report trying to lose weight (73.3%) than male participants (33.3% and 41.7%, respectively). Female participants had higher negative attitudes towards diabetes scores (33.7%) than male (12.5%). The findings based on gender suggest the need for gender-based interventions. I could design an intervention to increase self-monitoring of blood glucose among male participants because regular self-monitoring reduces complications associated with poorly managed diabetes (ADA, 2009, 2010, 2011, 2012). It was not surprising to find female participants more likely to report being told by their doctors of a need to and trying to lose weight than male participants because of the epidemic of obesity among African American females (Anderson-Loftin et al., 2005; Harreaves et al., 2002). I could partner with nutritionists and other health educators to design a weight management intervention to help older African American females with diabetes.

I was surprised that female participants were more likely than male participants to have higher mean scores on negative attitudes towards diabetes. This suggests female participants may experience difficulty coping with the diagnosis of diabetes and therefore should be targeted for additional psychosocial support.

Although income was not a statistically significant influence for the majority of the analyses, it approached significance for supportive device usage or ownership (p = .055) and the number of days in the hospital in the past six months (p = .064). Participants who reported earning less than $15,000 annually had a higher mean score for supportive devices (M = 1.18, SD = 1.25) than those who reported earning $15,000 or more annually (M = .76, SD = 1.14). Participants who reported earning less than $15,000 annually reported spending more days in the
hospital ($M = 1.30, SD = 3.20$) than those who reported earning $15,000 or more annually ($M = .50, SD = 1.52$). Because type 2 diabetes is an expensive disease to manage (ADA, 2008), and because many older African Americans in the United States live in poverty (AARP, 2009), the relationship between income and diabetes self-care needs further examination in future studies.

Perhaps one of my most surprising findings was the percentage of participants who experienced one or more low blood sugar episodes in the past 30 days (44%). In order to assess diabetes control based on the frequency of low blood sugar, I recoded the five-point Likert type question from the DCP (Fitzgerald et al., 1996) into no control and control. Participants that I recoded as control reported no low blood sugar episodes in the past 30 days (56% of participants). Participants that I recoded as no control reported one or more low blood sugar episodes in the past 30 days (44% of participants). This finding is important because, unlike high blood sugar, low blood sugar can result in sudden death (Meneilly, 2009; Meneilly & Tessier, 2001). Regular self-monitoring of blood glucose is important to diabetes self-care (ADA, 2012), but more than 10% of participants reported not testing their blood sugar as directed by their physician or health care provider (11.2%). When participants were asked about the number of times each day that they tested their blood sugar, findings indicate an urgent need for education ($M = 1.56, SD = .945$).

I was equally surprised by the statistically non-significant findings for diabetes control based on sociodemographics. This finding speaks to the difficulty of managing type 2 diabetes for my participants regardless of sociodemographics, such as age and education. Reducing low blood sugar episodes and increasing the frequency of self-monitoring of blood glucose are areas for intervention for which I can partner with diabetes educators and nutritionists.
Participants are doing well in some areas of diabetes self-care. Participants self-reports of self-monitoring of blood sugar (88.8%), self-administered foot exams (81.6%), HbA1c (91.2%), and dilated eye examinations (84.8%) exceed the levels reported for Alabama (CDC, 2010). However, the results also indicate there are two areas of diabetes care that fall below the rate reported for the state of Alabama (CDC, 2010): comprehensive foot exam and diabetes management education.

**Comprehensive foot exam.** The ADA (2012) recommends an annual comprehensive foot examination and foot self-care education, which includes nail and skin care and wearing appropriate shoes. The majority of participants reported annual visits to a podiatrist (65.6%), which is slightly below the state level of 69.0% (CDC, 2010). These findings were particularly interesting because there were differences between older and younger participants. Although the differences were not statistically significant, the mean age of those who had seen a podiatrist was greater than the mean for those who had not; however, the mean age of those who checked feet regularly was smaller than the mean age of those who did not. Given the high risk for lower limb amputations among older African Americans with type 2 diabetes (Resnick, Valsania, & Phillips, 1999), this population should be the focus of additional education about foot care.

**Diabetes management education.** The ADPH (2010a), in conjunction with the CDC, has launched a program to educate providers on physician-completed care activities, such as diabetes management education. The target goal for the state is 95%; the state indicator rate is 54.7% (CDC, 2010). Although research on DSME and nutrition education continue to demonstrate that both are effective in lowering glucose levels among adults with type 2 diabetes and reducing complications associated with poor diabetes management (ADA, 2012), only a
small number of participants reported receiving annual DSME (29.6%) and nutrition education (42.4%) in the past 12 months.

**Additional areas of concern.** Two other areas of concern that are important aspects of diabetes self-care (ADA, 2012) are influenza and pneumococcal vaccinations. Influenza and pneumonia are common preventable illnesses associated with high mortality and morbidity among older adults, especially those with chronic conditions such as diabetes (ADA, 2012). Although participants in this study reported having received both vaccinations, the sample exceeds the state rate for influenza vaccination (53.8%) and pneumococcal vaccinations (53.0%) (CDC, 2010). However, the self-report rates of influenza vaccination (66.4%) and pneumococcal vaccinations (71.2%) fall far below the targeted goal of 90% for non-institutionalized adults 65 years and older (CDC, 2010). Because lower respiratory infections are among the leading causes of death for older adults (CDC, 2010), I could partner with health educators to design an intervention to increase vaccination rates among older African Americans with type 2 diabetes.

In addition to influenza and pneumococcal vaccinations, one other finding requires further discussion. Findings indicate that the number of years participants have had the diagnosis of diabetes rather than age was a significant predictor of the need for supportive devices. This is one area that will require further study given the important role that moderate physical activity plays in the management of diabetes (ADA, 2012) and because the use of supportive devices may also limit independence (Gregg, Engelgau, Narayan, 2002; Sinclair, Conroy, & Bayer, 2008).

**Strengths and Limitations**

**Strengths.** The strengths of this study are in the areas of recruitment, validity of the instrument, and findings regarding self-care practices of an understudied, vulnerable population
within the newly classified “Diabetes Belt,” which represents counties within the United States with a diabetes incidence of 11% or higher (Barker, Kirtland, Gregg, Geiss, & Thompson, 2011).

I incorporated several approaches to recruitment for this study, including attending worship services at different churches in recruitment areas, participating in activities at agencies providing services to older adults, patronizing Black-owned businesses, visiting senior housing, and advertising in the Black press. The majority of participants were recruited as a result of snowball sampling in Tuscaloosa and Birmingham, Alabama. The sample of participants ranged in age from 65 to 94 years. The oldest female participant was 94 years old \((M = 72.78, SD = 5.85)\); the oldest male participant was 86 years old \((M = 72.62, SD = 5.21)\).

This study was an attempt to address the need for an instrument to assess the diabetes self-care practices of a vulnerable group of older adults. Not only did the preliminary stages indicate that participants understood the questions and could complete the battery of instruments, but results from the primary study revealed no ceiling or floor effects. This indicates that there are indeed individuals with type 2 diabetes who perform few recommended diabetes self-care practices and others who perform most of them. Findings of ceiling or floor effects would suggest the questions on the SUGAAR were either too easy (asking questions that do not need to be asked) or too difficult (hard to understand or relating to difficult practices) for participants. The lack of both effects further strengthens claims that the instrument is a valid and useful checklist for use among older African Americans with type 2 diabetes.

The descriptive results from this study provide valuable insight into the diabetes self-care, health, and functional status of a marginalized and understudied population of older adults. This study is particularly valuable given that older African Americans consistently demonstrate the poorest health status of all groups of older adults, regardless of the measure used to assess
their health (Markides & Wallace, 2007). And the study is particularly timely because it provides insight into the diabetes self-care of older African Americans living within the Diabetes Belt. Most important, the significant findings strongly suggest that the findings were not a result of chance, but an indication that I found meaningful differences that have implications for social work research, practice, and policy.

Limitations. Participants for this study were recruited through purposive sampling. Approximately 81% of the sample was female compared to 19.2% male. The small number of men might reflect the life expectancy of 69.6 years for Black males in Alabama (ADPH, 2010b) more so than cultural issues and distrust of research (Corbie-Smith, Thomas, & St. George, 2002; Freimuth et al., 2000). It also may reflect the snowball effect that occurred among the female participants. The small number of rural participants reflects the amount of time spent recruiting in the urban areas due to a snowball effect.

Another limitation of this study was the reliance on self-reporting of diabetes control and other health information. Although participants’ responses to the survey and willingness to provide additional information suggest that their reports were accurate, it is possible that they over-reported compliance with self-care practices and other health information. A blood glucose measure, such as the hemoglobin A1c, would have been useful for the verification of diabetes and could have been used as a measure for assessing convergent validity. Chronic health conditions and prescription medication could have been verified through medical records.

The mean age of participants (72.8 years) almost matched the mean age of older African Americans in Alabama (73.1 years; ADPH, 2010b). It is possible that a relatively healthy sample of participants volunteered for this study, regardless of their self-report of diabetes self-care, health, and functional status.
Implications for Social Work Practice

Social workers will increasingly encounter older African Americans with type 2 diabetes in need of services and support (DeCoster & Dabelko, 2008; Francoeur & Elkins, 2006). In order to demonstrate competency with this population of older adults, social workers will need to improve their understanding of older adults with diabetes and the effects of the chronic illness on overall health and well-being. The SUGAAR can help social workers understand recommended diabetes self-care practices so they can better inform older African Americans and their caregivers about diabetes self-care and identify additional areas for education and support.

The ADA (2012) recommends that older adults with type 2 diabetes who are physically able should engage in regular physical activity consisting of resistance training and moderate-intensity aerobic activity at least three days per week for a minimum 150 minutes. The majority of participants reported not engaging in resistance training (78.4%) or aerobic activity (53.6%). It is possible that participants may not understand the benefits of exercise and may experience barriers to exercise common among this population, such as lack of safe neighborhoods (Sellers, Govia, & Jackson, 2009) or arthritis (Gregg & Caspersen, 2005; Leeman et al., 2008; Morrow et al., 2008). Social workers could work with communities to increase awareness about the importance of regular exercise and increase safe and open spaces for older adults with type 2 diabetes and their families.

The ADA (2012) recommends including a psychosocial assessment as part of routine diabetes management. Diabetes is a difficult disease to manage without the additional challenge of poor mental health. Results from this study indicate 29.6% of participants reported negative emotions about having diabetes. Participants who reported negative emotions about having diabetes were also more likely to have a higher mean score on OARS mental health questions,
which indicates poor mental health. It is important for social workers to screen older African Americans with type 2 diabetes for depression and other mental health issues because of the potential of poor mental health to affect diabetes self-care (Bell et al., 2005). Social workers could use SUGAAR to screen for psychological issues related to diabetes and as a checklist to identify participants in need of additional education and diabetes support and services.

The ADA (2012) recommends that individuals with diabetes have annual pupil dilation examinations. Findings from this study, however, indicate that income is a barrier to annual pupil dilation examinations. Participants reporting annual incomes under $15,000 were approximately one-third as likely to report annual pupil examinations. Because glaucoma is one of the leading causes of blindness among older African Americans with type 2 diabetes (Ellish, Royak-Schaler, & Higginbotham, 2011; Sample et al., 2009), social workers could identify community resources to assist older African Americans with low income with access to comprehensive eye examinations.

**Implications for Social Work Research**

Future research on the SUGAAR will include developing the checklist for the growing population of racially and ethnically diverse adults 65 years and older with type 2 diabetes. It is my plan to develop the Self-care Utility Geriatric American Rating for this growing population.

The majority of diabetes care is the responsibility of the individual, however, in order for future interventions to achieve maximum effectiveness, researchers must target physicians and providers for diabetes care interventions. For example, only 29.6% of participants reported receiving diabetes self-management education in the past 12 months. The coordination of diabetes self-management education and other diabetes-related services is the responsibility of
the primary care physician. I could work with diabetes educators and physicians to design an intervention to increase referrals for diabetes-related services for older African Americans.

This study was primarily quantitative, but the participants had a lot to say about living with and managing type 2 diabetes as an older adult. For example, one participant wanted to explain to me why she was not testing her blood sugar regularly. She informed me that she left her blood glucose monitor at her daughter’s house and her grandchild broke the monitor. She was unable to get a new monitor because of Medicare’s policy on replacement monitors. The insight gained from participants will assist in framing future qualitative and intervention studies about the diabetes self-care practices of older African Americans.

**Implications for Social Work Policy**

Diabetes is an expensive chronic illness to manage. Successful management of diabetes requires routine care managed by various specialists, such as endocrinologists, podiatrists, and ophthalmologists. Yet, the majority of participants reported annual earnings under $15,000 (56.8%) and over 30% of participants reported having Medicare and Medicaid for insurance (31.2%), which indicates a high burden of poverty among participants. Although Medicare was reported as the primary insurance for the majority of participants (98.4%), Medicare, whether fee-for-service or managed care, creates financial barriers to diabetes-related supplies and services (Rector & Venus, 2004; Utz et al., 2008; Webster, 2010). With the implementation of new legislation stemming from the Patient Protection and Affordable Care Act (HR 3590) taking place over the course of the next eight years, the full effect of the legislation on the diabetes self-care of older African Americans remains unknown. However, the Medicare Diabetes Prevention Act of 2012 (S. 3463 IS, 2012), which was introduced in the Senate and was referred to Committee on Finance, holds great promise for the prevention and management of diabetes.
among older adults. Given the current political climate, it is unlikely, however, that the Medicare Diabetes Prevention Act will pass.

There are numerous opportunities for social workers to advocate on behalf of older African Americans with diabetes. Because many older African Americans rely on Social Security as their sole source of income (AARP, 2009), social workers could advocate for strengthening the policies and programs that indirectly or directly affect diabetes self-care, such as Social Security, Medicare, and Medicaid. Social workers could also partner with the ADA, physicians and providers, senior organizations, and African American communities to help increase awareness about the importance of diabetes management education. The SUGAAR could be used by social workers to better inform policy advocates about the challenges faced by many older African Americans with diabetes. Social workers could also advocate for changes in physician and provider loan forgiveness programs that could help to increase the number of endocrinologists and diabetes educators in Alabama, especially in rural areas.

Finally, there are personal, financial, and societal costs associated with poorly managed type 2 diabetes and these costs are disproportionately experienced by older African Americans (CDC, 2009; FIFA-RS, 2010). This study was conducted to validate the SUGAAR and to gain insight into the diabetes self-care, health, and functional status of older African Americans in Alabama with type 2 diabetes. This study was just the beginning of my efforts to improve the health and well-being of older African Americans living with type 2 diabetes.
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The Self-care Utility Geriatric African American Rating (SUGAAR)

This survey contains 25 questions. Choose your answer by marking the box for Yes or No.

Q1 In the past 12 months, I have visited my primary care doctor for my sugar diabetes.
   Yes............................................. □
   No............................................. □

Q2 In the past 12 months, I had my pupils dilated.
   Yes............................................. □
   No............................................. □

Q3 In the past 12 months, I have seen a foot doctor.
   Yes............................................. □
   No............................................. □

Q4 In the past 12 months, I had diabetes self-management education.
   Yes............................................. □
   No............................................. □

Q5 In the past 12 months, I have seen a registered dietitian.
   Yes............................................. □
   No............................................. □

Q6 In the past 3 months, I had the 3-month blood sugar test (HbA1c).
   Yes............................................. □
   No............................................. □

Q7 I had the flu shot for this year.
   Yes............................................. □
   No............................................. □

Q8 I had a pneumonia shot after my 65th birthday.
   Yes............................................. □
   No............................................. □

Q9 I take medicine, diet or exercise to control my sugar diabetes as instructed by my doctor.
   Yes............................................. □
   No............................................. □

Q10 I take other medicine as instructed by my doctor.
   Yes............................................. □
   No............................................. □

Q11 I test my blood sugar as instructed by my doctor.
   Yes............................................. □
   No............................................. □

Q12 I keep records of my blood sugar readings.
   Yes............................................. □
   No............................................. □

Q13 I check my feet every day.
   Yes............................................. □
   No............................................. □

Q14 My doctor has told me to lose some weight.
   Yes............................................. □
   No............................................. □

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<tbody>
<tr>
<td>Q15</td>
<td>I am trying to lose some weight.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q16</td>
<td>I do strength training with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bands or weights three times a</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>week.</td>
<td>No</td>
<td>☐</td>
</tr>
<tr>
<td>Q17</td>
<td>I walk or do other aerobic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>exercise for 30 minutes at least</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>five times a week.</td>
<td>No</td>
<td>☐</td>
</tr>
<tr>
<td>Q18</td>
<td>I limit the amount of fat in my</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>diet.</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q19</td>
<td>I limit carbohydrates and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>starches in my diet.</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q20</td>
<td>I use sugar substitutes or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sweeteners.</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q21</td>
<td>I smoke cigarettes, a pipe, a</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cigar, chew tobacco, or dip</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>snuff.</td>
<td>No</td>
<td>☐</td>
</tr>
<tr>
<td>Q22</td>
<td>I sometimes drink beer, wine, or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alcohol.</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q23</td>
<td>I sometimes feel down, sad,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>blue, depressed, stressed,</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>worried, or nervous about my</td>
<td>No</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>sugar diabetes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q24</td>
<td>I need help with my sugar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>diabetes from my family and</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>friends.</td>
<td>No</td>
<td>☐</td>
</tr>
<tr>
<td>Q25</td>
<td>I get help with my sugar diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>from my family and friends.</td>
<td>Yes</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
APPENDIX B

Self-care Utility Geriatric African American Rating (SUGAAR) – 52

Instructions: The following questionnaire contains 52 questions. Choose your answer by placing a circle around Yes or No. Please note that all questions may not apply to you.

1. In the past 12 months, I have seen a regular doctor for my sugar/diabetes.  
   Yes  No

2. In the past 12 months, I have seen an eye doctor.  
   Yes  No

3. In the past 12 months, I have seen a foot doctor.  
   Yes  No

4. In the past 12 months, I have seen a diabetes educator (teacher/instructor).  
   Yes  No

5. In the past 12 months, I have seen a nutritionist (food/diet specialist)  
   Yes  No

6. In the past 12 months, I had a flu shot.  
   Yes  No

7. Within the past five years, I had a pneumonia shot.  
   Yes  No

8. I have difficulty arranging transportation.  
   Yes  No

9. I have regular transportation (car, bus, taxicab, train, van ride, family/friend) to my doctor appointments.  
   Yes  No

10. I have regular transportation (car, bus, taxicab, train, van ride, family/friend) to the pharmacy/drug store.  
    Yes  No

11. I have a pharmacy/drug store near my home.  
    Yes  No

12. I have a garden, farmer’s market, grocery store, or supermarket near my home.  
    Yes  No

13. I have transportation (car, bus, taxicab, train, van ride, family/friend) to the farmer’s market, grocery store, or supermarket.  
    Yes  No

14. I have money/food stamps to buy groceries/food.  
    Yes  No

15. I know what kinds of foods to buy and eat to control my sugar/diabetes.  
    Yes  No

16. I buy and eat the foods that help control my sugar.  
    Yes  No

17. I have help from family or friends with my sugar/diabetes.  
    Yes  No
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. I take a sugar/diabetes pill/medicine.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I take insulin for my sugar/diabetes. If no, skip to question 22.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>20. I take my sugar/diabetes medicine (pills/insulin) like my doctor tells me to.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>21. I can afford my sugar/diabetes medicine (pills/insulin).</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>22. I do not take anything for my sugar/diabetes.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>23. In the past 3 months, I had the special 2 month blood sugar test (HbA1C)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>24. I know my HbA1C (hemoglobin A1C) level.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>25. I test my sugar/diabetes every day like my doctor tells me to.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>26. I own a sugar/glucose monitor. If no, skip to question 28.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>27. I can afford test strips to check my sugar/glucose level.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>28. I check my feet every day.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>29. I exercise for 30 minutes five times a week (walk, run, swim, aerobics, bike, tennis, garden, golf, etc.).</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>30. I do resistance training with bands or weights three times a week.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>31. There is a gym, recreation center, YMCA/YWCA, fitness club near my home.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>32. My doctor has told me to lose some weight.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>33. I am trying to lose some weight.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>34. My doctor has told me that I have high blood pressure. If no, skip to question 38.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>35. I take a pressure/blood pressure pill/medicine.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>36. I take my pressure/blood pressure pill/medicine like my doctor tells me to.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Yes</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>37</td>
<td>I can afford my pressure/blood pressure pill/medicine.</td>
<td>Yes</td>
</tr>
<tr>
<td>38</td>
<td>My doctor has told me that I have high cholesterol. If no, skip to question 42.</td>
<td>Yes</td>
</tr>
<tr>
<td>39</td>
<td>I take a pill for my cholesterol.</td>
<td>Yes</td>
</tr>
<tr>
<td>40</td>
<td>I take my cholesterol pill/medicine like my doctor tells me to.</td>
<td>Yes</td>
</tr>
<tr>
<td>41</td>
<td>I can afford my cholesterol pill/medicine.</td>
<td>Yes</td>
</tr>
<tr>
<td>42</td>
<td>My doctor has told me that I have heart disease. If no, skip to question 47.</td>
<td>Yes</td>
</tr>
<tr>
<td>43</td>
<td>My doctor has told me to take an aspirin for my heart.</td>
<td>Yes</td>
</tr>
<tr>
<td>44</td>
<td>I take another type of pill/medicine for my heart.</td>
<td>Yes</td>
</tr>
<tr>
<td>45</td>
<td>I take my aspirin/pill/medicine for my heart like my doctor tells me to.</td>
<td>Yes</td>
</tr>
<tr>
<td>46</td>
<td>I can afford my aspirin/pill/medicine for my heart.</td>
<td>Yes</td>
</tr>
<tr>
<td>47</td>
<td>I smoke cigarettes, a pipe, a cigar, chew tobacco, dip snuff. If no, skip to question 50.</td>
<td>Yes</td>
</tr>
<tr>
<td>48</td>
<td>My doctor has told me to quit smoking cigarettes, pipe, cigar, chew tobacco, dip snuff.</td>
<td>Yes</td>
</tr>
<tr>
<td>49</td>
<td>I am trying to quit smoking cigarettes, pipe, cigar, chewing tobacco, dipping snuff</td>
<td>Yes</td>
</tr>
<tr>
<td>50</td>
<td>I sometimes drink beer or alcohol.</td>
<td>Yes</td>
</tr>
<tr>
<td>51</td>
<td>I sometimes feel down (sad, blue, depressed, stressed, worried, nervous) about my diabetes.</td>
<td>Yes</td>
</tr>
<tr>
<td>52</td>
<td>I sometimes feel down (sad, blue, depressed, stressed, worried, nervous) about my health.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
APPENDIX C

Saint Louis University Mental Status Examination

St. Louis University Mental Status Exam [SLUMS] with minor modifications
If pt is not alert during the exam please indicate here

<table>
<thead>
<tr>
<th>Actual Score</th>
<th>Scoring</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>What day of the week is it?</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>What is the year?</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>What state are we in?</td>
</tr>
</tbody>
</table>

Please remember these five objects. I will ask you what they are later:
APPLE PEN TIE HOUSE CAR

You have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20.

1. How much did you spend?
2. How much do you have left?
3. Please name as many animals as you can in one minute.
   0-4 animals score 0; 5-9 score 1; 10-14 score 2; 15+ score 3
5. What were those FIVE objects I asked you to remember?

2. I am going to give you a series of numbers and I would like you to give them to me backwards. For example:
   If I say 42, you would say 24
   87 → no score (trial) 649-1 point 8537-1 point

I am going to tell you a story. Please listen carefully because afterwards, I’m going to ask you some questions about it.

Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a disarmingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.

2. What was the female’s name?
2. When did she go to work?
2. What work did she do?
2. What state did she live in?

Please look at the clock face below. Please put the hour markers and the time at ten minutes to eleven o’clock.

2. Hour markers okay
2. Time correct

1. Look at the three figures below. Please place an X in the Triangle.
1. Which of the three figures below is the largest?

APPENDIX D

Six-Item Screener to Identify Cognitive Impairment

1. I would like to ask you some questions that ask you to use your memory. I am going to name three objects. Please wait until I say all three words, then repeat them. Remember what they are because I am going to ask you to name them again in a few minutes. Please repeat these words for me: APPLE – TABLE – PENNY.
(Interviewer may repeat words 3 times if necessary but repetition not scored.)

<table>
<thead>
<tr>
<th>Did participant repeat all three answers correctly?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Correct</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1. What year is this?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What month is this?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What is the day of the week?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What were the three words I asked you to remember?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Apple =</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Table =</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Penny =</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E
Diabetes Care Profile

Section VI Control Problems

Q1. How many times in the last month have you had a low blood sugar (glucose) reaction with symptoms such as sweating, weakness, anxiety, trembling, hunger or headache?

0 times
1-3 times
4-6 times
7-12 times
More than 12 times
Don’t know
### Section VIII. Attitudes towards Diabetes Scale

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. I am afraid of my diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q2. I find it hard to believe that I really have diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q3. I feel unhappy and depressed because of my diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q4. I feel satisfied with my life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q5. I feel I'm not as good as others because of my diabetes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q6. I can do just about anything I set out to do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q7. I find it hard to all the things I have to do for my diabetes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q8. Diabetes doesn’t affect my life at all.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q9. I am pretty well off; all things considered.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q10. Things are going very well for me right now.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Q11. I am able to: (circle one answer for each line)</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>a) keep my blood sugar in good control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>b) keep my weight under control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>c) do the things I need to do for my diabetes (diet, medicine, exercise, etc.).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>d) handle my feelings (fear, worry, anger) about my diabetes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
### APPENDIX F

Multidimensional Functional Assessment of Older Adults

<table>
<thead>
<tr>
<th>[CHECK &quot;YES&quot; OR &quot;NO&quot; FOR EACH OF THE FOLLOWING.]</th>
<th>CARD 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Medicaid</td>
<td></td>
</tr>
<tr>
<td>Medicare Plan A only (hospitalization only)</td>
<td></td>
</tr>
<tr>
<td>Medicare Plans A and B (hospitalization and doctors' bills)</td>
<td></td>
</tr>
<tr>
<td>Other insurance: hospitalization only</td>
<td></td>
</tr>
<tr>
<td>(Blue Cross or other)</td>
<td></td>
</tr>
<tr>
<td>Other insurance: hospitalization and doctors' bill (Blue Cross and Blue Shield, major medical or other)</td>
<td></td>
</tr>
</tbody>
</table>

27. Please tell me how well you think you are now doing financially as compared to other people your age—better, about the same, or worse?
   2 Better
   1 About the same
   0 Worse
   - Not answered
   49

28. How well does the amount of money you have take care of your needs—very well, fairly well, or poorly?
   2 Very well
   1 Fairly well
   0 Poorly
   - Not answered
   50

29. Do you usually have enough to buy those little "extras," that is, those small luxuries?
   1 Yes
   0 No
   - Not answered
   51

30. At the present time do you feel that you will have enough for your needs in the future?
   1 Yes
   0 No
   - Not answered
   52

**MENTAL HEALTH**

Next, I'd like to ask you some questions about how you feel about life.

(continued)
31. How often would you say you worry about things—very often, fairly often, or hardly ever?
   0 Very often
   1 Fairly often
   2 Hardly ever
   - Not answered

32. In general, do you find life exciting, pretty routine, or dull?
   2 Exciting
   1 Pretty routine
   0 Dull
   - Not answered

33. Taking everything into consideration how would you describe your satisfaction with life in general at the present time—good, fair, or poor?
   2 Good
   1 Fair
   0 Poor
   - Not answered

34. Please answer the following questions "Yes" or "No" as they apply to you now. There are no right or wrong answers, only what best applies to you. Occasionally a question may not seem to apply to you, but please answer either "Yes" or "No", whichever is more nearly correct for you.
   [CIRCLE "YES" OR "NO" FOR EACH.]

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Do you wake up fresh and rested most mornings?</td>
<td>yes</td>
<td>NO</td>
</tr>
<tr>
<td>(2) Is your daily life full of things that keep you interested?</td>
<td>yes</td>
<td>NO</td>
</tr>
<tr>
<td>(3) Have you, at times, very much wanted to leave home?</td>
<td>YES</td>
<td>no</td>
</tr>
<tr>
<td>(4) Does it seem that no one understands you?</td>
<td>YES</td>
<td>no</td>
</tr>
<tr>
<td>(5) Have you had periods of days, weeks, or months when you couldn’t take care of things because you couldn’t &quot;get going&quot;?</td>
<td>YES</td>
<td>no</td>
</tr>
<tr>
<td>(6) Is your sleep fitful and disturbed?</td>
<td>YES</td>
<td>no</td>
</tr>
<tr>
<td>(7) Are you happy most of the time?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>(8) Are you being plotted against?</td>
<td>YES</td>
<td>no</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>CARD 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Do you feel useless at times? .......... YES no</td>
</tr>
<tr>
<td>10. During the past few years, have you been well most of the time? .......... yes NO</td>
</tr>
<tr>
<td>11. Do you feel weak all over much of the time? .......... YES no</td>
</tr>
<tr>
<td>12. Are you troubled by headaches? .......... YES no</td>
</tr>
<tr>
<td>13. Have you had difficulty in keeping your balance in walking? .......... YES no</td>
</tr>
<tr>
<td>14. Are you troubled by your heart pounding and a shortness of breath? .......... YES no</td>
</tr>
<tr>
<td>15. Even when you are with people, do you feel lonely much of the time? .......... YES no</td>
</tr>
</tbody>
</table>

Sum of Responses in Capital letters

35. How would you rate your mental or emotional health at the present time—excellent, good, fair, or poor?
   3 Excellent
   2 Good
   1 Fair
   0 Poor
   - Not answered

36. Is your mental or emotional health now better, about the same, or worse than it was five years ago?
   2 Better
   1 About the same
   0 Worse
   - Not answered

37. About how many times have you seen a doctor during the past six months other than as an inpatient in a hospital? Card #
   [EXCLUDE PSYCHIATRISTS.]
   _______ Times

PHYSICAL HEALTH

Let's talk about your health now.

35. How would you rate your mental or emotional health at the present time—excellent, good, fair, or poor?
3. Excellent
2. Good
1. Fair
0. Poor
- Not answered

36. Is your mental or emotional health now better, about the same, or worse than it was five years ago?
2. Better
1. About the same
0. Worse
- Not answered

37. About how many times have you seen a doctor during the past six months other than as an inpatient in a hospital? Card #
[EXCLUDE PSYCHIATRISTS.]
58. During the past six months how many days were you so sick that you were unable to carry on your usual activities—such as going to work or working around the house?
   0 None
   1 A week or less
   2 More than a week but less than one month
   3 1-3 months
   4 4-6 months
   - Not answered

59. How many days in the past six months were you in a hospital for physical health problems?
    ________ Days
    11-15

40. How many days in the past six months were you in a nursing home, or rehabilitation center for physical health problems?
    ________ Days
    14-16

41. Do you feel that you need medical care or treatment beyond what you are receiving at this time?
   1 Yes
   0 No
   - Not answered

42. I have a list of common prescription medicines that people take. Would you please tell me if you’ve taken any of the following in the past month.
    [CHECK “YES” OR “NO” FOR EACH MEDICINE.]
    1 0

<table>
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<td>Arthritis medication</td>
<td>18</td>
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<tr>
<td>Prescription pain killer (other than above)</td>
<td>19</td>
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<tr>
<td>High blood pressure medicine</td>
<td>20</td>
</tr>
<tr>
<td>Pills to make you lose water or salt (water pills)</td>
<td>21</td>
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<tr>
<td>Digitalis pills for the heart</td>
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<td>Nitroglycerin for chest pain (tablets or patches)</td>
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<td>Blood thinner medicine (anticoagulants)</td>
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<td>Drugs to improve circulation</td>
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<td>Insulin injections for diabetes</td>
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<td>Pills for diabetes</td>
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<td>Prescription ulcer medicine</td>
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<td>YES</td>
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<td>Seizure medications (like Dilantin)</td>
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<td>Thyroid pills</td>
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<tr>
<td>Cortisone pills or injections</td>
</tr>
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<td>Antibiotics</td>
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<td>Tranquilizers or nerve medicine</td>
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<tr>
<td>Prescription sleeping pills (once a week or more)</td>
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<td>Hormones, male or female (including birth control pills)</td>
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43. What other prescription drugs have you taken in the past month? [RECORD THE "others". THEN ENTER THEM IN APPROPRIATE CATEGORIES ABOVE IF POSSIBLE.]

**[SPECIFY]**

36-37

44. Do you have any of the following illnesses at the present time? [CHECK "YES" OR "NO" FOR EACH OF THE FOLLOWING. IF "YES", ASK: "How much does it interfere with your activities, not at all, a little (some), or a great deal?" AND CHECK THE APPROPRIATE BOX.] [IF "YES", ASK:] How much does it interfere with your activities?

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<td>YES</td>
<td>NO</td>
<td>NOT AT ALL</td>
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<td>38</td>
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<td>Glaucoma</td>
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<td>Asthma</td>
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<td>Emphysema or chronic bronchitis</td>
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<td>Tuberculosis</td>
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<td>High blood pressure</td>
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<td>Heart trouble</td>
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<tr>
<td>Circulation trouble in arms or legs</td>
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(continued)
46. How is your eyesight (with glasses or contacts)—excellent, good, fair, poor, or are you totally blind?  
   1  Excellent  
   2  Good  
   3  Fair  
   4  Poor  
   5  Totally blind  
      - Not answered  65  

47. How is your hearing—excellent, good, fair, poor, or are you totally deaf? [WITHOUT HEARING AID.]  
   1  Excellent  
   2  Good  
   3  Fair  
   4  Poor  
   5  Totally deaf  
      - Not answered  66  

48. Do you have any other physical problems or illnesses at the present time that seriously affect your health?  
   1  Yes  
   0  No  
      - Not answered  67  

   [IF "YES" SPECIFY:]  

49. Do you use any of the following aids all or most of the time?  
   [CHECK "YES" OR "NO" FOR EACH AID.]  

   1  0  

   YES  NO  
   Cane (including tripod-tip cane)  69  
   Walker  70  
   Wheelchair  71  
   Leg brace  72  
   Back brace  73  
   Artificial limb  74  

(continued)
APPENDIX G

Diabetes Care Profile Demographic Form

Section I – Demographics
Please answer each of the following questions by filling in the blanks with the correct answers or by choosing the single best answer.

Note: For this survey, a Health Care Provider refers to a doctor, nurse practitioner, or physician assistant.

Q1. Age: ____ years old
Q2. Birth date: ____ / ____ / ____
   (Month / Day / Year)
Q3. Zip Code: ____ ____ ____
Q4. Sex: ☐ 1 Male  ☐ 2 Female
Q5. What year were you first told you had diabetes? (Please enter the year)
   ____ ____ ____
Q6. What is your marital status? (check one box)
   ☐ 1 Never married
   ☐ 2 Married
   ☐ 3 Separated/Divorced
   ☐ 4 Widowed
Q8. How many people live with you? (check one box)
   ☐ 0 I live alone
   ☐ 1 1 person
   ☐ 2 2 people
   ☐ 3 3 people
   ☐ 4 4 people
   ☐ 5 5 or more
Q9. How much schooling have you had? (Years of formal schooling completed)
(check one box)

☐ 1 8 grades or less
☐ 2 Some high school
☐ 3 High school graduate or GED
☐ 4 Some college or technical school
☐ 5 College graduate (bachelor’s degree)
☐ 6 Graduate degree

Q10. Which of the following best describes your current employment status?
(check one box)

☐ 1 Working full-time, 35 hours or more a week
☐ 2 Working part-time, less than 35 hours a week
☐ 3 Unemployed or laid off and looking for work
☐ 4 Unemployed and not looking for work
☐ 5 Homemaker
☐ 6 In school
☐ 7 Retired
☐ 8 Disabled, not able to work
☐ 9 Something else? (Please specify): ___________________________
Q11. How would you describe the insurance plan(s) you have had in the past 12 months? (check all that apply)

☐ 1. An individual plan – the member pays for the plan premium
☐ 2. A group plan through an employer, union, etc. – the employer pays all or part of the plan premium
☐ 3. U.S. Governmental Health Plan (e.g., Military, CHAMPUS, VA)
☐ 4. Medicaid
☐ 5. Medicare
☐ 6. I have not had an insurance plan in the past 12 months

Q12. Do you test your blood sugar? (check one box)
☐ 1. No ☐ 2. Yes

Q12a. How many days a week do you test your blood sugar?

____ (days / week)

Q12b. On days that you test, how many times do you test your blood sugar?

____ (times / day)

Q12c. Do you keep a record of your blood sugar test results? (check one box)

☐ 1. No ☐ 2. Yes ☐ 3. Only Unusual Values
Q13. Which of the categories best describes your total annual **combined** household income from all sources? (check one box)

- [ ] 01 Less than $5,000
- [ ] 02 $5,000 to $9,999
- [ ] 03 $10,000 to $14,999
- [ ] 04 $15,000 to $19,999
- [ ] 05 $20,000 to $29,999
- [ ] 06 $30,000 to $39,999
- [ ] 07 $40,000 to $49,999
- [ ] 08 $50,000 to $59,999
- [ ] 09 $60,000 to $69,999
- [ ] 10 $70,000 and over
APPENDIX H

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APPENDIX I

License Agreement for Diabetes Care Profile

On Feb 4, 2011, at 10:31 PM, Gina McCaskill wrote:

Dear Dr. Fitzgerald,

My name is Gina McCaskill. I am a PhD student in Social Work at The University of Alabama. I am currently engaged in my dissertation research on older African Americans and diabetes. I would like to receive a copy of the Diabetes Care Profile for possible inclusion in my dissertation. My dissertation chair is Dr. Kathleen Bolland, who I have copied on this email. If you have any questions regarding my request, please feel free to contact me at (205) 393-5888.

Thanks in advance,

--
Gina M. McCaskill, MSW, MPA
ACHE/SREB Doctoral Scholar
The University of Alabama, School of Social Work

James T. Fitzgerald <tfitz@umich.edu>
to Gina McCaskill <gmmccaskill@crimson.ua.edu>

cc Bolland, Kathleen" <kbolland@sw.ua.edu>

date Mon, Feb 7, 2011 at 7:47 AM
subject Re: Diabetes Care Profile Request

Ms. McCaskill,
You have our permission to use Diabetes Care Profile survey instrument (or selected scales) for your dissertation. You can find the survey at http://www.med.umich.edu/mdtrc/ just select "For Health Professionals" and then "Survey Instruments" from the site's menus. Scale scoring and references can also found there. Please call (734-763-5054) or email if you have any questions. Good luck with your study.

James T. Fitzgerald, PhD
Professor
Department of Medical Education
University of Michigan
(734) 936-1644
(734) 936-1641 (fax)
Associate Director of Education & Evaluation
Geriatric Research, Education, and Clinical Center
Ann Arbor VA
(734) 845-3047
(734) 845-3298 (fax)
# APPENDIX J

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APPENDIX L

Institutional Review Board Certification

Office for Research
Institutional Review Board for the Protection of Human Subjects

Gina McCaskill, MSW, MPA
School of Social Work
Box 870314

Re: IRB#: 11-OR-269-ME-R1 "Validation of the Self-Care Utility Geriatric African American Rating (SUGAAR) for Type 2 Diabetes"

Dear Ms. McCaskill:

The University of Alabama Medical Institutional Review Board has granted approval for your renewal application.

Your protocol has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

1. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on July 16, 2013. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Request for Study Closure Form.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Carpaneto T. Myles, MSS, CIR
Director & Research Compliance Officer
Office of Research Compliance
The University of Alabama

July 17, 2012

358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
fax (205) 348-2126

144
March 21, 2012

Gina McCaskill, MSW, MPA
School of Social Work
The University of Alabama
Box 870314

Re: IRB # 11-OR-164-R1 (Data Analysis Only) "Cognitive Interviews for Further Development of the Self-care Utility Geriatric African American Rating (SUGAAR) for Type 2 Diabetes

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has granted approval for your renewal application.

Your renewal application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on March 20, 2013. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Study Closure Form.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpenuto I. Myles, MSM, CIM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama
Office for Research
Institutional Review Board for the Protection of Human Subjects

October 27, 2011

Gina McCaskill, MSW, MPA
School of Social Work
The University of Alabama
Box 870314

Re: IRB #11-OR-260 (Revision #2) “Validation of the Self-care Utility Geriatric African American Rating (SUGAAR) for Type 2 Diabetes”

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has reviewed the revision to your previously approved expedited protocol. The board has approved the change in your protocol.

Please remember that your approval period expires one year from the date of your original approval, August 18, 2011 not the date of this revision approval.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants.

Good luck with your research.

Sincerely,

Stuart Usdan, Ph.D.
Chair, Non-Medical IRB
The University of Alabama
August 18, 2011

Gina McCaskill
School of Social Work
The University of Alabama
Box 870314

Re: IRB # 11-OR-260 “Validation of the Self-care Utility Geriatric African American Rating (SUGAAR) for Type 2 Diabetes”

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on August 17, 2012. If the study continues beyond that date, you must complete the IRB Renewal Application. If you modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this application, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

Carpetta T. Myles, MSM, CCM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama

358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
(205) 348-7489
X61 877-830-3066

147
June 6, 2011

Gina McCaskill, MSW, MPA
School of Social Work
The University of Alabama
Box 870314

Re: IRB # 11-OR-164: “Cognitive Interviews for Further Development of the Self-care Utility Geriatric African American Rating (SUGAAR) for Type 2 Diabetes”

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on May 11, 2012. If the study continues beyond that date, you must complete the IRB Renewal Application. If you modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this application, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

Carpaitato T. Myles, MSW, CIM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama
May 12, 2011

Gina McCaskill, MSW, MPA
School of Social Work
The University of Alabama
Box 870314

Re: IRB # 11-OR-164: “Cognitive Interviews for Further Development of the Self-care Utility Geriatric African American Rating (SUGAAR) for Type 2 Diabetes”

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. You have also been granted the requested waiver of written documentation of informed consent for the online survey participants. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on May 11, 2012. If the study continues beyond that date, you must complete the IRB Renewal Application. If you modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this application, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

Carpentor Myles, MSM, CIR
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama

Office for Research
Institutional Review Board for the Protection of Human Subjects
THE UNIVERSITY OF ALABAMA RESEARCH

152 Peake Administration Building
Box 870317
Tuscaloosa, Alabama 35487-0317
(205) 348-4661
FAX (205) 348-8882
TOLL FREE (877) 320-3066

149
March 26, 2010

Gina McCaskill, MSW, MPA
School of Social Work
The University of Alabama
Box 870314

Re: IRB # 09-OR-126-R1 “The Development of a Diabetes Self-Care for Older African Americans with Type 2 Diabetes”

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has granted approval for your renewal application.

Your renewal application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on March 26, 2011. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpetato T. Myles, MSW, CIM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama
September 8, 2009

Gina McCaskill
School of Social Work
Box 870314

Re: IRB#: 09-OR-126 (Revision), The Development of a Diabetes Self-Care Scale for Older African Americans

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has reviewed the revision to your previously approved expedited protocol. The board has approved the change in your protocol.

Please remember that your approval period expires one year from the date of your original approval, 4/22/2009 not the date of this revision approval.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

Carpaneto T. Myles, MSM, CHM
Director & Research Compliance Officer
Office of Research Compliance
The University of Alabama
April 28, 2009

Gina McCaskill  
School of Social Work  
Box 870314

Re: IRB #: 09-OR-126, The Development of a Diabetes Self-Care Scale for Older African Americans with Type 2 Diabetes

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has reviewed the revision to your previously approved expedited protocol. The board has approved the change in your protocol.

Please remember that your approval period expires one year from the date of your original approval, 4/22/2009 not the date of this revision approval.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

Carpenato T. Myles, MSM, CRM  
Director of Research Compliance & Research Compliance Officer  
Office of Research Compliance  
The University of Alabama
April 22, 2009

Gina McCaskill
School of Social Work
Box 870314

Re: IRB#: 09-OR-126, The Development of a Diabetes Self-Care Scale for Older African Americans with Type 2 Diabetes

Dear Ms. McCaskill:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on April 22, 2010. You will receive a notice of the expiration date 90 days in advance. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure Form. If you wish to modify the application, complete the Modification of an Approved Protocol. When the study closes, complete the appropriate portions of the Continuing Review and Closure Form.

Please use reproductions of the IRB approved consent and assent forms to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpeta T. Myles, MSW, CIM
Director of Research Compliance & Research Compliance Officer
Office of Research Compliance
The University of Alabama