EVALUATING SOCIAL FACTORS IN DIABETES MANAGEMENT BY
MEXICAN AMERICAN ETHNICITY

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Differences in Mexican American ethnicity, family and friend social support, and importance of diabetes self-management as related to diabetes management in the older adult population were evaluated with the University of Michigan Health and Retirement Study (HRS) 2003 Diabetes Study. Comparisons were made between Mexican Americans with Type II diabetes and similar non-Hispanic Caucasian and African American individuals with Type II diabetes. Neither family/friend social support nor importance of diabetes self-management were significant predictors of HbA1c levels. Results did not support the idea that perception of receiving support from family/friends or placing importance on diabetes self-management covaried with lower HbA1c level (family/friend: beta = -.13, t = -1.47, p = .143; self management: beta = .08, t = .55, p = .584).
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ACKNOWLEDGMENTS

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................................................................................... iii

LIST OF TABLES ...........................................................................................................................v

Chapter

I. INTRODUCTION ...................................................................................................1
   Statement of the Problem
   Overview of Diabetes and Diabetes Management
   General Social Support and Diabetes Management
   Family/Friend Specific Support and Diabetes Management
   Cultural and Ethnic Differences in Diabetes Management
   Purpose of Research
   Hypothesis

II. METHODS ............................................................................................................12
   Participants
   Procedures
   Measures

III. RESULTS ..............................................................................................................16
   Sample Characteristics of Individuals with Type II Diabetes by Race/Ethnicity
   Relationships among Variables of Interest by Race/Ethnicity
   Relationship of Family/Friend Social Support, Self-Care Diabetes Management, and HbA1c
   Primary Evaluation of Social Factors Influencing Diabetes Management

IV. DISCUSSION ........................................................................................................22
   Summary of Findings
   Limitations and Future Directions of Research

APPENDICES ...............................................................................................................................28

BIBLIOGRAPHY ..........................................................................................................................38
LIST OF TABLES

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Descriptive Data for Participants</td>
</tr>
<tr>
<td>2</td>
<td>Relationships among Continuous Variables for Mexican Americans</td>
</tr>
<tr>
<td>3</td>
<td>Relationships among Continuous Variables for African Americans</td>
</tr>
<tr>
<td>4</td>
<td>Relationships among Continuous Variables for Caucasians</td>
</tr>
</tbody>
</table>
CHAPTER I

LITERATURE REVIEW

The four purposes of this chapter are to: a) present the statement of the problem, including an overview of Type II diabetes mellitus and management of the disease; b) review empirical research on social support and diabetes management; c) discuss social support in the context of family/friends and cultural differences in diabetes management; and d) provide an explanation of the purpose of this completed research and present the specific hypothesis evaluated in this research. All of this is done with a focus on the Mexican American population with Type II diabetes.

Statement of the Problem

Statistics derived from the 2007 National Diabetes Fact Sheet (Centers for Disease Control, 2008) indicate there are 23.6 million people in the United States, or 7.8% of the population, who have diabetes. Diabetes, a disease in which insulin is not properly utilized and/or produced by the body, has a variety of potential causes. A combination of genetics, lifestyle, and environmental factors has been implicated in its onset. The onset of diabetes has varied effects on both the physical and psychological well being of an individual.

Overview of Diabetes and Diabetes Management

Type II diabetes, as opposed to Type I diabetes or gestational diabetes, was the primary interest of this study. More than 90% of cases of diabetes are Type II diabetes (Ligaray, 2007). Type II diabetes is characterized by two defects: insulin deficiency and/or insulin resistance. Relative insulin deficiency usually occurs because of resistance to the actions of insulin in
muscle, fat, and the liver and an inadequate response by the pancreatic beta cell. This pathophysiologic abnormality results in decreased glucose transport in muscle, elevated hepatic glucose production, and increased breakdown of fat (Ligaray, 2007).

Pregnant women who have never had diabetes before but who have high blood sugar (glucose) levels during pregnancy are said to have gestational diabetes, which is similar to, but distinct from, Type II diabetes. Gestational diabetes affects about 4% of all pregnant women - about 135,000 cases of gestational diabetes in the United States each year (American Diabetes Association, 2010) and most typically subsides after the pregnancy.

Unlike people with Type I diabetes who have a complete breakdown of the ability to produce insulin, people with Type II diabetes produce insulin; however, the insulin their pancreas secretes is either not enough and/or the body is unable to recognize the insulin and use it properly. This inability to use insulin is called insulin-resistance. The morbidity and mortality associated with diabetes, and specifically Type II diabetes, are related to short- and long-term complications, which include increased risk of high blood pressure, hyper-lipidemia, infections, microvascular complications such as retinopathy and nephropathy, and macrovascular disease such as stroke and heart disease (Votey & Peters, 2009). Type II diabetes mellitus is more prevalent among Latino, Native American, African American, and Asian/Pacific Islander individuals in comparison to non-Hispanic Caucasian individuals. The incidence of Type II diabetes is essentially equal in women and men in all populations (Votey & Peters, 2009).

Diabetes management is achieved by accounting for personal and cultural preferences and a willingness to change behavior (American Diabetes Association, 2008). The coordination of meals with medication reflects the importance of healthy eating in diabetes management. Because of the effects of obesity on increasing insulin resistance, weight loss is an important
objective for individuals with prediabetes and diabetes (Norris et al., 2005). Aside from nutrition and weight management, physical activity, as another lifestyle change, aids the body’s response to and utilization of insulin. Regular exercise has been shown to improve blood glucose control, reduce cardiovascular risk factors, contribute to weight loss, and improve overall health. Medication adherence and preventative actions (e.g., management of stress) are also components of proper diabetes management. Other aspects of diabetes management are those related to self-management education (DSME). This component in the clinical care of diabetes factors in the roles of social situation and culture. In fact, when psychosocial factors are addressed, better outcomes have been reported for DSME (Norris, Engelgau, & Narayan, 2001; Peyrot & Rubin, 2007). A growing body of empirical literature suggests that patient perceptions of health and threat of disease, as well as barriers in a patient's social or cultural environment, appears to influence the likelihood that a patient will engage in health-promoting or treatment behaviors (e.g., medication intake, proper diet, physical activity, DiMatteo, Haskard, & Williams, 2007). Although important for diabetes management, these factors were not evaluated as they were outside the bounds of this current project.

It is clear that multiple contextual factors need to be considered to understand the mechanics of chronic-illness management. Expert consensus outlined in standards of care for diabetes recommends assessment of psychological and social situation be included as an ongoing part of the medical management of diabetes. As diabetes continues to remain a prevalent and growing health concern, demographic and psychosocial factors need to be taken into account. This furthers understanding on the impact these factors have on the development and health outcomes of individuals with diabetes. The current study focused on family/friend social factors as well as importance of diabetes self-management with a United States national sample of
Mexican American older adults with Type II diabetes and included comparisons to non-Hispanic Caucasian and African American individuals with Type II diabetes.

General Social Support and Diabetes Management

Over the past quarter century, much research has documented the beneficial effects of social networks and social support on morbidity, mortality, and a variety of positive chronic illness outcomes (Berkman & Glass, 2000; Kaplan & Toshima, 1990 as cited in Gallant, 2003). The mechanism by which support influences health was not well understood and this was a priority to be undertaken by researchers during the 1990s (Bloom, 1990). The global notion of social support includes several related concepts (van Dam et al., 2005). An individual’s social network refers to a web of social relationships and social linkages assessed through the number or density of social support sources and persons around a person. Social support can be defined by its observed or reported content or by the perceived support given to a person assessed by careful observations and reports, by indices of satisfaction, or by scores of perceived support.

It is clear that research on social support networks have focused on emotional support: warmth and nurturance, concern, and validation of his or her partner’s identity. The way individuals perceive emotional support from their immediate social network has the potential to influence coping during chronic illness. Moreover, more emotional support is related to improved recovery from various illnesses and injuries and then subsequently relates to longevity (Seeman, 2001). It should be noted that there is no evidence, due to limited evaluations, that any one type of social support is more effective than another (Dennis, 2003; Hogan, Linden, & Najarian, 2002).

Although social support often is related to positive outcomes, there is some evidence that
not all social support is helpful (Lincoln, 2000). Too little or too much support may worsen diabetes outcomes. Observational studies suggest that bigger social network size bear negatively for both men and women with diabetes, and that higher social support satisfaction may relate to worse diabetes control in men (Boehm, Schlenk, Funnel, Powers, & Ronis, 1997; Kaplan & Hartwell, 1987). Knowledge of contextual factors facilitates understanding on ways that culture, family relations, and other social processes such as social support affects individual health. The mechanics of an individual’s environment reveals factors that may or may not be considered abnormal yet may not be conducive to well-being.

Family/Friend Specific Support and Diabetes Management

As indicated by van Dam et al. (2005), understanding the ways in which social support operates allows researchers and practitioners alike to enhance various aspects of diabetes management. This includes but is not limited to self-care, adherence to treatment recommendations, and lifestyle modification. Aside from the health professionals that make up a diabetes care team, an invaluable form of support for the patient with diabetes is the patient’s own support network of family and friends. The quality of those supports is dependent on the structural or quantitative (the number of social contacts) aspects and functional (more instrumental activities of daily living) aspects (Wills & Fegan, 2000, as cited in Harper, 2004).

Several presumptions can arise regarding the relationship between support and chronic disease management. Within the context of familial relationships, family members may facilitate the self-management process in a variety of ways such as emotional support or more direct assistance with illness management activities such as being given insulin shots twice a day for glucose control. Some research has provided evidence that illness-specific support is more
predictive of health outcomes than general support (Aalto, Uutela, & Aro, 1997).

Family characteristics surrounding the individual with diabetes have been the least explored context of disease management (Fisher et al., 2000). A large portion of research that has looked at familial contributions to diabetes management has focused on children and adolescents (Auslander & Corn, 1996). Increasing incidence of diabetes with age necessitates the need to look at familial characteristics among older adults. The research that has looked at family behavior, adherence, and metabolic control in adults has reported mixed results. Some studies have demonstrated that strong family social support appear to have a positive impact on glycemic control and/or self-management behaviors (Albright, Parchman, Burge, & the RRNesST Investigators, 2001; Boehm et al., 1997; Fisher et al., 2000; Glasgow & Toobert, 1988). Other studies have found no relationship between diabetes disease management and family support (Gleeson-Kreig, Bernal, & Woolley, 2002; Trief, Grant, Elbert, & Weinstock, 1998).

There is critical need to closely examine the effects of family support regarding the clinical management of Type II diabetes. As noted by Fisher et al. (2000), most disease management behavior evolves through, is sanctioned by, or takes place within the family or home setting. A study of Latinos from four diverse communities found that family support was important in ensuring patient compliance with diabetes management behaviors (Weller et al., 1999). Several conditions (e.g. health-related beliefs or tangible support) identify the family as unique and distinguish it from other social relationships that provide social support (Cox & Gonder-Frederick, 1992; Goodall & Halford, 1992 as cited in Fisher et al., 2000).

Contextual perspectives cannot overlook the combination of patient and spouse behavior and its influence on disease management. Gender differences are often present. Researchers
(Kvam & Lyons, 1991; Rubin & Peyrot, 1998) have indicated men tend to want and receive more support from their spouse while women utilize additional support from family and friends. This is called the support-gap hypothesis. Consistent with the support gap hypothesis, there is reliable evidence that men, on the average, receive more emotional support from their spouses than women do from their spouses (Antonucci & Akiyama, 1987; Huston-Hoberg & Strange, 1986 as cited in Xu & Burleson, 2001).

Fekete, Stephens, Mickelson, and Druley (2007) suggest couples who are able to meet each other’s emotional needs may experience better adjustment when coping with chronic illness. In evaluating gender and nutrition management in Type II diabetes, Wong, Gucciardi, Li, and Grace (2005) found that male clients are more likely to be actively supported by their wives in the form of meal preparation and verbal encouragement, while female clients are only passively supported by their husbands.

Focus has been expanding to evaluate the psychosocial context of living with diabetes, specifically within the context of marriage. Beverly, Penrod, and Wray (2007) explored spousal relationships and found that beliefs held by people with diabetes are influenced by their spouse's beliefs, and disease management is consequently dependent on the couple's perceptions and understanding of diabetes. The management of a chronic illness can become burdensome and many sources of conflict may influence the long-range health and well-being of both partners who are living with diabetes. Knowledge of contextual factors seems to play a strong role in whether perception of helping behavior is considered helpful or intrusive in particular situation (Bailey, 1993). In addition, some studies suggest that gender differences in support receipt depend on situational variables such as type of problem, controllability of outcome, and behavior elicited by the individual that signals need for support (Barbee et al., 1993; Matthews, Stansfeld,
& Power, 1999). The current study examined diabetes management support in the context of family and friends.

Cultural and Ethnic Differences in Diabetes Management

Researchers are apt to note that while increased social support may have a positive relationship to health, more studies are needed to evaluate cultural differences in the use and effect/relationship of social support. There has not been a clear understanding of how social support may operate among individuals from different cultural backgrounds (Kim, Sherman, & Taylor, 2008). It is usually hypothesized the subjective experiences of an individual’s perceived support could affect that individual’s ability to cope with complications due to diabetes management. Social support might offer a coping mechanism to deal with stressful situations and provide a structure that could potentially reduce the likelihood that stress will lead to poor health (Sarazon, Sarason, & Gurung, 1978, as cited in van Dam et al., 2005).

Burson (2003) discusses the pragmatic relevance of exploring cultural differences in emotional support processes. When there are differences in reliance on emotional support and distinctions between various social groups, practice, pedagogy, and additional services would need to be reflective of this diversity (Kunkel & Burleson, 1998 & Wood, 1993, as cited in Burson, 2003). Greater understanding into the cultural variations of emotional support in close relationships influences the conceptualization of why they are present and how they influence health outcomes.

Cultural differences in the expectations and norms regarding how relationships are coordinated should have implications for whether people use social support, the mode of social support they use, and the effectiveness of social support seeking (Kim et al., 2008). With
increasing prevalence of diabetes among ethnic minorities, evaluating differences in these groups is crucial. A large portion of research emphasizes sociodemographic factors, clinical variables, and health care access related to glycemic control (Harris, 2001; Harris, Eastman, Cowie, Flegal, & Eberhardt, 1999). Given this focus, racial and ethnic differences in quality of diabetes care and diabetes self-management has been established at the national level (Nwasuruba, Khan, & Egede, 2007; Thackeray, Merrill, & Neiger, 2004). Even when self-management and quality of care may be comparable for Latinos and Caucasians with diabetes, ethnic disparities persist in managed care settings (Brown et al., 2003). When assessing for differences between the three major racial and ethnic groups in the United States, self management education appears to be beneficial for Caucasian and African American individuals but not for Latino individuals, independent of having a regular health care provider (Kurian & Borders, 2006).

Studies evaluating the role of social factors by race and ethnicity are expanding. Among African American individuals, relationships among personal factors (education and morbidity) as well as physical functioning on social support as it relates to glycemic control has been evaluated (McDonald, Wykle, Misra, Suwonnaroop, & Burant, 2002). Multiple studies looking at social support variables on glycohemoglobin values has shown higher values among African American individuals in comparison to Caucasian individuals (Bailey, 1997; Kirk, D’Agostino, Bell, Passmore, Bonds, Karter, & Narayan, 2006). Even when psychosocial variables are assessed their relation to health outcomes among individuals with Type II diabetes may be absent. Chlebowy and Garvin (2006) found that although African American individuals reported less social support satisfaction, Caucasians and African American individuals were similar on social support, self-efficacy, and outcome expectations.

As recently as 2006, attendance to cultural differences has been systematically reviewed
to outline the health issues that exist among Latinos with diabetes (Caban & Walker, 2006). Much of the research about cultural differences and diabetes conducted at the national level focuses on Mexican Americans. Several studies have reported significant findings of social and family support on diabetes self-care among this Mexican American group (Carranza & LeBaron, 2004; Wen, Shepard & Parchman, 2004).

Purpose of Research

Despite the body of literature about the positive benefits of social support on diabetes management, limited research remains evaluating differences in the Mexican American population and the effects of perceived social support from family or friends on diabetes management. The purpose of the current study was twofold. First, I sought to replicate previous findings on the positive effects of high perceived diabetes social support on diabetes control. Second, I sought to investigate if the effects of perceived diabetes social support or importance of diabetes self-management would differ among older adults grouped as non-Hispanic Caucasian individuals, non-Hispanic African American individuals, or Mexican American individuals. I also investigated the influence of gender on HbA1c level, a measure of diabetes control.

Data utilized in this study was obtained from the University of Michigan 2002 through 2004 Health and Retirement Study (HRS), a survey taken every two years of more than 22,000 Americans over the age of 50. The National Institute on Aging (NIA) provided funding for the 2003 Diabetes Study, the focus of the current project. The 2003 Diabetes Study reviewed data from self-reported questionnaires on diabetes self-management.

Based on previous research findings in the area of diabetes management, I sought to
investigate whether family/friend social support or importance of diabetes self-management would affect diabetes control as determined by HbA1c levels. If present, would these factors differ in a sample of Mexican American older adults with Type II diabetes? The following hypotheses were proposed and tested:

Hypothesis I – Higher levels of perceived diabetes support from family/friends were expected to influence diabetes control, evidencing more normal levels of HbA1c.

Hypothesis II - Higher importance of diabetes self-management were expected to influence diabetes control, evidencing more normal levels of HbA1c.

Close attention was then focused on the sample of Mexican American individuals with Type II diabetes.
CHAPTER II

METHODS

Participants

There were 3,194 interviewed respondents in the 2002 HRS interview who reported a
diagnosis of diabetes. Of these, 680 participants were excluded from the 2003 Diabetes Study
due to participation in a competing survey. Of the 2,514 eligible 2002 participants, 129
participants were excluded as they had died before the start of the 2003 Diabetes Study. Of the
2,385 remaining eligible cases who were sent the 2003 Diabetes Study material, 1,901 returned
questionnaires. Of the 1,901 study respondents, the sample for these analyses included persons
with Type II diabetes \( (n = 1,603) \). Individuals with Type I diabetes \( (n = 50) \), respondents who
did not know their diabetic status \( (n = 178) \), and missing data \( (n = 70) \) were excluded from the
study sample. Of those respondents, 585 respondents did not have a usable blood sample to
obtain a laboratory HbA1c measure, resulting in a sample of 1,018 participants for analysis (524
males and 494 females).

The focus of this study centered on differences between three specific racial and ethnic
groups with a particular emphasis on Mexican American individuals. Participants were initially
separated into groups of Mexican American individuals \( (n = 63) \) and a group of non-Mexican
American individuals \( (n = 955) \). Groups were further divided into one of three racial/ethnic
groupings. This diverse sample of 1,018 individuals with Type II diabetes consisted of non-
Hispanic White or Caucasian individuals \( (n = 816) \), Black or African American individuals \( (n = 139) \), and Mexican American individuals \( (n = 63) \).
Procedures

*University of Michigan Health and Retirement Study.* Data was obtained from the University of Michigan 2002 through 2004 Health and Retirement Study (HRS), a survey taken every two years of more than 22,000 Americans over the age of 50. Supported by the National Institute on Aging (NIA), the HRS looks at various aspects of physical and mental health disparities that are present in the aging population of America. The current project focused on the between wave 2003 Diabetes Study.

*2003 Diabetes Study of the HRS.* The National Institute on Aging (NIA) funded the HRS 2003 Diabetes Study of the HRS. The study reviewed data from self-reported questionnaires on diabetes self-management. These survey questions were drawn from several sources, including validated instruments from the Michigan Diabetes Research and Training Center.

Measures

*University of Michigan Health and Retirement Study.* The following demographic information was gathered from the 2002 HRS interview and served as independent variables in this research: race/ethnicity (Appendix A) and sex (Appendix B). Interviewed respondents in the 2002 HRS who reported a diagnosis of diabetes were included in the 2003 Diabetes Survey. As such, demographic and additional respondent information, such as age, years of education, and marital status (Appendix C), was gathered through the 2002 or earlier HRS Core interviews.

*HbA1c level.* The primary outcome of interest, the dependent variable, was the respondent’s HbA1c count. The respondents who completed the 2003 Diabetes Survey were also sent a self-administered HbA1c testing kit to use and mail back at the time they completed the 2003 Diabetes Survey. Physical data in the form of glycosylated
hemoglobin, or HbA1c, was collected to evaluate individuals’ glucose control. The hemoglobin A1c test shows the average amount of sugar in the blood of an individual with diabetes over the last two to three months. It tends to be the best indicator of an individual’s blood sugar control over an extended period of time (60 to 90 days), although it is more highly influenced by blood sugar level more proximate to the time of measurement. This HbA1c measure was treated as a continuous variable, but can also be conceptualized as a cut-score, with an HbA1c of 7.0% or lower, being the goal for good diabetes control.

**Family and Friend Diabetes Social Support Scale.** To assess social support for diabetes management, Items D.2a through D.2h from the 2003 Diabetes Study under Section D: Family and Social Situation Question D.2 (Appendix D) were averaged to form a family and friend diabetes support scale score. For the purpose of this study where social support is a key variable of interest, to be eligible for inclusion in analysis the participant had to complete at least 3/4 of this social support scale (a minimum of 6 of the 8 items). These items were scored on a 5-point Likert-type scale where 1 = strongly disagree, 2 = disagree, 3 = neither disagree or agree, 4 = agree, and 5 = strongly agree. The mean and alpha internal consistency reliability of the scale was analyzed both overall and by sex and racial/ethnic groupings. These alpha internal consistency reliability scores were found to be similar by group.

**Self-Care Diabetes Management Scale.** To perform subsequent analyses on diabetes self-care as it relates to HbA1c results, Items D.1a through D.1h from the 2003 Diabetes Study under Section D: Family and Social Situation Question D.1 (Appendix E) were averaged to form a self-care diabetes management scale. For the purpose of this study where diabetes self-management importance is a key variable of interest, to be eligible for inclusion in analysis the participant had to complete at least 3/4 of this self-care scale (a minimum of 6 of the 8 items). Items were also
scored on a 5-point Likert-type scale. The mean and alpha internal consistency reliability of the scale was analyzed both overall and by sex and race/ethnicity groups. These alpha internal consistency reliability scores were found to be similar by group.
CHAPTER III

RESULTS

This chapter is organized into four sections. The first section presents sample information including descriptive statistics on variables of interest by racial/ethnic groupings. In the second section, relationships among key study variables including age, education, HbA1c level, family/friend social support, and self-care diabetes management are examined. The third section explores the two hypotheses on the association and differences in family/friend social support, self-care diabetes management, and HbA1c levels. The fourth section further explores the two hypotheses and looks at the regression analysis to investigate the primary hypothesis on the relative contribution of family/friend diabetes social support and self-care diabetes management on HbA1c levels to determine diabetes management. Particular attention was then focused on the sample of Mexican American individuals of this study.

Sample Characteristics of Individuals with Type II Diabetes by Race/Ethnicity

Table 1 presents descriptive data for demographics, variables of interest including perceived diabetes social support from friends and family, importance of self-care management broken down by the three major racial/ethnic groupings as well as their corresponding HbA1c levels, the clinical measure of diabetes control.
### Sample Characteristics of Participants by Racial/Ethnic Groupings

<table>
<thead>
<tr>
<th></th>
<th>Caucasian (n = 816)</th>
<th>African American (n = 139)</th>
<th>Mexican American (n = 63)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex (%, n)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>45.3 (370)</td>
<td>61.9 (86)</td>
<td>60.3 (38)</td>
</tr>
<tr>
<td>Male</td>
<td>54.7 (446)</td>
<td>38.1 (53)</td>
<td>39.7 (25)</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70.41 (8.60)</td>
<td>68.19 (8.61)</td>
<td>67.14 (9.04)</td>
</tr>
<tr>
<td><strong>Educations (years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.63 (2.61)</td>
<td>11.02 (3.79)</td>
<td>8.11 (4.12)</td>
</tr>
<tr>
<td><strong>Marital Status (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>69.1 (541)</td>
<td>53.0 (71)</td>
<td>57.1 (36)</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>8.6 (67)</td>
<td>19.4 (26)</td>
<td>12.7 (8)</td>
</tr>
<tr>
<td>Widowed</td>
<td>20.6 (161)</td>
<td>25.4 (34)</td>
<td>30.2 (19)</td>
</tr>
<tr>
<td>Never married</td>
<td>1.8 (14)</td>
<td>2.2 (3)</td>
<td></td>
</tr>
<tr>
<td><strong>HbA1c lab result (%) (M, SD)</strong></td>
<td>7.07 (1.21)</td>
<td>7.69 (1.86)</td>
<td>8.05 (1.71)</td>
</tr>
<tr>
<td><em><em>Family/Friend Diabetes Support</em> (M, SD)</em>*</td>
<td>3.80 (.79)</td>
<td>3.88 (.86)</td>
<td>3.94 (.77)</td>
</tr>
<tr>
<td><em><em>Self-Care Importance</em> (M, SD)</em>*</td>
<td>4.23 (.46)</td>
<td>4.27 (.53)</td>
<td>4.19 (.46)</td>
</tr>
</tbody>
</table>

*Mean score for items that are based on a 5-point Likert-type scale where 1 = strongly disagree, 2 = disagree, 3 = neither disagree or agree, 4 = agree, and 5 = strongly agree.

### Relationships among Variables of Interest by Race/Ethnicity

Bivariate relationships among key study variables were examined using correlations. Although atheoretical and not hypothesis driven, it is important to understand the relationships among these variables across racial/ethnic groupings. Table 2 summarizes the correlations among all continuous variables utilized in the study for Mexican American individuals. Table 3 summarizes associations for non-Hispanic African American individuals. Table 4 summarizes
associations for non-Hispanic Caucasian individuals. As can be seen in Table 2, it seems the older the Mexican American participants, the lower and better HbA1c levels. Years of education and family/friend social support were also negatively correlated (i.e., greater education associated with less perceived support from family and friends). A relatively strong correlation was found in which greater perceived support from family and friends was associated with greater importance of self-care management in this group.

Table 2

*Bivariate Relationships among Continuous Variables for Mexican American Individuals*

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>HbA1c</th>
<th>Education (years)</th>
<th>Family/Friend Support</th>
<th>Self-Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.0</td>
<td>-.315**</td>
<td>-.133</td>
<td>-.007</td>
<td>-.195</td>
</tr>
<tr>
<td>HbA1c</td>
<td>1.0</td>
<td>.075</td>
<td></td>
<td>-.109</td>
<td>-.180</td>
</tr>
<tr>
<td>Education (years)</td>
<td>1.0</td>
<td></td>
<td>-.296**</td>
<td></td>
<td>.017</td>
</tr>
<tr>
<td>Family/Friend Support</td>
<td></td>
<td>1.0</td>
<td></td>
<td>.526*</td>
<td></td>
</tr>
<tr>
<td>Self-Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Correlation significant at the p < .01 level (2-tailed). **Correlation significant at the p < .05 level (2-tailed).

Table 3

*Bivariate Relationships among Continuous Variables for African American Individuals*

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>HbA1c</th>
<th>Education (years)</th>
<th>Family/Friend Support</th>
<th>Self-Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.0</td>
<td>-.2.44**</td>
<td>-.401*</td>
<td>.178**</td>
<td>-.011</td>
</tr>
<tr>
<td>HbA1c</td>
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<td>.041</td>
<td></td>
<td>-.002</td>
<td>-.016</td>
</tr>
<tr>
<td>Education (years)</td>
<td></td>
<td>1.0</td>
<td>-.192**</td>
<td></td>
<td>-.060</td>
</tr>
<tr>
<td>Family/Friend Support</td>
<td></td>
<td></td>
<td>1.0</td>
<td>.570*</td>
<td></td>
</tr>
<tr>
<td>Self-Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Correlation significant at the p < .01 level (2-tailed). **Correlation significant at the p < .05 level (2-tailed).
Table 4

_Bivariate Relationships among Continuous Variables for Caucasian Individuals_

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>HbA1c</th>
<th>Education (years)</th>
<th>Family/Friend Support</th>
<th>Self-Care</th>
</tr>
</thead>
<tbody>
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<td>-0.144*</td>
<td>0.112**</td>
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<tr>
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<td></td>
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<tr>
<td>Education (years)</td>
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<td></td>
<td>-0.147*</td>
<td>0.077**</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>0.314*</td>
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<tr>
<td>Self-Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Correlation significant at the p < .01 level (2-tailed). **Correlation significant at the p < .05 level (2-tailed).

In order to investigate the possible influence of family/friend social support and self-management importance on diabetes control, an evaluation of differences and association was done between the scales representing the constructs of interest: the Family/Friend Diabetes Social Support Scale and the Self-Care Diabetes Management Scale. There was a positive correlation between \( r = 0.37, p < 0.000 \) perceived diabetes support from family or friends and self-care diabetes management importance for all participants. When correlations were repeated by sex, results were essentially the same as that for all participants with males \( r = 0.41, p < 0.000 \) and females \( r = 0.33, p < 0.000 \) evidencing positive correlations between these scales.

An association between family/friend diabetes social support and self-care diabetes management importance was found for all racial/ethnic groups. However, that association seemed to have a stronger positive relationship among non-Hispanic African American individuals \( r = 0.57, p < 0.000 \) and Mexican American individuals \( r = 0.53, p < 0.000 \) in contrast to non-Hispanic Caucasian individuals \( r = 0.31, p < 0.000 \).
An assessment of difference in strength of the association between family/friend social support and self-care diabetes management importance was compared between all three racial/ethnic groups using a z-test for correlation coefficients. This difference was statistically significant only between non-Hispanic Caucasian individuals and non-Hispanic African American individuals ($z = -3.43, p < .001$). Family/friend social support explains significantly more of the variance in self-care diabetes management importance for non-Hispanic African American Individuals than for non-Hispanic Caucasian individuals.

A one-way ANOVA was performed to look at HbA1c levels by race and ethnicity. Three different racial/ethnic groups were examined: non-Hispanic Caucasian, non-Hispanic African American individuals, and Mexican American individuals. Results indicated significant group differences, ($F(2, 1015) = 24.97, p < .001$). Post-hoc comparisons using the Scheffe test indicated that non-Hispanic Caucasian individuals ($M = 7.07, SD = 1.21$) differed significantly from both non-Hispanic African American individuals ($M = 7.69, SD = 1.86$) and Mexican American individuals ($M = 8.05, SD = 1.71$). Non-Hispanic Caucasian individuals evidenced lower HbA1c levels, indicative of better diabetes management.

Primary Evaluation of Social Factors Influencing Diabetes Management

The relative contribution of family/friend social support and self management importance was assessed using linear regression analyses. In the regression analysis, age, years of education, and sex was entered in the initial block of independent variables. The overall model explained 2.6% of the variance in HbA1c level. A second model added entered race/ethnicity to evaluate potential differences. Reference group coding was used to convey all the necessary information on membership into one of the three racial/ethnic groups. Race/ethnicity explained an additional
3.2% of the variance in HbA1c level, after controlling for age, years of education, and sex, R squared change = .032, \((F(5, 966) = 11.904, p < .001)\). Specifically, membership in the Mexican American group had a higher beta value (beta = .90, \(t = 4.65, p < .001\)) as well as membership in the non-Hispanic African American group (beta = .55, \(t = 4.18, p < .001\)).

A third model additionally added the relative contribution of family/friend social support or self-care management importance in the prediction of HbA1c. Neither family/friend social support nor importance of diabetes self-management were significant independent predictors of HbA1c levels. The coefficients did not support the idea that perception of receiving support from family or friends and placing importance on diabetes self-management influence diabetes management (family/friend: beta = -.08, \(t = 1.31, p = .191\); self management: beta = -.04, \(t = -.40, p = .693\)).

In a fourth model, I further added the interaction of gender and family/friend social support as well as gender and self-care diabetes management importance. Neither of these interaction terms were significant independent predictors in HbA1c levels. A fifth and final model added the interaction of race/ethnicity and family/friend social support as well as race/ethnicity and self-care diabetes management importance. Again, none of these interactions were significant independent predictors in HbA1c levels. Contrary to my primary hypotheses, neither family/friend social support nor importance of diabetes self-management were significant independent predictors of HbA1c levels.
CHAPTER IV
DISCUSSION

This chapter consists of two sections. The first presents a summary of the research findings in relation to the proposed hypothesis and implications of the data. The second presents limitations of the research and concludes with directions for future research.

Summary of Findings

The overarching purpose of this research was to examine the relationship between family/friend social support and self-care diabetes management importance in the management of Type II diabetes. Participants for this research were taken from data containing a nationally representative sample of the aging population. Contrary to prediction, individuals with high levels of perceived diabetes social support from family/friends and high self-care diabetes management importance did not influence HbA1c, the marker of diabetes management. If this result had been found it would have been in line with literature examining the role of friends in the context of health whereby friends provide important types of support and assistance that contribute to well-being and independence in an older adult population (Wenger, 1990). The results were not in line with the research documenting associations between better diabetes management and other illness self-management and higher levels of illness-specific social support (Gallant, 2003; Glasgow & Toobert, 1988; Kulik & Mahler, 1993; Lloyd, Wing, Orchard, & Becker, 1993; Ruggierro, Spirito, Bond, Coustan, & McGarvey, 1990; Tillotson & Smith, 1996).

An association between family/friend diabetes social support and self-care diabetes management importance was found for all racial/ethnic groups. However, that association
seemed to have a stronger positive relationship among non-Hispanic African American individuals and Mexican American individuals in contrast to non-Hispanic Caucasian individuals. A possible explanation may be the collectivistic nature of these two groups and the importance that is placed on the family as a unit. This could potentially explain how the influence of support from family influences how much importance is placed on attending to one’s health particularly in this sample where Type II diabetes was of primary interest. When evaluated by racial/ethnic grouping, a significant negative association, although relatively weak, was found between perceived support from family or friends and HbA1c level for non-Hispanic Caucasian individuals. These results are in contrast to those presented by Rees, Karter, and Young (2010) who evaluated how social support and race/ethnicity were associated with diabetes self-care behaviors and clinical outcomes. They found social support was associated with HbA1c levels among Caucasian individuals, but in the opposite direction than anticipated (i.e., increases social support was associated with higher HbA1c).

There is still needed evaluation on racial/ethnic differences present in regard to the impact of social support on health outcomes. Research on other Latino subgroups, such as Puerto Rican individuals, is growing. Carbone, Rosal, Torres, Goins, and Bermudez (2007) looked at diabetes self-management from the perspective of this population and their health care providers. Results indicated that many patients with diabetes viewed themselves as being limited in their ability to manage emotional, environmental, and economic factors that in turn affected their diabetes control. Although negative attitudes toward self-management existed, this Latino subgroup reported that family support and religious faith were key facilitators of diabetes self-management (Carbone et al., 2007). This is in contrast with previous findings of social support being strongly unrelated to diabetes self-management among a sample of predominantly Puerto
Rican Americans (Gleeson-Kreig et al., 2002). Thackeray et al. (2004) note a limitation in trying to explain cultural beliefs as they relate to diabetes management is that the Hispanic culture is not only one culture but a composite of many cultures. This study adds to the literature on Mexican American individuals, a subgroup within the Hispanic culture. It appears at least in this sample that race/ethnicity, and not family/friend social support, influences diabetes management. In fact, it remained a rather influential explanatory variable for diabetes management, as evidenced by HbA1c levels. This was independent of the influence of age, sex, years of education, family/friend social support, and self-care diabetes management importance. Additionally, Mexican American individuals exhibited the highest change in response per unit change in the predictor. In other words, HbA1c levels differed significantly based on membership in the Mexican American sample.

There is still much to uncover regarding health beliefs and practices among different subgroups in Latino populations within the United States (Caban & Walker, 2006). This in turn limits generalizations that can be made among these populations and how those health behaviors influences diabetes self-management.

To date, Rees et al. (2010) have evaluated how social support and race/ethnicity are associated with diabetes self-care behaviors and clinical outcomes. They used the 2005-2006 National Health and Nutrition Examination Survey (NHANES) to examine a sample of Caucasian, African-American, and Latino respondents who reported a diabetes diagnosis (n = 450). They developed an index from the social support questions within the NHANES to assess the number of sources of support in their lives. They found no differences in social support by race/ethnicity. They found significant race/ethnicity by social support interactions in adjusted models controlling for several confounding factors among African-American and Caucasian
individuals. However, no significant effects were noted for Latinos.

Our current study found all racial/ethnic groups showed a positive correlation with scales assessing family/friend diabetic support and importance of diabetes self management. However, African American individuals and Mexican American individuals evidenced stronger correlations in contrast to Caucasian individuals. Campinha-Bacote (2003) promotes the idea that cultural values give an individual a sense of direction as well as meaning to life. She also acknowledges a direct relationship between culture and health practices. Of the many factors that are known to determine health beliefs and behaviors, culture is most influential (Harwood, 1981). With this in mind, it is important for health care providers to have a sound understanding of the concept of culture and its implications for providing care. This leads to the collection of relevant cultural data that allows both provider and patient to understand what steps are need to manage chronic illness and how to communicate that information so that both parties are on the same page.

Several limitations are present in the Rees et al. (2010) study. They acknowledged the social support scale utilized in the study looked at a count of the types of support in one’s life, which is more general than a scale. Looking at the specific role that family support has on clinical outcomes such as HbA1c levels may have prompted different results. Their sample size was relatively small even with the nationally representative nature of the NHANES. In addition, Latinos comprised the smallest subset of individuals in the sample (112) in comparison to Caucasian (171) and African-American (150) participants. Disregarding variation in the Latino subgroup limits generalizations that can be made concerning any results that were found in this group. The variability in findings regarding Latinos and health suggests that even within the same sociodemographic category, social connections that seem to be related to health may not be
uniform for Latinos (Weinick, Jacobs, Stone, Ortega, & Burstin, 2004, as cited in Mulvaney-Day, Alegria, & Sribney, 2007). This current study attempted to expand generalizations that could be made within a specific Latino subgroup, Mexican American individuals.

Limitations and Future Directions of Research

Although results of this research add to the literature evaluating the impact of social support on racial/ethnic groups some limitations are to be noted. The instrumentation utilized in this research might also threaten both the internal validity and the external validity of the research findings (Cook & Campbell, 1979). A fully validated measure of social support could have provided a more accurate picture of the impact of social support across races/ethnicities. For the purpose of this study where family/friend social support and self-care diabetes management importance were key variables of interest, to be eligible for inclusion in analysis participants had to complete at least 3/4 of the scales representing these factors (a minimum of 6 of the 8 items). Thus, some level of inaccuracy is expected. Future research projects that examine social support in conjunction with diabetes management would benefit from the use of diabetes specific social support scales. This might provide better insight into what role family and friends play in the management process, and inform more appropriate measures and/or items on social support scales. The perceived social support scale only measured perceived support, not actual support received by individuals with diabetes. It would be interesting to include measures in future studies that encompass both perceived and actual support in the future.

Lastly, although the sample utilized in the study contributes to research on diabetes management in an older adult population, we also have to consider how individuals in the study could also be considered a healthier sample than would be expected given the effects of Type II
diabetes on the lifespan. Franco, Steyerberg, Hu, Mackenbach, and Nusselder (2007) found that individuals with Type II diabetes lose about eight years from their life span. On average, a 50-year-old male with Type II diabetes has a life expectancy of 21.3 years—7.5 years less than other men. On average, a 50-year-old woman with Type II diabetes has a life expectancy of 26.5 years—8.2 years less than that of other women. Given that the age range for this sample was 42-94 years of age, it could be considered that this particular sample held a factor that would arguably consider them a “healthier” group of individuals with Type II diabetes.
APPENDIX A

RACE AND ETHNICITY VARIABLE
Do you consider yourself primarily White or Caucasian, Black or African American, American Indian, or Asian, or something else?

1. WHITE/CAUCASIAN  
2. BLACK/AFRICAN AMERICAN  
7. OTHER (SPECIFY)  
8. DK (Don’t Know)  
9. RF (Refused)  
Blank. INAP (Inapplicable)

Do you consider yourself Hispanic or Latino?

1. YES  
5. NO  
8. DK (Don't Know)  
9. RF (Refused)

Would you say you are Mexican American, Puerto Rican, Cuban American or something else?

1. MEXICAN AMERICAN/CHICANO  
7. OTHER (SPECIFY) masked version includes Puerto Rican, Cuban American  
8. DK (Don't Know); NA (Not Ascertained)  
9. RF (Refused)
APPENDIX B

SEX VARIABLE
SEX OF INDIVIDUAL-UPDATED
1. MALE
2. FEMALE
APPENDIX C

MARITAL STATUS
1. Married
3. Separated
4. Divorced
5. Widow
6. Never Married
7. Other (Specify)
8. DK (Don't Know)
9. RF (Refused)
Blank. INAP (Inapplicable)
APPENDIX D

FAMILY/FRIEND SOCIAL SUPPORT SCALE
**D2.** I can count on my family or friends to help and support me a lot with:

a. Following my meal plan  
b. Taking my medicine  
c. Taking care of my feet  
d. Getting enough physical activity  
e. Testing my sugar  
f. Going to the doctor or nurse  
g. Keeping my weight under control  
h. Handling my feelings about diabetes
APPENDIX E

SELF-CARE DIABETES MANAGEMENT IMPORTANCE SCALE
D1. I think it is important for me to:

a. Following my meal plan

b. Taking my medicine

c. Taking care of my feet

d. Getting enough physical activity

e. Testing my sugar

f. Going to the doctor or nurse

g. Keeping my weight under control

h. Handling my feelings about diabetes
REFERENCES


