SPOUSAL SUPPORT AND DIABETES MANAGEMENT:

THE ROLE OF GENDER AND RELIGION

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One in four adults over the age of 60 suffers from diabetes. Around 85%-90% of individuals who have diabetes suffer from Type II diabetes. The prevalence of individuals with diabetes is expected to increase. This paper addresses the influence spousal support, friend support, and religion all have on diabetes mellitus. Gender difference in relation to spousal support benefits has also received limited attention. The limited amount of studies that have examined gender differences in relation to spousal support and diabetes management indicate that diabetic men benefit the most from spousal support due to their wives active involvement in meal preparation and grocery shopping. The results showed that neither spousal support nor religious salience was significantly related to diabetes management. There were observed gender differences in religious salience (males = 4.84, females = 5.36, p <.001) and positive spousal support (males = 3.19, females = 3.02, p <.001), but none of the major hypotheses were supported.
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CHAPTER I
INTRODUCTION

For the purpose of this introduction, four variables of interest are introduced in the form of literature review and data integration: spousal support and chronic disease management, spousal support and diabetic management, gender differences and spousal support, and religiosity. Below is a model that will help conceptualize the relationship between the variables discussed in this paper.

![Model of the relationship between variables of interest.](image)

**Figure 1.** Model of the relationship between variables of interest.

**Chronic Illness Management**

Currently, nearly half of the elderly population suffers from a chronic illness (Partnership to Fight Chronic Disease, 2011). An estimate of 26.9% of older adults suffer from diabetes, 40% have arthritis, and about 7% have heart disease. These three diseases are the leading causes of disability among older adults (Centers for Disease Control and Prevention, 2011). In fact, diabetes is the 7th leading cause of death in the United States (American Diabetes Association, 2011).

A significant aspect of older adults’ self-care is chronic illness management (Ory & DeFriese, 1998). The proper management of these three chronic illnesses involves regimens of
medication taking, high exercise activity, dietary and weight management, and specific related behaviors. The literature suggests that successfully adhering to such regimens is related to better physical and psychological well-being (Clark, 2003). Nonetheless, adhering to recommended regimes has been documented to be difficult for individuals. Understanding the different factors that affect the compliance to the specific chronic illness regimen and individual differences may influence the health outcomes of these individuals. The current project focuses on the role factors such as spousal support, gender and religion play on diabetes mellitus management.

Type I and II Diabetes

Nature of the Disease

Millions of Americans have been diagnosed with Type II diabetes and many more are unaware they have it or are at a high risk of developing it. One in four adults who is 60 and older has diabetes. Type II diabetes is the most common form of diabetes. The body of individuals who suffer from Type II diabetes is either unable to produce enough insulin or the cells ignore the insulin (insulin resistant). Insulin has a vital role in the utilization of glucose as fuel. The complications of individuals who suffer from Type II diabetes originates from the accumulation of glucose in the blood rather than being metabolized in the cells; the insulin is either not present or not able to transfer glucose to the cells (American Diabetes Association, 2011). Severe hyperglycemia associated with diabetes causes micro- and macrovascular damage leading to atherosclerotic heart disease, retinopathy, peripheral neuropathy, peripheral vascular disease and renal failure (Wong, Gucciardi, Li, & Grace, 2005). Some of these physiological complications are fatal if not managed properly.
From the high percentage of individuals who have been diagnosed with diabetes, 5-10% of them are diagnosed with Type I diabetes. Decades ago, Type I diabetes was known as juvenile diabetes; children and young adults are currently diagnosed with Type I diabetes. The main difference between Type I diabetes and Type II diabetes consist on the total inability of Type I diabetics to produce insulin (American Diabetes Association, 2011). Individuals with Type I diabetes must adhere to the diet and exercise regimen similar to those with Type II diabetes to successfully manage their condition. In addition, it is essential for individuals with Type I diabetes to inject insulin daily, in order to maintain their diabetic control. Those individuals with Type II might have to intake oral diabetic medications for their illness management.

This project will mainly focus on the understanding of Type II diabetes because Type II is the most prevalent form of diabetes among our population. Individuals with diabetes must manage their glucose levels and weight by changing their lifestyles, as diabetes is a chronic illness with high self-management needs. Poor glycemic control is one of the biggest obstacles in the management of Type II diabetes, with 36 -69% of patients failing to reach glycemic control targets (Keogh et al., 2011). This can be attained by increasing physical activity, proper nutrition, and frequent medical check-ups (Savoca & Miller, 2001). Adhering to an increased amount of physical activity has proven to be the most difficult for individuals suffering from Type II diabetes. Sustaining an active lifestyle is essential because of the psychological and physiological benefits. Exercising greatly decreases hemoglobin A1C, an index of blood glucose control, lowers the risk of cardiovascular complications, and improves joint flexibility. It’s also pertinent to note that middle-age and older adults have been observed to participate in a lower amount of physical activity. This is a problem because most of the individuals who suffer from diabetes are older adults (Beverly & Wray 2010). Behavioral changes are crucial for the
management of Type II diabetes and different factors have been documented as influencing the adherence to diabetic interventions.

Currently, younger individuals have been noted to develop diabetes and obesity at a higher rate than before. Type II diabetes increased by 70% in adults 30-39 years of age over the last decade, making young adults the fastest growing group for both obesity and Type II diabetes. Factors such as sedentary behaviors, labor reducing technological advances, and poor dietary habits might contribute to this finding (Hillier & Pedula, 2001). Obesity must also be considered when describing the behavioral changes of individuals diagnosed with diabetes.

Several chronic illnesses originate from obesity, thus losing weight is a tangible form of managing a specific chronic illnesses’ symptoms. Diabetes, especially Type II diabetes, is highly related to obesity. Some diabetic individuals struggle to reduce their weight because of how psychological factors affect their behavior. According to Rabkin (1982), there are two detrimental psychological factors that contribute to the inability to alter unhealthy behaviors. These individuals could be classified into two groups: individuals whose personal traits impede an alteration to their lifestyles and those individuals who face recurrent stressors from their environment that prohibit them from benefiting from positive psychological factors.

In his study, Rabkin (1982) observed the relationship of spousal support and the spouse’s perception of the patient’s excess body mass on weight reduction. Rabkin suggests that psychological strengths help alter behaviors. His results indicated that individuals who perceived greater spousal support had greater success stories on weight reduction. An interpretation of this finding could be that perceived support motivates individuals to achieve their goals; they are not only working hard for their own benefits but maybe to also meet their spouses’ expectations. He
also found that spousal support positively influenced the commitment to a diabetic intervention, physical activity program, and having therapeutic goals.

**Managing Diabetes**

Self-management is described as a set of skilled behaviors one engages to manage one’s own illness (Goodall & Halford, 1991). It has been well documented that individuals who have better self-management skills usually demonstrate more positive health-related outcomes. Serious complications related to a diabetes diagnosis can be minimized and delayed by adhering to recommended regimens (Center of Disease Prevention and Control, 2011). Individuals suffering from diabetes need to maintain their blood sugar levels within the normal range. In order for the diabetic management to be effective, these individuals must perform a series of self-care behaviors that can include insulin injections several times a day or taking daily oral hypoglycemic medication. In addition, a strict calorie-controlled diet that is low in fat and high in fiber and regular exercise are required for successful diabetes management (Diabetes Care, 1990). The regimen becomes complicated when these individuals need to modify each of their self-management factors over time according to their level of activity and their self-monitored blood glucose levels (Goodall & Halford, 1991). For example, prior to vigorous exercise, individuals with diabetes must adjust their insulin intake as well as type of food consumed throughout the day. Planning ahead of time is essential for the management of diabetes; individuals need to change their behaviors to effectively manage their illness.

Based on previous research, it can be concluded that patients with diabetes who have better self-management skills tend to have lower mortality rates and express higher rates of quality of life (Fortmann, Gallo, Philis-Tsimikas, 2011). In conclusion, those diabetic individuals
who better self-manage experience fewer health complications (Centers for Disease Control and
Prevention, 2011).

Psychosocial Factors Affecting Diabetes Management

Diabetic patients report that diet and exercise are difficult aspects of treatment to manage. An estimated 75% of diabetic patients report significantly deviating from their diabetic management regimen. More than 50% underreport their blood glucose levels on at least half their daily recordings (Goodall & Halford, 1991). Effective diabetic management can be obstructed by different factors, such as cognitive, behavioral and environmental events. Diabetic patients usually report barriers that prohibit them from fully adhering to their management regimen; these barriers include: (a) competing demands interfering with attending to the regimen and (b) negative emotional states, such as sadness or anxiety, leading to abandoning the regimen (Goodall & Halford, 1991).

Individuals who suffer from diabetes experience psychological distress because of their dietary regimen and physical complications related to their illness (Carney, 1998). Diabetics tend to have a higher prevalence of psychological disorders (Rubin & Peyrot, 2001). Daily demands associated with diabetes management can increase patients’ perceived stress and anxiety having acute exacerbations. In many cases diabetic, individuals experience frequent and sudden fluctuations in their blood glucose levels after putting forth their best efforts, which may cause frustration and lower their confidence in managing their condition. Social support can benefit the emotional well-being of individuals who suffer from diabetes. Marriage has been well documented to have positive effects on individuals suffering from chronic illnesses (Kiecolt-
Glaser & Newton, 2001), thus being married may have a major role on the emotional well-being of individuals who suffer from Type II diabetes.

**Spousal Support and Chronic Disease Management**

Personal relationships have been well documented as having a positive effect on physical and emotional health. Findings from well-controlled epidemiological studies suggest that individuals who isolate themselves are at higher risks of morbidity and mortality, with statistical effect sizes comparable to those of such well-established risk factors as smoking, blood pressure, blood lipids, obesity, and physical activity (House, Landis, & Umberson, 1988). Researchers have categorized social support into four broad areas: appraisal support, tangible assistance, informational support, and emotional support (Wong et al., 2005). For the purposes of this project, active spousal support was defined as Positive Emotional Support. For older adults, marriage is the central relationship and the most influential interaction during adulthood. The literature suggests that mortality and morbidity are lower in the married than the unmarried (Kiecolt-Glaser & Newton 2001). It has been documented that working as a team facilitates the self-care regimen of individuals with chronic illnesses (Trief, Ploutz-Snyder, Britton, & Weinstock, 2004). Also, positive physiological changes in symptomatology were observed in individuals who have a positive relationship with their spouse. Looking more closely at spousal support and its effects on chronic disease management, Kiecolt-Glaser et al. (1997) found that alterations to the body’s homeostatic and allostatic regulatory systems caused by marital arguments activate illness symptoms. This suggests that spouses might have an influence on the regression/diminishment and potentially exacerbations of chronic illness symptoms. This is
important because individuals suffering from chronic illnesses need to be emotionally stable in order to adhere to their medical treatment and dietary regimen.

Some studies support the notion that spouses’ behavior influences symptomatology in neurological disorders (Kiecolt-Glazer & Newton, 2001). A longitudinal study examined the symptom manifestations of care recipients suffering from Alzheimer’s disease (AD). The results indicated that the spouse’s expressed emotions, defined as expressions of criticism and/or intrusive involvement toward the care patient predicted an increased negative behavior in the impaired spouse (Vitaliano, Young, Russo, Romano, & Megana-Amato, 1993). Another study examined the neurophysiological’s symptom exacerbation among Parkinson’s disease patients. The researchers videotaped patients with Parkinson’s with their spouses while they discussed changes in their lives since the patient’s diagnosis. After watching the videotapes of these interactions researchers discovered that patients in stressful relationships blinked less frequently and had lower blink duration than “nondistressed” counterparts. Spontaneous blinking rate and duration can be affected by dopamine availability; it can serve as an indication of neurophysiological symptom exacerbation in patients with Parkinson’s disease in distressed marriages (Greene & Griffin, 1998). These two studies could indicate that the absence of spousal positive interaction and support worsens neurological disorders.

Similarly, lack of support was shown to affect the health outcome of individuals with rheumatoid arthritis (RA). This was illustrated in the study conducted by Manne and Zautra (1984). The study observed the psychological adjustment of RA female patients in relation to their spouses’ criticism. The study consisted of 103 female RA patients and their spouses. Their findings suggest that poor psychological adjustment may be a result of spouse’s criticism and negativity. The RA patient’s self-esteem can be greatly harmed by spouse criticism, thus leaving
the individual at a disadvantage when trying to cope with their chronic illness. Dunkel-Schetter et al., (1982) proposed an interesting reverse causal sequence. They suggested that the spouses adjust their help and support in response to the original coping strategy implemented by the ill person. In summary, Manne and Zautra (1984) support the utility of a stress and coping paradigm for explaining adherence problems to treatments and individual differences in adjustment to chronic diseases.

For an individual to cope successfully with the multiple problems imposed by a chronic illness, the individual should be conscientious and proactive, most importantly emotionally stable and resilient. Chronic illnesses are accompanied by physical symptoms that create fears and difficulties. For instance in the case of RA, these fears can include severe pain, progressive physical deterioration and disfigurement, disease recurrence, dependency of others, and threat to self-image. For an individual to adapt and stay emotionally stable, they may require greater social support (Manne & Zautra, 1989). Spousal Positive Support seems important in all chronic illness management, but as other diseases have specific attributes, so does diabetes.

Kiecolt-Glaser and Newton created a systematic review (2001) that looked at 64 articles and summarized their findings. This review focuses on the pathways from the marital relationship to physical health. It supports the hypothesis of negative dimensions of marital functioning having indirect influences on health outcomes through depression and health habits, and direct influences on cardiovascular, endocrine, immune, neurosensory, and other physiological mechanisms. This review also looked at gender differences and stated that gender differences have not been researched as much even after learning about the protective effects of marriage. The study did acknowledge how gender differentials in stress exposure occur within
the context of marital roles (i.e. chores responsibilities) and how these might affect the health outcomes of individuals suffering from chronic illnesses.

*Gender Differences in Spousal Support Chronic Illness Management*

Kiecolt-Glaser and Newton (2001) reviewed a study conducted by Marcenes and Sheiham (1996); this study examined gender differences and observed similar associations between marital functioning and health status for men and women. In contrast, Keicolt-Glazer and Newton (2001) observed that two other studies showed that marital functioning had a stronger impact on women than men. One of those two studies used a substantial follow-up period, rather than a cross-sectional design, in order to establish a stronger and less ambiguous relationship between marital processes and health outcomes (Hibbard & Pope, 1993). This systematic review also observed findings of self-rated health and marital functioning. In two studies that recruited men and women, higher marital satisfaction was associated with higher self-rated health for both men and women (Ganong & Coleman, 1991; Ren, 1997). Another study found that women who reported great marital conflicts and work conflicts were more likely to received work disability due to a variety of health problems. In these two studies, men were not at risk with health problems originating from marital conflicts or work problems. This systematic review is worth noting because it highlights gender differences in marital conflicts and health outcomes. However, this review did not cover gender differences explicitly deriving from spousal support, thus adding to the notion that gender difference in spousal support has received limited attention.

The role gender plays on factors involving general health has been overlooked. The role gender plays in the management of diabetes needs to be further analyzed. From the minimal
research conducted on this subject, it has been noted that men benefit the most from spousal support; the marriage “protective effects” are stronger in men than women (Brekman & Breslow, 1983). The coping mechanisms between the genders vary. From the current research conducted on this area it appears that men are more likely to rely on their wife’s support for adaptive behavioral changes and adjustment to chronic illnesses, while women greatly benefit from strong social interactions. It has been documented that females have closer and more meaningful relationships with friends, thus perceiving greater friend support than males (Lowenthal et al., 1976; Pleck & Sawyer, 1974; Vaux, 1985).

Spousal Support and Diabetic Management

Some researchers support the finding that spousal support is better associated with long term adherence to major lifestyle changes that directly affect Type II diabetic symptoms. This might suggest that obtaining the emotional and physical support from a spouse can help the diabetic spouse lose weight, sustain a low sugar and low starch diet, and frequently visit the doctor (Beverly & Wray, 2010). Cohen and McKay (1984) suggested that the provided advice given by a significant other can affect coping by improving how the ill individual appraises the stressor, by influencing the person to choose a more effective strategy, or by improving the person’s sense of self-efficacy. Inversely to this notion, disruptive or intrusive relationships in marriages could lead to an illness regression or more complications (Kielcot-Glaser & Newton, 2001). In Type II diabetics, this implies that experiencing marital distress may cause the diabetic spouse to have poor illness management; ultimately, ignoring professionally suggested life changes and interventions. There has been a shift from focusing on individual interventions to
couples’ multimodal approach when trying to improve the quality of life of individuals suffering Type II diabetes.

Overall, the limited studies that focus on spousal support and diabetic management report that diabetic individuals report better diabetic care regimen adherence and psychological wellbeing when they have a supportive spouse. “There is ample evidence that intimate relationships can impact illness processes or outcomes indirectly through alternations in mood, as well as through their influence on health habits (Kiecolt-Glaser et al., 1998).” The “protective power” of marriage, however, has different effects on females and males.

**Gender Differences in Spousal Support Diabetic Management**

Dietary modification is probably the most difficult of all lifestyle changes with which people with diabetes have to contend (Savoca & Miller, 2001). Most people find dietary changes to be extremely difficult to implement and maintain. The family dynamics tend to change as soon as there is a diabetes diagnosis. For those families living with diabetes, food becomes a central point of dispute and negotiation (Wong et al., 2005). For the dietary management to be successful family members need to be supportive and cooperative. Individuals with diabetes often report familial obligations, food preferences, and lack of family support as the biggest of obstacles to their successful self-management. Another aspect of family influence involves family cultural norms (Sperry, 2005). Allen (1981) described cultural norms as subtle social and cultural influences that unconsciously influence a person’s attitudes toward his/her body relations with others and, most importantly, health beliefs and behaviors. Such obstacles might be even more significant when we evaluate gender-based roles associated with meals and meal
preparation. There has been minimal research conducted on the role gender plays on nutrition management in individuals who suffer from diabetes (Wong et al., 2005).

Wong et al. (2005) conducted a study with individuals who suffer from Type II diabetes and their family members. They collected 561 medical records of individuals with Type II diabetes (265 males, 296 females). The ages ranged from 26-90 years with a mean of 59. Their analyses revealed three trends: male clients were more likely to be actively supported by their wives, female clients were more likely to be passively supported by their husbands, and female clients were more likely to seek out other sources of support. Diabetes nutrition recommendations are suitable for the whole family. Diabetic patients often revealed that the food preference of other family members, including spouses, were often obstacles to their own nutritional adherence.

According to Wong et al.’s (2005) findings, the data collected revealed that male patients were more likely to eat the same meals as the rest of the family while female patients were more likely to modify their meals or to prepare a separate meal for themselves in order to meet their nutritional requirements. This study found that there was no significant difference between eating habits changed after the diagnosis of diabetes. In addition, there was no significant difference between the genders when describing family and social occasions as their main obstacles when adhering to their diets. This study showed that gender differences in division of household labor may have an important effect on diabetes management. This suggests that professionals need to recognize gender differences and address these differences in order to help people who suffer from diabetes control their illness. Professionals should especially help women who are not receiving adequate spousal or family support and encourage them to participate in family therapy and peer-support groups.
As mentioned earlier, individuals who suffer from diabetes tend to have a more difficult time adhering to a new dietary regimen as compared to individuals with other chronic diseases. Savoca et al. (2001) emphasized in his research the relationship between individuals who suffer from diabetes and their spouses. This relationship had a major impact on food selection and meal planning. In this study 14 of the 26 women that participated cooked two meals (one for themselves and another meal for the rest of the family) or accommodated their spouse’s food preferences by continuing to prepare high-fat meals for both themselves and their husbands. The majority of these women stated that their husbands wished for them to eat healthful diet as long as it did not interfere with his eating habits. A small percentage of these women reported developing healthful cooking skills for the entire family and were certain that their husbands were the primary influence. Male participants reported different experiences from the female participants. Out of the 19 men who participated in the study, 12 had healthy meals prepared for them by their wives. These wives also influenced the males’ physical activity level by joining their spouse in the activity. These men considered their wives to be the main key in facilitating their adherence to their self-management regimen. This study leaves us wondering what influenced the women who participated in the study to positively adjust their meal preparation. There could be some personality characteristics facilitating the adherence to the diabetic care regimen.

Socio-Cultural Religious Factors

The way individuals cope with a chronic illness diagnosis varies. There are a percentage of older individuals that cope through religious mechanisms. The literature on this matter is limited. So far, findings appear to be contradictory, especially when observing the relationship
between religiosity and diabetes management. However, it is clear that individuals benefit from different sources to cope with their chronic illness and enhance their quality of life. Some might benefit from sources outside their immediate family such as religious affiliations and organizations while others might confide and trust close friends. Scholarly reviews have documented the effects of religiosity on physical health. Those effects were associated with higher ratings of enjoyment of better physical health and higher ratings of perceived health (Son & Wilson, 2011).

Religious activity or religiosity has been defined as the extent of participation or devotion to the teaching and the organized activity of a particular religion (Emblem, 1992). On the other hand, religious belief is the fundamental belief system that could influence the ideas, values in life and ways of living of an individual. Many patients recognize the importance of religion and wish professionals would integrate their religious norms into their treatments (Maugans & Wadland, 1991). Currently, there has been an increased in spirituality specialization in medical schools. Some professionals have even suggested that the biopsychosocial model of medicine might be replaced by the biopsychosocial-spiritual model (Sulmasy, 2002). Physicians and other professionals acknowledge the positive effects religion has on health outcomes; however, little research has been done on this. Weaver et al (2004) reported that over a three-year period less than 1% of the studies published in the three major general medical journals (Journal of the American Medical Association, The Lancet and New England Journal of Medicine) measured variables relating to religion, spirituality or both.

Supporting the positive effects of religiosity is the study by Strawbridge et al. (2001). Strawbridge et al. (2001) observed positive religious effects on survival. This study specifically examined the influence religious attendance has on the improvement of and maintenance of
healthy behaviors, mental health, and social relationships. The sample consisted of 2,676 Alameda County Study participants, from 17-65 years of age in 1965, who survived to 1994. Overall, the results of this study indicated that those participants with higher religious attendance were more likely to both improve poor health behaviors and maintain good ones by 1994 than those participants whose attendance was less or none. Results were stronger for women in improving poor health behaviors and mental health. Strawbridge et al. (2001) results were consistent with the notion that women benefit the most from religious practices.

The limited research that has been conducted on religiosity and/or spirituality and chronic illnesses provide contradictory findings. Some studies found that more religious individuals had lower blood pressure, less hypertension, more compliance to treatment and follow-up and lower need for doctor visits (Maugans & Wadland, 1991; Koenig et al., 1998). In contrast, Obisesan et al. (2006) found no significant relationship between diabetes and metabolic risk factors such as serum lipids, dietary intake, prevalence of coronary heart disease and religiosity and/or spirituality. Poor diabetes control was also found among Greeks who suffered from Type II diabetes, who reported having strong religious beliefs (Kouniakis et al., 2005). A limitation in that research was that religious affiliation/identification was not taken into account. Similarly, Naeem (2003) conducted a study in Leed, UK and observed that Kashmiri Moslem men had poor diabetes control because their overall attitude was to enjoy life to the fullest and “leave the rest to Allah” (pp.110).

How, Ming, and Chin (2011) conducted a study in Malaysia to examine the relationship between religious affiliation and glycemic control of Type II diabetes. The scale used to measure religiosity was the Beliefs and Values Scale (BV), which contains 20 items each with a Likert scale of five possible responses; the higher the score the stronger the religious belief. The
individuals who participated in the study ($N=188$) suffered from Type II diabetes and also reported participating in a specific religion or non-religious affiliation for at least three years. Participants were 30 years or older. Diabetes control was measured by the mean value of fasting plasma glucose (FPG) and the HbA1c levels taken from the latest three documented readings within the last three years. When glucose adheres to hemoglobin molecules it creates glycosylated molecules called HbA1c. HbA1c is the average plasma glucose concentration found in the bloodstream. Because red blood cells survive from 8-12 weeks before renewal, professionals can measure HbA1c and obtain an average 2 to 3 month blood glucose reading. Higher readings of HbA1c mean there is more hemoglobin in the bloodstream, thus suggesting poor diabetes control (Global Diabetes Community, 2012). The results of the study conducted by How, Ming, and Chin (2011) yielded no significant correlation between religion specific BV scores and glycemic control except among Moslems. In this study, religion was found to be significantly associated with HbA1c but not with FPG level. This study’s significant finding was consistent with Naeem’s (2003) suggesting that Moslems have poorer glycemic control as compared to other religious groups including atheists, because of their “leave it up to Allah” attitude.

Another study examined the effects of deferring and self-directed religious coping on the assumptive worldview of women ($N=284$) following the diagnosis of Type II diabetes, the death of a child, or the death of another friend or family member. The study conducted by Hibberd, Vandenberg, and Wamser (2011) described Type II diabetes as being an example of an stressor that is preventable; diabetes management is significantly dependent on the individual. This study was the first to examine religious coping as a predictor of assumptive worldviews. Past research has focused on the various religious coping styles in relation to distress, quality of life, and
adjustment (Belavitch & Pargament, 2002; Pargament et al., 1990). Hibberd et al. (2011) compared the outlook in life between individuals with Type II diabetes and individuals who were suffering from bereavement. This study’s results indicated that individuals coping with Type II diabetes, a high-control stressor, reported greater belief in a meaningful world than individuals coping bereavement (i.e. non-child loss), a low-control stressor. In this study a high-control stressor was defined as a stressor that can be successfully managed by the person, meaning that the individual has direct control over the stressor. Inversely, a low-control stressor was defined as a stressor that could not be controlled by the person; the stressor was caused by chance alone. This study might be suggesting that individuals who suffer from Type II diabetes have a better outlook in life in comparison to individuals suffering from bereavement. Professionals could integrate this finding into the creation of treatment plans for diabetics, especially if they have a strong religious belief. Trying to enhance the self-worth of individuals who suffer from diabetes might be facilitated through religious coping.

Religiosity factors on diabetes management have not been consistently or extensively studied in the Western society. The following study examined African American diabetic women who had strong religious beliefs. However, there was not an objective measure of glucose levels. The qualitative study conducted by Samuel-Hodge et al. (2000) suggested that clinicians need to redefine the health interventions they find appropriate for African American women who struggle with Type II diabetes. As a qualitative investigation, this study did not look directly at HbA1c and/or diabetic control, measures. Samuel-Hodge et al. (2000) examined the relevance spirituality/religiosity had in their perceived overall health, disease adjustment, and coping. The researchers also examined how the relationship between general life stress, multi-caregivers responsibilities and emotional tiredness affected their diabetes management. The results of this
study indicate that African American diabetic women involved religious beliefs and “God” in daily discussions. The researchers also found that reading the bible and talking about God were forms of social support and techniques for coping. Participants mentioned that they often asked God for help in controlling their diabetes and when facing difficult problems. They reported viewing church members as an additional source of emotional support. In summary, the findings of this study suggest that African American diabetic women could greatly benefit by including spirituality/religion, and other culturally appropriate factors in their diabetic treatment.

The limited research on religiosity and chronic illness or general health, overall, suggests that religiosity has an important impact on physical and mental health (Miller & Thoresen, 2003; Hill & Pargement, 2003; Kendler, Liu, Gardner, McCullough, Larson, & Prescott, 2003). The limited data collected suggests that individuals who report having strong religious and spiritual beliefs and consistent religious affiliations may utilize them to cope with distress associated with chronic illnesses (Miller & Thoresen, 2003). This is important to note because Type II diabetes might damage the self-worth, independence, and/or free spirit of individuals because of the strict self-care regimen they must adhere to in order to prevent fatal complications. There is also some evidence that suggests that highly religious individuals might feel less responsible about their chronic illness management, most specifically diabetes management. Religiosity effects should be carefully examined to determine its true influence on diabetic management.

The Present Study

Individuals who suffer from diabetes experience negative emotional and physical symptoms as a result of their illness. These individuals need supportive and protective factors that will help them manage their diabetic symptoms. Positive Spousal Support and Religious
Salience and Affiliation may impact the symptomatology expressed by individuals who suffer from diabetes. However, there are gender differences that should be taken into consideration when planning psychological and diabetic behavioral interventions for diabetes management. The current project aimed to expand the literature available on the study of (a) the effects spousal support has on diabetic management, (b) the role of gender on spousal support and diabetes management, (c) and the effects religion plays on diabetic management. With regards to spousal support, the project specifically examined the extent to which the quality of the spousal support perceived influences the status and direction of diabetic management. With regards to the role of religion, this project examined if the individual’s religious salience influences diabetic management. The project’s data was analyzed using a cross-sectional design approach.

Hypotheses

It was proposed that positive spousal support will be associated with better diabetes management, while gender was predicted to play a significant role in diabetes management and religious salience. More specifically,

1) Diabetic individuals who have greater positive spousal support are predicted to have better diabetic control (lower HbA1c levels). This hypothesis is based on the literature that reports that positive spousal support improves the likelihood that diabetics will adhere to their nutritional and exercise regimen (Beverly & Wray, 2010).

2) The relationship between better diabetic control, lower HbA1c, and more positive spousal support are predicted to be stronger for male diabetics than for female diabetics. This hypothesis is based on the literature that says that in a marital
relationship male diabetics benefit the most from positive spousal support. Males are more likely to have a more emotionally and physically supportive wife (Savoca et al., 2001). The emotional support wives provide their husbands improves diabetic management (Kiecolt-Glaser & Newton, 2001).

3) Male diabetics are predicted to have lower levels of positive friend support than female diabetics. This is based on the literature that claims that females have more close friends and that their friendships consist of greater sharing of deep feelings and confidences than male friendships (Lowenthal et al., 1976; Pleck & Sawyer, 1974).

4) Female diabetics are predicted to have higher levels of religious salience than male diabetics. This hypothesis is based on the notion that females are more likely to seek emotional support from religious means than males (Samuel-Hodge et al., 2000).

5) It is predicted that the predictor variables (greater spousal support, greater friend support, gender, and greater religious salience) will jointly account for a significant amount of variance in better diabetic control (lower HbA1C). This hypothesis is based on the research assumption that the variables listed above are appropriate predictors for the outcome variable of diabetic control.

**Hypotheses for Non-Diabetic Spouses**

It was proposed that the non-diabetic spouses from the general population will share similar characteristics to diabetic spouses participating in this project. More specifically this project aimed to support the following hypotheses:

1. Married non-diabetic males are predicted to have lower levels of positive friend support than married non-diabetic females. This is based on the literature that claims
that females have more close friends and that their friendships consists of greater sharing of deep feelings and confidences than male friendships (Lowenthal et al., 1976; Pleck & Sawyer, 1974).

2. Married non-diabetic females are predicted to have higher levels of Religious Salience than married non-diabetic males. This hypothesis is based on the notion that females are more likely to seek emotional support from religious means than males (Samuel-Hodge et al., 2000).

Research Questions

This project predicted several directional hypotheses based on the literature. However, variables such as social support, religiosity and gender together have not been well studied in relation with diabetes management. The following research questions are derived from the limited and/or inconsistent literature provided on gender differences and religiosity. The following non-directional research questions were addressed:

1) The current literature provides limited information on the role gender plays in diabetes management. The effects of psychological factors, such as spousal support, have on diabetes management has been studied. However, the role gender plays has received little attention. This study will address the question: Is there a significant mean difference between the genders in HbA1c?

2) The conclusion that females are more likely to devote themselves to a religion and affiliate themselves with a religious practice has been well documented. Females are more likely to benefit physically and mentally from religious practices and meaningful friendships than are males (Samuel-Hodge et al., 2000; Strawbridge,
Positive spousal support has been documented as having promising effects on chronic illness management, including diabetes (Kiecolt-Glaser & Newton, 2001). Positive spousal support and religious salience have not yet been studied together to examine the effects they have on female diabetics. This project hopes to address the question: What is more influential for the management of diabetes among females, religious salience or positive spousal support?

3) The limited studies that focused on diabetes management and how it is affected by religion were mainly based on non-U.S. sample. From those studies the majority of indicated that for diabetics who have higher levels of religious beliefs are also more likely to manage their illness poorly. In addition, some studies support the conclusion that individuals who are more religious tend to depend on a higher power to manage their diabetic illness (How, Ming, & Chin 2011; Samuel-Hodge et al., 2000). This project will examine the strength of the relationship between religious salience and HbA1c levels for a U.S. sample.
CHAPTER II

METHOD

The data used for the present study originates from the Health and Retirement Study (HRS), a biennial longitudinal project that surveys more than 22,000 Americans over the age of 50 (HRS, August 2011). The HRS is sponsored by the National Institute on Aging (Grant Number NIH U01 AG09740) and conducted by the Institute for Social Research (ISR) Survey Research Center (SRC) at the University of Michigan.

The HRS datasets that were used for the present study correspond to the 2006 wave. Data collection for the 2006 wave began in February of the corresponding year and ended in February of the following year (HRS, August 2009). As determined by the U.S Department of Health and Human Services’ Code of Federal Regulations, the content of existing datasets is not considered human subjects data as long as it is de-identified or is publicly available (U.S Department of Health and Human Services, 2009), as it is the case for the HRS datasets, which, in addition, had been blinded. It is important to note that the HRS randomly selects respondents to complete different waves of questionnaires, thus this may affect the current study’s sample size.

Participants and Procedures

For the purpose of this project the participants of interest are those who are married and have a diabetes diagnosis. Participants who did not meet the criteria (being married and diabetic) were excluded. The participants of interest were selected from the 2006 wave because current Biomarker data (2008 and/or 2010) is inaccessible to the public. The project needs the Biomarker data to make the proposed statistical analyses. In addition, only participants who are 60 years of age or older were studied.
Power Analysis

A priori power analyses calculations were conducted to determine the effect sizes of the significant findings provided by some of the studies described above. How, Ming, and Chin (2011) found a significant relationship between religion types and HbA1c levels with a small effect size of .24 (Cramer’s V formula was used in order to calculate this) and a sample of 188 divided by 6 religion types. Trief (2004) found a significant $R^2$ when examining spousal support and diabetes diet regimen adherence ($f^2 = .66$), with a sample size of 78 participants. Both studies had sufficient power to be able to declare significant results (their power ranged from .91-.95). These analyses were conducted using the G-Power software (Erdfelder, Faul, & Buchner, 1996). It was estimated that the sample size of the current project will consist of approximately 1,100 participants, thus if the researchers above were able to obtain significant findings with their effect sizes and smaller sample sizes, it is expected that significance will be found if there truly is an effect of comparable size.

Measures

The survey questions for the HRS were drawn from validated instruments from the Michigan Diabetes Research and Training Center (HRS, August 2011). Respondents were interviewed, either in person or over the telephone, using a standard script. For the purpose of this study the data was obtained from the 2006 wave. The interview questions and questionnaires encompass items related to demographic information and psychosocial factors such as religion, and spousal support. Data on diabetes management were obtained from the HRS Diabetes Study sensitive health data file. The HRS did not inquire about the type of diabetes respondents had (Type I versus Type II). However, according to the Centers for Disease Control and Prevention
(2011), 90-95% of individuals who have diabetes suffer from Type II diabetes. As a result of this statistic, this thesis project assumed that the majority of the respondents have Type II diabetes.

**Demographic Data**

Using the HRS Cross-Wave Tracker File, demographic information such as age, gender, race/ethnicity, marital status, and level of education will be extracted from the first survey in the longitudinal HRS completed by the respondents (see Appendix).

**Diabetes Data**

**Diabetes Diagnosis**

Respondents were asked whether a doctor had ever told them they had diabetes or high blood sugar levels (see Appendix).

**Perceived Diabetes Control**

Respondents were asked two outcome related questions: 1) “Is your diabetes generally under control?” and 2) “Compared to when we interviewed you last, has your diabetes gotten better, worse or stayed about the same?” (see appendix , pp. 38). The two items were combined into a composite score using their z-score transformations. Higher scores indicate greater perceived diabetic control.

**HbA1c Biomarker Data**

Glycosylated hemoglobin, HbA1c, was used as the lab measure of diabetic control. HbA1c is an average plasma glucose concentration. Blood tests were given to all respondents
who were available for the enhanced face-to-face interview. Special informed consent was acquired for the blood acquisition process. Blood was taken by pricking the participant’s finger with a sterile lancet after cleansing the finger with an alcohol swab. Droplets of blood were expressed from the finger and directly placed on specially treated filter paper, within circles printed on the paper. There was an attempt to fill six circles, but this was not always successful. The blood spots on filter paper were then placed in special foil envelopes with a desiccant packet and then within mailing containers, and shipped to Biosafe Labs (Health and Retirement Study, 2011). HbA1c biomarker data was retrieved from the 2006 wave sensitive health data file. This data provided an objective measure to examine the diabetes management of the participants.

Social Support

The social support scale assesses social integration and the quality of contact within social integration. This scale contains separate questions that are asked about the participant’s spouse/partner, children, family, and friends. For each social tie, there are 3 positively worded items and 4 negatively worded items. Responses were rated on a 4-point Likert-type scale, 1 (a lot), 2 (some), 3 (a little), and 4 (not at all). This scale was used to assess social support in regards to its quality (positive or negative). This project specifically focuses on the quality of the social support between the diabetic participant and his/her spouse and close friends. These social support items were combined in a variety of ways to construct a support measure.

Positive Spousal Support

Respondents were asked a series of questions associated with positive relationships (see Appendix). Their responses were assessed via a 4-point Likert-type scale (a lot, some, a little,
not at all). These were the questions given to the participants: 1) How much do they really understand the way you feel about things?; 2) How much can you rely on them if you have a serious problem?; 3) How much can you open up to them if you need to talk about your worries?. The three positive questions were combined into a composite score using their z-score transformation. Higher scores indicate greater positive spousal support.

**Negative Spousal Support**

Respondents were asked four negatively structured questions on their spousal relationship (see Appendix). Their responses were assessed via a 4-point Likert-type scale (a lot, some, a little, not at all). 4) How often do they make too many demands on you?; 5) How much do they criticize you?; 6) How much do they let you down when you are counting on them?; and 7) How much do they get on your nerves? Prior to data analysis, these items were reversed so that higher score reflect higher rates of positive spousal support. Then the items were combined into a composite score using their z-score transformation.

**Positive Friend Support**

Respondents were asked a series of questions associated with positive relationships (see Appendix). Their responses were assessed via a 4-point Likert-type scale (a lot, some, a little, not at all). These were the questions given to the participants: 1) How much do they really understand the way you feel about things?; 2) How much can you rely on them if you have a serious problem?; 3) How much can you open up to them if you need to talk about your worries? The three positive questions were combined into a composite score using their z-score transformation. Higher scores indicate greater positive friend support.
Negative Friend Support

Respondents were asked four negatively structured questions on their spousal relationship (see Appendix). Their responses were assessed via a 4-point Likert-type scale (a lot, some, a little, not at all). 4) How often do they make too many demands on you?; 5) How much do they criticize you?; 6) How much do they let you down when you are counting on them?; and 7) How much do they get on your nerves? Prior to data analysis, these items were reversed so that higher scores reflect higher rates of positive friend support. Then the items were combined into a composite score using their z-score transformation.

Religion Measures

Religious Salience

Respondents were asked to agree or disagree with the statement, “I try hard to carry my religious beliefs over into all my other dealings in life,” using a 6-point Likert-type scale (1 = strongly disagree to 6 = strongly agree). They were also asked to respond to the statement, “How important would you say religion is in your life?” using a 5-point Likert-type scale (1 = very important to 5 = not too important) (see Appendix). Prior to data analysis, the second item was reversed so that higher scores reflect greater importance of religion in their lives. The two items were combined into a composite score using their z-score transformations. Higher scores indicate greater religious salience.

Religious Attendance

Respondents were asked to indicate how often they attended religious services during the past year, using a 5-point Likert-type scale (1 = more than once a week to 5 = not at all) (see
Appendix). Prior to data analysis, this item was reversed so that higher scores reflect more frequent religious attendance.

Potential Confounding Variables

Given the complex nature of chronic disease in older adult populations, there exist potentially confounding factors in this study. Among potential confounds is the likelihood among such older married couples that both members of the couple may have diabetes and/or other serious chronic illnesses. Although this may influence the internal validity of the study, such likelihood is simply a representation of what actually exists for the health circumstances of many older married couples. This study may sacrifice internal validity, but gains external validity. Measures are suggested in the below proposed analyses to attempt to address such confounds.
CHAPTER III

RESULTS

Before presenting tests of the individual hypotheses, descriptive data is presented for the sample in order to more fully understand the sample and the variables being used.

Table 1 represents descriptive data for continuous variables in this study and compares these variables by gender. As can be seen, significant gender differences were present for age, with men being older. Significant gender differences were present for spousal support as well, with men reporting greater spousal support, while women reported greater friend support. Lastly, a gender difference was present for religious salience, with women reporting greater religious salience than men.

Table 2 represents descriptive data for continuous variables in this study among the diabetic sample and compares these variables by gender. As can be seen, significant gender differences were present for age, with diabetic men being older. In addition, significant differences were present for spousal support, with diabetic men reporting greater spousal support, while diabetic women reported greater friend support and religious salience.

Table 3 represents descriptive data for continuous variables in this study among the non-diabetic sample and compares these variables by gender. As can be seen, significant gender differences were present for age, with non-diabetic men being older. All gender differences were consistent among the three samples, except that education is not significantly different between non-diabetic females and non-diabetic males.
Table 1

Comparison of Continuous Variables of Overall Sample by Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall Sample</th>
<th>Women</th>
<th>Men</th>
<th>T Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Min-Max</td>
<td>M</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td>74.59</td>
<td>9.20</td>
<td>60-109</td>
<td>74.00</td>
</tr>
<tr>
<td><strong>School (years)</strong></td>
<td>12.44</td>
<td>3.21</td>
<td>0-17</td>
<td>12.39</td>
</tr>
<tr>
<td><strong>HbA1C (%)</strong></td>
<td>5.87</td>
<td>.87</td>
<td>4.30-13.9</td>
<td>5.87</td>
</tr>
<tr>
<td><strong>Spousal Support</strong></td>
<td>3.21</td>
<td>.57</td>
<td>1-4</td>
<td>3.14</td>
</tr>
<tr>
<td><strong>Friend Support</strong></td>
<td>3.35</td>
<td>.45</td>
<td>1-4</td>
<td>3.41</td>
</tr>
<tr>
<td><strong>Religious Salience</strong></td>
<td>5.02</td>
<td>1.37</td>
<td>1-6</td>
<td>5.24</td>
</tr>
</tbody>
</table>

Note. Effects sizes were calculated using Cohen’s d formula.
Table 2

*Comparison of Continuous Variables among the Diabetic Sample by Gender*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall Diabetic Sample</th>
<th>Diabetic Women</th>
<th>Diabetic Men</th>
<th>T Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Min-Max</td>
<td>M</td>
</tr>
<tr>
<td>Age (years)</td>
<td>74.82</td>
<td>8.69</td>
<td>60-109</td>
<td>74.14</td>
</tr>
<tr>
<td></td>
<td>N=1208</td>
<td></td>
<td></td>
<td>n=593</td>
</tr>
<tr>
<td>School (years)</td>
<td>11.82</td>
<td>3.49</td>
<td>0-17</td>
<td>11.53</td>
</tr>
<tr>
<td></td>
<td>N=1207</td>
<td></td>
<td></td>
<td>n=593</td>
</tr>
<tr>
<td>HbA1C (%)</td>
<td>6.75</td>
<td>1.29</td>
<td>4.7-13.9</td>
<td>6.78</td>
</tr>
<tr>
<td></td>
<td>N=1208</td>
<td></td>
<td></td>
<td>n=593</td>
</tr>
<tr>
<td>Spousal Support (1-4scale)</td>
<td>3.12</td>
<td>.59</td>
<td>1-4</td>
<td>3.02</td>
</tr>
<tr>
<td></td>
<td>N=744</td>
<td></td>
<td></td>
<td>n=320</td>
</tr>
<tr>
<td>Friend Support (1-4scale)</td>
<td>3.32</td>
<td>.46</td>
<td>1.33-4</td>
<td>3.39</td>
</tr>
<tr>
<td></td>
<td>N=991</td>
<td></td>
<td></td>
<td>n=494</td>
</tr>
<tr>
<td>Religious Salience (1-6scale)</td>
<td>5.11</td>
<td>1.30</td>
<td>1-6</td>
<td>5.38</td>
</tr>
<tr>
<td></td>
<td>N=1073</td>
<td></td>
<td></td>
<td>n=532</td>
</tr>
</tbody>
</table>

*Note.* Effects sizes were calculated using Cohen’s $d$ formula.
Table 3

**Comparison of Continuous Variables among the Non-Diabetic Sample by Gender**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall Non-Diabetic Sample</th>
<th>Non-Diabetic Women</th>
<th>Non- Diabetic Men</th>
<th>T Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Min-Max</td>
<td>M</td>
</tr>
</tbody>
</table>
| Age (years)               | 74.53 | 9.33 | 60-109  | 73.97 | 9.25 | 60-105  | 75.16 | 9.39 | 60-109  | *t*(4427) = -4.24, *p*<.01  
  Effect Size = -0.13 |
| School (years)            | 12.61 | 3.11 | 0-17    | 12.61 | 2.83 | 0-17    | 12.10 | 3.41 | 0-17    | *t*(4013) = .09, *p* = .93  
  Effect Size = .16 |
| HbA1C (%)                 | 5.63  | .48  | 4.3-11.2 | 5.64  | .46  | 4.5-11.0 | 5.62  | .51  | 4.3-11.2 | *t*(4177) = 1.49, *p* = .14  
  Effect Size = .04 |
| Spousal Support (1-4scale) | 3.23  | .56  | 1-4     | 3.17  | .60  | 1-4     | 3.30  | .51  | 1-4     | *t*(2778) = -6.01, *p*<.01  
  Effect Size = -.23 |
| Friend Support (1-4scale) | 3.36  | .45  | 1-4     | 3.41  | .45  | 1-4     | 3.29  | .43  | 1-4     | *t*(3772) = 8.27, *p*<.01  
  Effect Size = .27 |
| Religious Salience (1-6scale) | 4.99  | 1.39  | 1-6     | 5.21  | 1.25  | 1-6     | 4.73  | 1.51  | 1-6     | *t*(3580) = 10.78, *p*<.01  
  Effect Size = .35 |

*Note.* Effects sizes were calculated using Cohen’s *d* formula.
Table 4 represents the marital statuses of all the individuals who participated in the study. Sixty-three percent of individuals who participated in the study were married with approximately 28% of individuals not currently married. The number of individuals who reported been diagnosed with diabetes is 1,208 while 4,429 reported not having diabetes. Ninety-three percent of the individuals who have 2006 biomarker data had HbA1c levels level less than 7%, but only a minority of these individuals are diabetic.

Table 4

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>3547</td>
<td>62.9</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>635</td>
<td>11.3</td>
</tr>
<tr>
<td>Widowed</td>
<td>824</td>
<td>14.6</td>
</tr>
<tr>
<td>Never Married</td>
<td>119</td>
<td>2.1</td>
</tr>
<tr>
<td>Status Unknown</td>
<td>1</td>
<td>.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5637</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

To initially explore associations between study constructs and to better understand the groups, lower triangular correlation matrices were created between the continuous variables among different groups and are displayed in Tables 5-7. The association between those variables is atheoretical in nature, and most are of small magnitude. These are presented below to include information about the relationship between pairs of these variables in the study sample.

Tables 5-7 represent the correlations between this study’s continuous variables among the overall sample, diabetic sample, and non-diabetic sample. In the overall sample, combining diabetic and non-diabetic groups, several significant correlations were noted. Both diabetic and non-diabetic samples appear to be influenced by the way HbA1c levels interact with Education.
and Age. These results suggest that older individuals who are more educated have better control of their glucose levels as measured by HbA1c. Positive Spousal Support was significantly correlated with Age, Education, and HbA1c in both the overall sample and non-diabetic sample. However, the diabetic sample did not produce a significant correlation between Positive Spousal Support and HbA1c levels. These results suggest that for non-diabetics receiving higher levels of positive support decreases HbA1c levels, thus resulting in better diabetic control. Positive Friend Support was correlated with Age and Positive Spousal Support in both the diabetic and non-diabetic sample. These results suggest that someone who is receiving positive spousal support is likely to also be receiving positive friend support, regardless if they have diabetes or not.

Table 5

*Correlations between the Continuous Variables in the Overall Sample*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Education</td>
<td>-.169**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HbA1C</td>
<td>-.066**</td>
<td>-.136**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Spousal Support</td>
<td>.061**</td>
<td>.109**</td>
<td>-.071**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Friend Support</td>
<td>.054**</td>
<td>.061**</td>
<td>-.023</td>
<td>.199**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. Religious Salience</td>
<td>.107**</td>
<td>-.167**</td>
<td>.063**</td>
<td>-.002</td>
<td>.053**</td>
<td>-</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed). Note. The n ranges from 6506-3921 due to missing data.

Religious Salience was significantly correlated with Age, Education, HbA1c levels, and Positive Friend Support in the overall sample and non-diabetic sample. The results suggest that higher levels of Religious Salience increase HbA1c levels only in individuals who do not have diabetes. In addition it appears that individuals who have higher levels of Religious Salience are
more likely to receive Positive Friend Support. Religious Salience does not appear to significantly influence HbA1c levels among diabetic individuals.

Table 6

Correlations between the Continuous Variables in the Diabetic Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Education</td>
<td>-.090**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HbA1C</td>
<td>-.116**</td>
<td>-.088**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Spousal Support</td>
<td>.124**</td>
<td>.115**</td>
<td>-.062</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Friend Support</td>
<td>.101*</td>
<td>-.014</td>
<td>-.026</td>
<td>.201**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. Religious Salience</td>
<td>.062*</td>
<td>-.123**</td>
<td>.012</td>
<td>.005</td>
<td>.072*</td>
<td>-</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed). Note. The n ranges from 1208-735 due to missing data.

Table 7

Correlations between the Continuous Variables in the Non-Diabetic Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Education</td>
<td>-.172**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HbA1C</td>
<td>-.094**</td>
<td>-.094**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Spousal Support</td>
<td>.056**</td>
<td>.094**</td>
<td>-.046*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Friend Support</td>
<td>.047**</td>
<td>.069**</td>
<td>-.002</td>
<td>.197**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. Religious Salience</td>
<td>.096**</td>
<td>-.168**</td>
<td>.070**</td>
<td>-.004</td>
<td>.064**</td>
<td>-</td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed). Note. The n ranges from 4,429-2,677 due to missing data

Table 8 provides information on race by hispanicity type to have a better understanding
of the individuals studied in this project. Overall 324 individuals described themselves as Mexican Americans while 220 described themselves as “other type of Hispanic.” The majority of respondents (5955) described themselves as “not Hispanic.”

Table 8

Race by Hispanicity Type in the Overall Sample

<table>
<thead>
<tr>
<th>Race</th>
<th>Hispanic, Unknown</th>
<th>Mexican American</th>
<th>Other Hispanic</th>
<th>Not Hispanic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1</td>
<td>279</td>
<td>156</td>
<td>5050</td>
<td>5486</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>4.3%</td>
<td>2.4%</td>
<td>77.7%</td>
<td>84.4%</td>
</tr>
<tr>
<td>Black/A.A</td>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black/A.A</td>
<td>1</td>
<td>0</td>
<td>18</td>
<td>811</td>
<td>830</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>.0%</td>
<td>.3%</td>
<td>12.5%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Other</td>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>45</td>
<td>46</td>
<td>94</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>.7%</td>
<td>.7%</td>
<td>1.4%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>324</td>
<td>220</td>
<td>5955</td>
<td>6501</td>
</tr>
<tr>
<td></td>
<td>.0%</td>
<td>5.0%</td>
<td>3.49%</td>
<td>91.6%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 9 provides information on the reliability of the items that were used to create the scales for this project. Fall the calculated scales produced a Cronbach’s alpha of acceptable magnitude. The variances of the scales appear to be restricted in range, indicating that people in general report a greater amount of social support. The Religious Salience scale descriptive data indicates that most individuals report religion to be salient in their lives.

Table 9

Scale Descriptives

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach’s Alpha (α)</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Min-Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Spousal Support, 3 items, 1-4 scale</td>
<td>.809</td>
<td>1.54</td>
<td>.217</td>
<td>1.30-1.70</td>
</tr>
<tr>
<td>Negative Spousal Support, 4 items, 1-4 scale</td>
<td>.780</td>
<td>3.01</td>
<td>.205</td>
<td>2.88-3.33</td>
</tr>
<tr>
<td>Total Positive Spousal Support*, 7 items, 1-4 scale</td>
<td>.826</td>
<td>3.20</td>
<td>.310</td>
<td>2.88-3.71</td>
</tr>
<tr>
<td>Positive Friend Support, 3 items, 1-4 scale</td>
<td>.840</td>
<td>1.96</td>
<td>.055</td>
<td>1.92-2.02</td>
</tr>
<tr>
<td>Negative Friend Support, 4 items, 1-4 scale</td>
<td>.760</td>
<td>3.57</td>
<td>.084</td>
<td>3.46-3.65</td>
</tr>
<tr>
<td>Total Positive Friend Support*, 7 items, 1-4 scale</td>
<td>.703</td>
<td>3.34</td>
<td>.283</td>
<td>2.98-3.65</td>
</tr>
<tr>
<td>Religious Salience*</td>
<td>.925</td>
<td>4.99</td>
<td>.226</td>
<td>4.79-5.30</td>
</tr>
</tbody>
</table>

Note: * indicates that some items were reverse coded in order for the total scale to go in the direction of positive support or religious salience. This indicates that the higher the number the greater the amount of support received.
Test of Hypotheses

The above analyses were atheoretical assessments of the relationships between variables as well as potential differences in the continuous variables used between the genders, diabetic and non-diabetic individuals. The following analyses were used to assess the remaining proposed hypotheses.

Correlation Analyses

For the diabetic sample, as a test of Hypothesis 1, which states that diabetic individuals who have greater positive spousal support are predicted to have lower HbA1c levels, three correlation analyses were conducted in order examine the relationship between Positive Spousal Support and HbA1c among the overall sample and between the genders. There was not a significant correlation between HbA1c and Positive Spousal Support in the overall sample ($r = -.060$, $p = .10$). In the diabetic female sample there was not a significant correlation between HbA1c and Positive Spousal Support ($r = -.050$, $p = .37$). In the diabetic male sample there was not a significant correlation between HbA1c and Positive Spousal Support ($r = -.059$, $p = .23$).

Z-Test for Two Correlation Coefficients

For the diabetic sample, as a test of Hypothesis 2, which states that the relationship between better diabetic control (lower HbA1c levels) and more Positive Spousal Support are predicted to be stronger for male diabetics than for female diabetics, a Z-test for two correlation coefficients was conducted to compare the strength of the correlation between HbA1c levels and Positive Spousal Support among diabetic males ($r = -.059$) against the strength of the correlation between HbA1c levels and Positive Spousal Support among diabetic females ($r = -.050$). The Z-
test produced a Z value = .12, \( p = .45 \), thus accepting the null hypothesis for this Z-test. The results suggest that there is not sufficient evidence to support that the correlation for HbA1c levels and Positive Spousal Support is different between diabetic males than diabetic females.

Another Z-test for two correlation coefficients was conducted, as a test for Research Question 2, which compared the strength of the correlation between Religious Salience and HbA1c levels (\( r = .026 \)) against Positive Spousal Support and HbA1c levels (\( r = -.050 \)) among diabetic females. The Z-test produced a Z value = -1.07, \( p = .14 \). This result suggests that there is not sufficient evidence to support that one correlation is stronger than the other among diabetic females.

**Independent t-Tests**

For the diabetic sample, as a test of this group’s Hypothesis 3, which states that male diabetics are predicted to have lower positive Friend Support than diabetic females, an independent sample \( t \)-test was conducted to examine the mean difference on Positive Friend Support between diabetic males (\( m = 3.25 \)) and diabetic females (\( m = 3.39 \)). Levene’s test for equality of variances was not significant, thus it can be assumed that the group variances were similar (\( F (1,989) = 3.02, p = .08 \)). The results indicate that there is in fact a significant mean difference between the genders on Positive Friend Support (\( t (989) = 4.96, p < .01 \)), with diabetic females reporting more support. Diabetic females appear to report higher levels of positive friend support than do diabetic males; this finding concurs with the current literature and the hypothesis proposed in the project.

For the diabetic sample, as a test of this group’s Hypothesis 4, which states that female diabetics are predicted to have higher levels of religious salience than male diabetics, a second
independent sample \( t \)-test was conducted to examine the difference on Religious Salience between diabetic males (\( m = 4.84 \)) and diabetic females (\( m = 5.38 \)). Levene’s test for equality of variances was significant, thus the homogeneity of variances assumption was violated \( (F_{(1,1071)} = 62.05, p < .001) \). The results indicate that there is a significant mean difference between the genders on Religious Salience \( (t_{(1000)} = 6.84, p < .001) \). Diabetic females appear to have higher levels of religious salience than do diabetic males thus this finding supported Hypothesis 4.

For the non-diabetics sample, as a test of this group’s Hypothesis 1 for the non-diabetic sample, which states that non-diabetic married men are predicted to have lower levels of Positive Friend Support (\( m = 3.26 \)) than non-diabetic married females (\( m = 3.42 \)), an independent sample \( t \)-test was conducted to determine if married non diabetic individuals differ by gender in their reported Positive Friend Support. Levene’s test for equality of variances was not significant, thus the groups are assumed to have equal variances \( (F_{(1,1997)} = .54, p = .46) \). The results indicate that there is a significant mean difference between non-diabetic males and non-diabetic females on Positive Friend Support \( (t_{(1997)} = 8.97, p < .001) \). Married non-diabetic females report greater Positive Friend Support this finding is congruent to the finding for married diabetic females.

For the diabetic sample, as a test of this group’s Research Question 1, an independent sample \( t \)-test was conducted to investigate if there is a significant mean difference on HbA1c levels between diabetic males (\( m = 6.71 \)) and diabetic females (\( m = 6.78 \)). Levene’s test for equality of variances was not significant, thus the groups are assumed to have equal variances \( (F_{(1,1206)} = 1.88, p = .17) \). The results indicated that there is not a significant mean difference between diabetic males and diabetic females on HbA1c levels \( (t_{(1206)} = .923, p = .36) \). This
finding suggests that diabetic control is not influenced by gender; however there are potential limitations to this project that could have influenced this finding, they are discussed later.

For the non-diabetic sample, as a test of this group’s Hypothesis 2, which states that married non-diabetic females are predicted to have higher levels of Religious Salience \((m = 5.21)\) than married non-diabetic males \((m = 4.66)\), an independent sample \(t\)-test was conducted to investigate if there is a significant mean difference between married non-diabetic individuals on Religious Salience. Levene’s test for equality of variances was significant, thus the groups appear to have unequal variances \((F(1, 2097) = 78.64, p < .001)\). The results suggest that there is a significant mean difference between the genders on Religious Salience \((t(1,2015) = 9.18, p < .001)\). This finding is also congruent with previous findings that suggest that married diabetic females report greater Religious Salience.

**Multiple Regression**

A multiple regression analysis was conducted to examine the contributions positive spousal support, positive friend support, religious salience and gender had on better diabetic control as measured by HbA1c among first the overall sample and then among male and female diabetics. First gender was dummy coded in order to better understand how it influences the regression model. The multiple regression model with all four predictors in the overall sample produced \(R^2 = .01\) \(F(4,3327) = .876, p < .001, n = 3,331\). This suggests that the four predictors account for essentially none (1%) of the variance in HbA1c among the overall sample. The model was significant but this is likely due to the sample size; only the coefficient of Positive Spousal Support was significant \((\beta = -.120, t(4,3327) = -4.56, p < .001)\). The magnitude of the
beta coefficient in Positive Spousal Support is small thus indicating that this result was caused by the large sample size.

A second multiple regression was conducted to examine the contributions Positive Spousal Support, Positive Friend Support, and Religious Salience have on HbA1c levels among male diabetics. The multiple regression model produced an $R^2 = .005$, indicating that the three predictors account essentially for none of the variance in HbA1c levels among male diabetics. Neither the model, $F (3,370) = .569, p = .64, n = 373$, nor the coefficients were significant.

A third multiple regression was conducted to examine the contributions Positive Spousal Support, Positive Friend Support, and Religious Salience have on HbA1c levels among female diabetics. The multiple regression model results conducted on female diabetics were very similar to the results observed on the regression model for male diabetics. The multiple regression model produced an $R^2 = .005$, which indicates that essentially none of the variance in HbA1c levels among female diabetics is accounted by the three predictors. Neither the regression model ($F (3,297) = .546, p = .65, n = 300$) nor the coefficients were significant.
CHAPTER IV
DISCUSSION

Individuals who suffer from diabetes experience negative emotional and physical symptoms as a result of their illness. These individuals need supportive and protective factors that will help them manage their diabetic symptoms. The main purpose of this study was to identify certain factors that could behave as facilitators in diabetes management. The factors or variables of interest were Gender, Positive Spousal Support, Positive Friend Support, and Religious Salience. Gender and Religious Salience have not been carefully studied in relation to their influence on diabetes management, thus this study hoped to expand the literature on this topic.

Discussion of Hypotheses Testing

Diabetic individuals who have greater positive spousal support were predicted to have lower HbA1c levels; however the results suggest that there is not a significant correlation between these two variables within the overall diabetic sample or within each gender. This finding is contrary to previous research, which finds that diabetic individuals who receive greater support from their spouses are more likely to engage in better diabetic management and are more likely to regularly adhere to their recommended regimes (Beverly & Wray, 2010). This finding originates from the idea that diabetic individuals who have caring and involved spouses are more likely to better manage their blood glucose levels because they are more emotionally stable and satisfied with their lives. It could be that these individuals do not let their diabetic symptoms overwhelm them because they have someone who positively supports them and alleviates the burden a chronic illness such as diabetes places upon them.
The fact that the analyses conducted were not significant was an unfortunate finding because positive spousal support could be the answer for distress diabetic individuals who are desperately struggling with the management of their HbA1c levels. Positive spousal support could enhance diabetic management by strengthening the self-discipline of the diabetic individual and by improving the chances of the individual adhering to dietary and exercise regimens. Social support overall has proven to be beneficial for individuals who suffer from a chronic illness; however, spousal support is potentially more essential for chronic illness management, especially diabetes mellitus. Spousal support could be more essential than overall social support because of the profound relationship most spouses share.

The non-significant result discussed above could have been influenced by some of the study’s limitations. For example, it was noted that the social support scales used in the study (both Spousal and Friend Support) were restricted in range as shown in Tables 1-3, meaning that most everyone reported receiving positive support from either their spouse or friends, this could have had a major impact on the results. The study’s limitations are further discussed later in this chapter.

A second hypothesis predicted that the relationship between better diabetic control, which is lower HbA1c, and more positive spousal support would be stronger for male diabetics than for female diabetics. However, after comparing the strengths of both correlations, the results suggest that there is no evidence to support that male diabetics benefit the most from positive spousal support when managing their diabetes illness. This finding is contrary to the current literature that says that in a marital relationship male diabetics benefit the most from positive spousal support and that the emotional support wives provide their husbands improves their diabetic management (Kiecolt-Glaser & Newton, 2001). The two correlations between positive spousal
support and HbA1c levels for each gender were not significant, thus that could be the reason the male diabetics in this study did not appear to benefit the most from positive spousal support when compared to female diabetics. Both correlations were noted to be small in magnitude before the Z-test comparison (refer back to results). Nonetheless, after observing the mean difference between the genders on positive spousal support, it was observed that males in general do report greater positive spousal support than do females (see Table 1). This finding concurs with the literature that males are more likely to have a more emotionally and physically supportive wife (Savoca et al., 2001).

The current study also compared non-diabetic individuals with diabetic individuals to get a better understanding of the differences and similarities of these two samples on psychological constructs. The results suggest that both diabetic and non-diabetic females have higher levels of positive friend support and religious salience than do diabetic and non-diabetic males. This finding is not deeply surprising because it supports the idea that overall females have more meaningful friendships than do males; in addition, females are more incline to religion than are males (Lowenthal et al., 1976; Pleck & Sawyer, 1974). This finding suggests that diabetic individuals do not greatly differ from non-diabetic individuals on these dimensions.

Gender was one of the main variables of interest because it has been hypothesized that gender differences exist in relation to diabetes management. Nonetheless, as mentioned earlier the current study did not produce any significant gender differences on the primary variables of interest. The purpose of examining gender differences was to recognize if gender played a role when studying diabetes management, specifically HbA1c levels in relation to reported spousal support. Previous research claims that diabetic females are more likely to employ greater self-discipline with regards to their recommended nutritional regimens and exercise routines than
Diabetic males. Diabetic males are likely to benefit from greater Positive Spousal Support, but are more likely to break their recommended regimens if they do not have a very supportive wife (Wong et al., 2005). It is important to note that these gender differences were not produced in the current study’s results. The study’s limitations could have influenced the non-significant results found.

Additional Findings

Although there were no significant gender differences between diabetic individuals on HbA1c levels, there were significant findings noted among the separate diabetic and non-diabetic sample. These two groups appear to be influenced by the way HbA1c levels covary with education and age. These results suggest that overall, older individuals who are more educated have better control of their glucose levels as measured by HbA1c, as shown in Tables 5-7. This finding is interesting because it validates the positive influence wisdom and education has on life in general, but most importantly on diabetes management. Taking another perspective, this finding could also imply that those younger diabetics that do not properly manage their diabetes have higher mortality rates.

Positive Spousal Support was significantly negatively correlated with HbA1c in both the overall sample and non-diabetic sample; however, HbA1c was not significantly correlated with Positive Spousal Support among the diabetic sample. It is important to note that the significant negative correlation between Positive Spousal Support and HbA1c among the overall sample and non-diabetic sample would not be considered clinically meaningful because the effect is small and it is very likely that the significant result was influenced by the large sample size, as shown in Tables 5 and 7. The combined sample and the non-diabetic sample both had large sample sizes
thus this influenced the significant results found in those two samples but not in the diabetic sample which was much smaller. Another important point to mention is the restriction of range in HbA1c levels among the diabetic sample because this restriction of range could had influenced the observed non-significant correlation (refer to Tables 1b); this ultimately could had also influenced the clinically meaningless correlations observed between HbA1c levels and Positive Spousal Support among non-diabetics and the overall sample.

The limited research on the effects religious plays on diabetes management suggests that the more religious the individual is the less likely he/she is to adhere in the recommended diabetes regimens (How, Ming, & Chin 2011; Samuel-Hodge et al., 2000). In the current study, Religious Salience was significantly positively correlated with HbA1c levels and Positive Friend Support in the overall sample and non-diabetic sample, as shown in Tables 5 and 7. The results suggest that higher levels of Religious Salience may slightly relate to HbA1c levels only in individuals who do not have diabetes. However, after observing the mean differences between Religious Salience among diabetic and non-diabetic individuals, the results indicate that in fact diabetic individuals report religion to be more salient in their lives (Tables 1 and 2). Religious salience or religiosity has not been extensively studied in relationship to diabetes thus conclusions are harder to interpret; based on previous research it appears that overall individuals who are influenced by their religion adopt more of an external locus of control, especially when it involves their health conditions (Samuel-Hodge et al., 2000), unfortunately the current study did not provide more validation to this finding.

In addition, it appears that individuals who have higher levels of religious salience are more likely to receive positive friend support; this finding was true for the current sample. This is an expected finding because typically individuals who have higher levels of religious salience
are likely to be surrounded by a supportive group of individuals who may also follow the same faith. However, it is important to note that the correlation coefficients were small in magnitude. Religious salience does not appear to significantly influence HbA1c levels among diabetic individuals. This finding is contrary to the limited research conducted on this matter (How, Ming, & Chin 2011; Samuel-Hodge et al., 2000).

Limitations and Strengths

Some of the non-significant findings discussed above could have been influenced by the study’s limitations. For example, as mentioned earlier the social support scales used were restricted in range thus there was limited variability among responses and this decreased the possibility of observing significant and strong correlations. In addition, the HRS-AHEAD randomly selects respondents to complete different waves of questionnaires, thus the current study only had a portion of diabetic individuals because only the Leave Behind and Biomarker Data were used. This could have influenced the results because the sample size was restricted. The study design overall would have benefited if the researcher would have been able to select preferred scales. The study’s limitations did not make the current study futile they rather allowed for future research growth.

The study also had significant advantages; for example, the HRS-AHEAD is a large epidemiological study. The sample used was a true representation of the United States population of individuals who suffer from diabetes and those who do not. Previous research conducted studies on religiosity in relation to diabetes and found significant results (How, Ming, & Chin, 2011; Samuel-Hodge et al., 2000, Wong et al., 2005); however, as mentioned earlier religiosity does not appear to be highly related to diabetes management among American diabetic
individuals. This was the major strength of the current research because previous researches only studied foreign samples. Religiosity and diabetes management may function differently among American individuals.

Clinical Implication and Future Research

Health professionals must always integrate different information into the clinical and behavioral intervention of individuals who suffer from diabetes mellitus. The current study aimed to expand the understanding of how gender, spousal support, and religion play a role in diabetes management. As supported by previous research, gender differences were present in this study with regards to reporting the amount of Positive Spousal Support received and the amount of Religious Salience. Future research should focus on understanding the role religion plays on diabetes management; religion overall has not been studied carefully and most importantly it has not been studied well in relation to diabetes management. Older individuals are likely to carry on greater religious beliefs than are younger individuals and it is known that the majority of individuals who suffer from diabetes are those who are older. Based on the limited research found it appears that religion may impact diabetes management negatively but if health professionals are able to identify the aspects of religion that may lead individuals to have less control of their diabetes management then those professionals would be making a great impact on those individuals’ lives. Religion has been noted to sometimes help individuals cope with life stressors, but it may be that it works differently when dealing with chronic illnesses, especially diabetes mellitus.

Future research should also focus on ethnic differences among individuals who suffer from diabetes. Positive spousal support, gender differences, and religiosity should be carefully
examined among different ethnicities to determine if different ethnicities differ on all or any of the variables mentioned above. Health professionals must take into account socio-cultural backgrounds, health beliefs, religious beliefs, social support, and gender in order to better expand the knowledge of diabetes. The better health professionals understand the individuals behind the diabetes diagnosis the easier it will be to communicate the complications and management of diabetes mellitus.
APPENDIX

VARIOUS PORTIONS OF THE HRS 2006 QUESTIONNAIRE

USED IN THE CURRENT STUDY
Demographic Data Questionnaire

1) Is respondent’s first name male or female?

1. MALE     2. FEMALE

2) Are you married?

Yes  No

3) First, I have some questions about your background. In what month, day, and year were you born?

__________________________
MONTH / DAY / YEAR

4) What is the highest grade of school or year of college you completed?

What is the highest grade of school or year of college [he/she] completed?

0 FOR NO FORMAL EDUCATION  1-11 GRADES  12 HIGH SCHOOL

13-15 SOME COLLEGE  16 COLLEGE GRAD  17 POST COLLEGE (17+ YEARS)

GO TO B016 BRANCHPOINT

97 OTHER  DK  RF
Q4. Do you have a husband, wife, or partner with whom you live?

(Mark (X) one.)

Yes □ Continue to Q5.

No □ Go to Q7. on page 4
Perceived Diabetes Control

C010
IF THIS IS A NEW INTERVIEW R or A DIFFERENT REPORTER FROM LAST IW
(C185 =1):
Has a doctor ever told you that you have diabetes or high blood sugar?

C011
In order to treat or control your diabetes, are you now taking medication that you swallow?

1. YES   5. NO   8. DK   9. RF

C012
Q1249
B4b. Are you now using insulin shots or a pump?

1. YES   5. NO   8. DK   9. RF

GO TO C015

C236  (Tag#=C012.5)
Has a doctor ever recommended to you that you use insulin?

1. YES   5. NO   8. DK   9. RF

C015
Is your diabetes generally under control?

1. YES   5. NO   8. DK   9. RF

C016
Compared to when we interviewed you last (in R’s LAST IW MONTH, YEAR), has your diabetes gotten better, worse, or stayed about the same?

1. BETTER   2. ABOUT THE SAME   3. WORSE   8. DK   9. RF
Spousal Support Scale

Q5. We would now like to ask you some questions about your partner or spouse. Please mark the answer which best shows how you feel about each statement. (Mark (X) one box for each line.)

<table>
<thead>
<tr>
<th>Question</th>
<th>A lot</th>
<th>Some</th>
<th>A little</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do they really understand the way you feel about things?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much can you rely on them if you have a serious problem?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much can you open up to them if you need to talk about your worries?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often do they make too many demands on you?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do they criticize you?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do they let you down when you are counting on them?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do they get on your nerves?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q6. How close is your relationship with your partner or spouse?

(Mark (X) one.)

<table>
<thead>
<tr>
<th>Close Degree</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Very close</td>
<td></td>
</tr>
<tr>
<td>Quite close</td>
<td></td>
</tr>
<tr>
<td>Not very close</td>
<td></td>
</tr>
<tr>
<td>Not at all close</td>
<td></td>
</tr>
</tbody>
</table>
**Friend Support Scale**

**Q15.** Do you have any friends?  
(Mark (X) one.)

- Yes [ ] Continue to **Q16.**  
- No [ ] Skip to **Q19.** on page 8

**Q16.** We would now like to ask you some questions about your friends. Please check the answer which best shows how you feel about each statement.  
(Mark (X) one box for each line.)

<table>
<thead>
<tr>
<th>Question</th>
<th>A lot</th>
<th>Some</th>
<th>A little</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do they really understand the way you feel about things?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>How much can you rely on them if you have a serious problem?</td>
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<tr>
<td>How much can you open up to them if you need to talk about your worries?</td>
<td></td>
<td></td>
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<tr>
<td>How often do they make too many demands on you?</td>
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<tr>
<td>How much do they criticize you?</td>
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<tr>
<td>How much do they let you down when you are counting on them?</td>
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</tr>
<tr>
<td>How much do they get on your nerves?</td>
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</tr>
</tbody>
</table>
Q17. On average, how often do you do each of the following with any of your friends, not counting any who live with you? (Mark (X) one box for each line.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Three or more times a week</th>
<th>Once or twice a week</th>
<th>Once or twice a month</th>
<th>Every few months</th>
<th>Once or twice a year</th>
<th>Less than once a year or never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meet up (include both arranged and chance meetings)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Speak on the phone</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Write or email</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q18. How many of your friends would you say you have a close relationship with? (Please write a number in the box.)

Number of friends with close relationship ☐ ☐
### Religion Measures

#### Q28. Please say how much you agree or disagree with each of the following statements: (Mark (X) one box for each line.)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Slightly disagree</th>
<th>Slightly agree</th>
<th>Some agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe in a God who watches over me.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>The events in my life unfold according to a divine or greater plan.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I try hard to carry my religious beliefs over into all my other dealings in life.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I find strength and comfort in my religion.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

#### Q29. How often do you pray privately in places other than at church or synagogue? (Mark (X) one.)

- More than once a day □
- Once a day □
- A few times a week □
- Once a week □
- A few times a month □
- Once a month □
- Less than once a month □
- Never □
REFERENCES


