RELATIONSHIP AMONG RELIGIOUS COPING, PSYCHOSOCIAL

FACTORS, AND QUALITY OF LIFE IN INDIVIDUALS

WITH TYPE 2 DIABETES

A Dissertation

by

JULIA M. LAGER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2006

Major Subject: Health Education

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Approved by:

Chair of Committee, Ranjita Misra
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ABSTRACT

Relationship Among Religious Coping, Psychosocial Factors, and Quality

of Life in Individuals with Type 2 Diabetes. (August 2006)

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M.S., Fort Hays State University

Chair of Advisory Committee: Dr. Ranjita Misra

The purpose of this study was to examine the relationship among religious

coping, acceptance of diabetes, social support, diabetes management, and quality of life

among individuals with type 2 diabetes (T2DM). Religious coping, acceptance of

diabetes, and social support were hypothesized to encourage adherence to self -

management behaviors thus enhancing quality of life. A convenience sample of 247

T2DM patients was recruited from local churches, clinics, a diabetes support group, and

a diabetes education class. Participants completed a 10-page survey comprising the

following reliable and valid scales: Religious Problem Solving Scale-Short Form, Ideas

About Diabetes-Revised Scale (IAD-R), the PRQ2000, the Religious Support Scale,

Summary of Diabetes Self-Care Activities-Revised, and the Diabetes Quality of Life

Measure. The mean age of the respondents was 54 years, with the majority being female

(68%), Caucasian (53%), and of Protestant religious affiliation (58%). Gender and ethnic

differences were found for religious coping, acceptance of diabetes, and self-

management behaviors. African Americans and women were more religious and used

more religious coping. African Americans also felt more inhibited by diabetes and

women were more likely to regularly examine their feet. Gender, general social support, and feeling less inhibited by diabetes (subscale of acceptance) were significant predictors of quality of life in the multivariate (regression) analysis (F (19, 219) = 7.777, p < .001; adjusted R^2 = .351). Results of this study support past research indicating the influence of gender, social support, and feeling inhibited by diabetes on respondents' quality of life. Attention to patients' level of social support and diabetes education that teaches patients how to integrate the disease into their life may be critical to improving quality of life.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

Diabetes is a debilitating and chronic disease affecting 20.8 million (7%) Americans (Centers for Disease Control (CDC), 2005; Sklyar & Oddo, 2002). African Americans, Mexican Americans, and Asian Americans are two to three times more likely to have diabetes than non-Hispanic whites of similar age (Agency for Healthcare Research and Quality (AHRQ), 2001; CDC, 2005). Poorly controlled diabetes is associated with multiple long-term complications resulting in significant economic costs. In 2002, the direct and indirect costs of type 2 diabetes totaled $132 billion (CDC, 2005).

Diabetes requires individuals to adjust and adapt to disease symptoms and lifestyle behaviors. Effective coping encourages acceptance and integration of the disease into daily life resulting in positive physiological and psychosocial outcomes (Gordon, et al., 2002; Macrodimitris & Endler, 2001; Pollock, 1989; Sanden-Eriksson, 2000; Sidell, 1997; Trief, Grant, Elbert, & Weinstock, 1998; Walsh, Katz, & Sechrest, 2002). Higher quality of life, better glycemic control, and less utilization of emergency medical services have been reported among diabetic patients coping well with diabetes (Macrodimitris & Endler, 2001; Sanden-Eriksson, 2000; Walsh, Katz, & Sechrest, 2002).

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This dissertation follows the style of *Health Education & Behavior*.

The ecological model suggests individual, social, organizational, community, and physical factors influence diabetes management (Fisher et al., 2005; Leonard et al., 1999). Religion and spirituality (R-S) may be an important social and environmental factor impacting diabetes outcomes. In fact, 80% of Americans believe in God, 64% are members of a church or synagogue, 35% attend weekly religious services, 59% view religion as very important, and 43% use prayer for health reasons (Barnes, Powell-Griner, McFann, & Nahin, 2004; Gallup Organization, 2006;). With R-S as a part of individuals' worldviews and life context, it may be particularly salient for individuals facing illness, disability, and death (Acklin, Brown, & Mauger, 1983; Ferraro & Kelley-Moore, 2000; Harrison, Koenig, Hays, Eme-Akwari, & Pargament, 2001; Laubmeier, Zakowski, & Bair, 2004; Miller & Thoresen, 1999; Stroebe, 2004).

Little research, however, has examined the mechanisms by which religion, in conjunction with other psychosocial factors, impact an individual's response to diabetes (Abraido-Lanza, Vasquez, & Echeverria, 2004; George, Ellison, & Larson, 2002). Hence, the purpose of this study is to examine the relationship between religious coping, psychosocial factors, self management behaviors, and quality of life in individuals with type 2 diabetes (T2DM). Understanding the relationship among these variables is critical for designing effective treatment strategies and improving diabetes outcomes.

This document is organized into six chapters (with chapters II-IV intended to stand alone as manuscripts for publication). The first chapter provides an overview of the content that follows. Chapter II is a critical literature review of current research examining religion as a coping resource and its influence on diabetes outcomes.

Limitations in existing research and direction for future studies are also provided.

Chapter III reports findings from a cross-sectional survey of T2DM individuals and

includes the theoretical background for examining the relationship among religious

coping, acceptance of diabetes, social support, self-management behaviors, and quality

of life. Chapter IV reviews definitions of religion and spirituality and their impact on

adjustment to T2DM. Recommendations for health educators are included for assessing

and including religion/spirituality in diabetes management education. Chapter V

provides a summary of the previous chapters.

CHAPTER II

RELATIONSHIP AMONG RELIGIOUS COPING, PSYCHOSOCIAL

FACTORS, AND QUALITY OF LIFE IN INDIVIDUALS

WITH TYPE 2 DIABETES

Introduction

Chronic diseases, such as diabetes, cardiovascular disease, and cancer, are the most preventable conditions of all health problems in the United States. In 2004, seventy percent of Americans died from chronic disease, and more than 90 million Americans suffered from a chronic condition (CDC, 2004a). Chronic diseases interfere with daily activities and life roles which can result in psychosocial and financial stress. This stress and the prolonged course of illness, pain, and disability greatly reduce the quality of life of millions of Americans (CDC, 2004b; Livneh & Antonak, 2005).

The onset or diagnosis of a chronic disease is a stressful and sometimes traumatic event (Livneh & Antonak, 2005). Successful coping requires adjusting to disease symptoms and lifestyle changes to achieve positive physiological and psychosocial outcomes (Gordon et al., 2002; Pollock, 1989; Sidell, 1997; Trief et al., 1998). Individuals utilize various strategies to help with coping, including denial, problem solving, and information seeking (Livneh & Antonak, 2005). Research efforts attempting to understand factors affecting successful adaptation to chronic disease have identified religion as an important factor impacting health outcomes and adjustment to chronic

illness (Ano & Vasconcelles, 2005; Folkman & Moskowitz, 2004; de Ridder &

Schreurs, 2001; Pargament, 1997; Siegel, Anderman, & Schrimshaw, 2001).

Religion is an integral component of life for individuals confronted with illness,

disability, and death (Acklin et al., 1983; Ferraro & Kelley-Moore, 2000; Harrison et al.,

2001; Laubmeier et al., 2004; Stroebe, 2004). Many individuals rely on their religious

beliefs and practices to provide meaning to the disease experience and obtain comfort,

hope, and social support (Pargament, 1997; Pargament, 1990). Evidence also indicates

religious beliefs and practices can impact the coping process. Religion may permeate the

stress process by influencing the cognitive and behavioral responses for interpreting and

handling negative life events (Pargament, 1997). For example, religion appears to

influence the interpretation, appraisal, and attribution of chronic illness (Gordon et al.,

2002; Siegel et al., 2001). Religion also may to contribute to the coping process by

providing coping options through the social, interpersonal, cognitive, spiritual, and

behavioral aspects of religious faith (Hathaway & Pargament, 1991). Finally, scholars

claim religion can be shaped by, or be a product of, the coping process. During times of

serious illness, individuals may seek organized religion due to its healing themes,

emotional support, and practical assistance (Krause, Ellison, Shaw, Marcum, &

Boardman, 2001; Pargament, 1997; Siegel et al., 2001). In fact, religious beliefs and

practices have been shown to improve mental health in heart transplant patients (Sears,

Rodrigue, Greene, Fauerbach, & Mills, 1997), encourage hope and acceptance of illness

in cancer patients (Holland et al., 1999; Mickley & Soeken, 1993), enhance mood in

patients with chronic pain (Greene Bush et al., 1999), improve mental and physical

health of medically ill elderly (Pargament, Koenig, Tarakeshwar, & Hahn, 2004), promote psychological adjustment in kidney transplant patients (Tix & Frazier, 1998), and decrease emotional distress, anxiety, and depression among HIV patients (Pargament, McCarthy, et al., 2004).

Although there is accumulating evidence suggesting the potential impact of religion on chronic illnesses, a lack of research exists among individuals with diabetes. Identifying gaps and limitations in published literature along with mechanisms by which religion exerts its effects can expand the theoretical framework explaining adjustment to diabetes. Further, research on religion, coping, and diabetes outcomes could provide valuable information regarding the need for incorporating religious and spiritual components in self-management education programs (Ano & Vasconcelles, 2005; Siegel et al., 2001). The purpose of this study was to systematically review published literature involving religion-related variables in individuals with T2DM. Specifically, this study will attempt to identify and examine: (1) the use of religion in individuals coping with diabetes, (2) the influence of religion on diabetes outcomes (i.e. glycemic control and quality of life), and (3) the measurement of religion in studies involving T2DM populations. Further, this critical analysis of the literature will identify limitations of existing research and directions for future studies.

Method

The EBSCOhost research database involving the following databases was searched for eligible studies from 1990 through 2005: *Academic Search Premiere (1975-present), ERIC, Health Source: Nursing/Academic Edition (1975-present), MEDLINE,*

Psychology and Behavioral Sciences Collection (1965-present), Religion and Philosophy Collection (1975-present), Sociological Collection (1965-present), and *ATLA Religion Database with ATLASerial (1949-present).* Keywords used in the search included diabetes, religion, religiosity, religious coping, coping, psychological adjustment, chronic illness, adjustment, and adaptation. To supplement this search, reference lists of articles meeting inclusion and exclusion criteria were inspected. Studies were included if research participants were adults with diabetes and if religion (i.e., frequency of church attendance, prayer, religious well-being, religiosity, etc.) was measured. Qualitative studies in which diabetic patients referred to God, prayer, or church congregation/members were also included. Studies were excluded if participants did not have type 2 diabetes and if religion-related constructs were not a coping resource (i.e., Ramadan fasting). Review articles, case studies, or commentaries were also excluded. The initial search produced a small number of studies and several studies included aspects of both religion and spirituality. Consequently, the search was expanded to include spirituality in order to broaden the perspective of how individuals with diabetes use religion and/or spirituality as a coping mechanism.

The decision to include studies focusing not only on religion-related variables but also on spirituality-related constructs warrants a brief discussion regarding the relationship between religion and spirituality. The terms "religion" and "spirituality" frequently are used interchangeably, yet they differ conceptually (O'Neill & Kenny, 1998; Rowe & Allen, 2004; Tanyi, 2002). Religion refers to an organized system of beliefs and practices related to God or a higher being (Thoresen & Harris, 2002).

Spirituality, on the other hand, is a broader term and the definitions are diverse and numerous. McSherry and Cash's (2004) taxonomy indicates spirituality encompasses a number of descriptors ranging from the religious to the existential and mystical. A possible definition of spirituality includes searching for meaning and purpose in life through a connection with a higher being and others. Despite the overlapping qualities of spirituality and religion, Rowe and Allen (2004) and Tanyi (2002) note an individual can be spiritual without being religious. Like religion, spirituality has been shown to impact chronic illness coping and health outcomes (Baldacchino & Draper, 2001; Narayanasamy, 2004; Potts, 1996; Rowe & Allen, 2004).

The literature search identified a total of 39 studies, but seven studies did not meet inclusion criteria (literature reviews, commentaries, or included adolescents with diabetes). Eight studies examining the effects of Ramadan fasting were also excluded as the physiological effects of fasting and diabetes treatment during Ramadan were not the focus of this review. The remaining 24 articles were examined using the matrix method (Garrard, 1999). The matrix included author, year of publication, purpose of the study, number of study participants, sample description, design and methodology, major findings related to religion/spirituality variables, and a methodological quality score. Quantitative and qualitative studies were separated and listed in chronological order (see Tables 1 and 2, respectively).

All studies were evaluated and received a methodological quality score (MQS) based on criteria developed by the author (see Table 3). The MQS theoretical range was from 0 to 36 with higher scores indicating higher quality. All studies were reviewed on

three separate occasions to ensure consistency of evaluation and discrepancies were re-examined to make a final decision.

Because of the differences in qualitative and quantitative research designs, studies were reviewed differently on use of theory, data analysis, study design, and data reliability and validity. For qualitative studies to receive a score for data reliability, authors had to provide protocol for data collection while a score for validity was given if authors obtained feedback from informants or had other researchers confirm data codes, themes, or categories (Creswell, 1994; Creswell, 1998; Merriam, 1998). To receive a score for theoretical framework usage, authors had to discuss a specific theory (or theories) used to guide or interpret findings or use grounded theory to build up a specific theory (Creswell, 1994; Creswell, 1998; Merriam, 1998). Qualitative studies also received a score for study design when authors indicated the approach used (e.g., ethnography). Finally, these studies received a score for use of a self-designed instrument if authors used an interview guide or provided examples of questions.

Similar scoring was performed for quantitative studies. For theoretical framework usage, quantitative studies received a score when relationships between variables were explained using a specific theory (or theories), and when an explanation of the relationships between variables occurred beyond reporting of findings from other studies (Creswell, 1994). Finally, studies received a score if reliability/validity of the data were presented or cited from previous research.

Table 1. Description of Qualitative Studies

Author	Purpose of Study	n	Sample Description	Design & Methodology		Major Findings Related to Religion/Spirituality	MQS Score
Young (1993)	To investigate and describe the use of spirituality in creating meaning for chronically ill	12	nursing home/ community 2 with diabetes aged b/w 65 & 89 67% female 33% male 100% Christian	ethnography	interview	Five categories were identified: spirituality defined, spiritual encounters, spiritual practices, spiritual afterlife, and significance of spirituality. Spirituality revolved around God, Jesus, and Christianity. The presence of a higher power, praying, and reading the bible provided power, comfort, and support. Spiritual beliefs also allowed them to accept their chronic illness and maintain hope for a better life.	10
Dietrich (1996)	To investigate attitudes of people with diabetes toward their disease and treatment	7	outpatient Type 2 diabetes mean age 58 100% women		interview	Participants referred to church congregation as providing support and encouragement for managing diabetes	9
Do Rozario (1997)	To use a creative hermeneutic and phenomenological perspective to understand how individuals with disability and chronic illness	49	community mixed chronic illnesses	phenomenology	focus groups autobiographies interviews	Five factors facilitating coping and adaptation were identified: spiritual transformation, hope, personal control, positive social support, and meaningful engagement in life.	11

Table 1. Continued

Author	Purpose of Study	n	Sample Description	Design & Methodology		Major Findings Related to Religion/Spirituality	MQS Score
Walker et al. (1997)	To assess knowledge and health beliefs related to preventing diabetic eye complications	104	outpatient mean age 58 81% women 100% African American	cross sectional	structured survey/open ended questions	The themes emerging from participant's responses regarding incentives and barriers to diabetic eye exams were fear or denial, spirituality (faith and hope), priorities, economic or logistical factors, and external/internal motivation.	16
Samuel-Hodge et al. (2000)	To identify culturally relevant psychosocial issues and social context variables influencing lifestyle behaviors	70	outpatient Type 2 diabetes 65% > 55 years of age 100% women 100% African American		focus groups	Emergent themes included spirituality/religiosity, diabetes impact, multi-caregiver role, stress, coping, and social support. Spirituality/religiosity were significant factors in coping and emotional support. Of the coping styles used, reliance on God and prayer were the most significant.	12
Choe, Padilla, Chae, & Kim, (2001)	To describe the meaning of health related quality of life (HRQOL) and identify factors influencing health related quality of life	22	outpatient Type 2 diabetes 50% women 50% men 100% Korean 8 Buddhist 5 Protestant 3 Catholic 5 no religion		interview	Six themes emerged concerning the meaning of HRQOL: health as global concept, overall well-being, satisfactory family relationships, living a rewarding life, spiritual life/relationship with God, and material support.	14

Table 1. Continued

Author	Purpose of Study	n	Sample Description	Design & Methodology		Major Findings Related to Religion/Spirituality	MQS Score
Daaleman, Cobb, & Frey, (2001)	To identify and describe elements of patient-reported, health-related spirituality, and to provide material for developing an instrument to measure spirituality in health care settings	35	outpatient 17 women with Type 2 diabetes (mean age 53; 53% white, 41% African American, 6% Asian American; 76% Christian) 18 women with no acute/chronic illness	exploratory	focus groups	Participants used spiritually based coping strategies such as prayer, meditation, and journaling to deal diabetes. Spirituality was identified as a cognitive construct providing a sense of order and purpose in the diabetic patients' lives.	16
Cagle, Appel, Skelly, & Carter-Edwards, (2002)	To explore African American women's perceptions of work and multi-caregiver role on diabetes self management and personal coping	12	outpatient Type 2 diabetes mean age 49 years 100% women 100% African American		focus groups	Participants achieved inner strength through self preservation and spirituality. By connecting with God and church members, the women were able to cope with diabetes and challenging life events. The women noted feeling uplifted by church member phone calls and visits, prayer, and weekly prayer meetings. The women obtained strength and the ability to cope with adversity from being connected to and receiving guidance from their churches.	11

Table 1. Continued

Author	Purpose of Study	*n*	Sample Description	Design & Methodology		Major Findings Related to Religion/Spirituality	MQS Score
Adams (2003)	To investigate the meaning of the experiences of Latinas diagnosed with Type 2 diabetes	13	outpatient Type 2 diabetes mean age 46 years 100% women 100% Latinas	descriptive phenomenology	interview	Religious faith served as external support system. Individuals believing in the possibility of a cure stated God would provide the cure. Participants relied on faith for strength and hope.	12
de Vera (2003)	To describe the perspectives of 4 Yaqui Native Americans with diabetes for healing foot ulcers	4	outpatient Type 2 diabetes aged 58 to 76 years 3 women 1 man 100% Yaqui Native American 2 Catholics 1 Protestant 1 Seventh-Day Adventist	exploratory descriptive ethnography	participant observation interview field notes	Participants prayed to heal foot ulcers. Talking to God, reading the bible, and going to church were common spiritual practices among participants. Participants felt spiritual support (i.e. church members and people's prayer) and belief in God gave them power and strength to cope with diabetes.	14
Egede & Bonadonna (2003)	To explore the concept of fatalism in the context of diabetes self-management	39	outpatient Type 2 diabetes 56% men 44% women 100% African American	clinical design	focus groups	Fatalism consisted of four dimensions: the meaning of diabetes, the illness experience, the individual's coping response, and the individual's religious and spiritual beliefs. The tendency toward fatalism was related to the meaning of diabetes, the individual's illness experience and coping response, and the religious or spiritual beliefs of the individuals.	15

Table 1. Continued

Author	Purpose of Study	*n*	Sample Description	Design & Methodology		Major Findings Related to Religion/Spirituality	MQS Score
Hjelm, Bard, Nyberg, & Apelqvist, (2003)	To explore the influence of cultural distance on health and illness beliefs and self-care practices	41	inpatient 100% women 13 born in Arab countries (median age 52) 13 born in ex-Yugoslavia (median age 55) 15 born in Sweden (median age 57)		focus groups	Religion was important for providing feelings of peace, security, and strength. Non-Swedes expressed fate and will of Allah or God as causes of diabetes	13
Hornsten, Sanstrom, & Lundman, (2004)	To describe personal understandings of illness among people with type 2 diabetes	44	outpatient Type 2 diabetes mean age 64 48% women 52% men	part of ongoing prospective educational intervention	interviews	Six categories were identified regarding personal understandings of illness: image of disease, meaning of the diagnosis, integration of the illness; space for the illness; responsibility for care; and future prospects. Relatives (wives or children), God, health care professionals and society provide support and diabetic patients hope or trust these others will manage a situation when he/she is unable.	14

Table 1. Continued

Author	Purpose of Study	*n*	Sample Description	Design & Methodology		Major Findings Related to Religion/Spirituality	MQS Score
Iwasaki, Bartlett, & O'Neil, (2005)	To gain a better understanding of how Aboriginal people with diabetes cope with stress	26	outpatient mean age 44 65% women 35% men 65% First Nations 35% Metis	phenomenology	focus groups	Three overarching themes were identified: identification and utilization of Aboriginal people's strengths; holistic healing--balance among mind, body, and spirit; and coping with stress and health from trauma as transformative. Five sub-themes describe the overarching themes emerging from the data: interdependence/connectedness; spirituality/transcendence; enculturation/facilitation of Aboriginal culture identity; self-control/self-determination/self-expression; and role of leisure in coping.	14
Popoola (2005)	To understand the holistic and trans-cultural experience of living with diabetes for Nigerians and African Americans	35	aged 60 to 82 years 63% female 37% male 43% African American 57% Nigerian	ethnography	interviews	Diabetes management interfered with participants' social, physical, and spiritual life. Many experienced a loss of spiritual fellowship by not being able to attend church. Their faith provided them hope and strength despite being spiritually deprived or in spiritual isolation. Visits from pastor, family, and friends along with praying and reading the bible gave them inspiration for living. Participants also used spiritual icons to cope.	12

Table 2. Description of Quantitative Studies

Author	Purpose of Study	n	Sample Description	Methodology Design & Instruments		Major Findings Related to Religion/Spirituality	MQS Score
Zalidvar & Smolowitz (1994)	To examine whether religious, spiritual, and folk medicine play a role in participants' views of diabetes and treatment choices	104	outpatient mean age 56 36% men 64% women 100% Hispanic		self-designed instrument	78% of participants said they had diabetes because it was God's will. 28% believed diabetes was punishment from God. 81% stated God controls their diabetes. 55% stated priests help them control their diabetes.	17
Landis (1996)	To examine relationship among uncertainty, spiritual well-being, and psychosocial adjustment to chronic illness	94	community Type 1 & 2 diabetes mean age 46 70% Type 1 65% women 35% men 66% Caucasian 83% Christian		Spiritual Well-Being Scale (SWB)	Significant negative relationship existed between uncertainty and SWB. Overall SWB score was negatively associated with psychosocial adjustment.	21
Deatcher (2002)	To examine the effects of prayer on medical outcomes and general wellness	9	outpatient Type 2 diabetes	intervention	Prayer Wheel	Seven participants experienced an improvement in A1c values following the use of the Prayer Wheel for three months. Subjects reported using the Prayer Wheel on most days rather than every day.	9

Table 2. Continued

Author	Purpose of Study	*n*	Sample Description	Methodology Design & Instruments		Major Findings Related to Religion/Spirituality	MQS Score
King, Mainous, & Pearson, (2002)	To investigate the relationship between religious service attendance and C-reactive protein (CRP)	10059	national sample from NHANES 1988-1994 non-institutionalized 556 with diabetes 62% attended religious services in last year	cross-sectional	frequency of attendance at religious services	Significant association existed between attendance at religious services and CRP among people with diabetes. Nonattendance at religious services predicted an increased chance of having an elevated CRP level. This association did not exist in those without diabetes.	21
Tellez-Zenteno & Cardiel (2002)	To identify the prevalence and factors associated with depression	189	outpatient Type 2 diabetes mean age 61 42% men	cross-sectional	religion	No results regarding religion were included.	15
Naeem (2003)	To explore the current experience and attitude towards control of diabetes among Kashmiri men with diabetes in Leeds	106	outpatient Type 1 & 2 diabetes 100% men 100% Indian 100% Muslim		structured questionnaire/ open ended questions	32% of the men believed they had diabetes due to Allah's will. 64% reported fasting during Ramadan.	13

Table 2. Continued

Author	Purpose of Study	*n*	Sample Description	Methodology Design & Instruments		Major Findings Related to Religion/Spirituality	MQS Score
Newlin, Melkus, Chyun, & Jefferson, (2003)	To explore the relationships between spiritual well-being, emotional distress, HbA1c values, and blood pressure levels	22	community Type 2 diabetes mean age 51 100% female 85% church affiliation 100% black	cross-sectional	Spiritual Well-Being Scale (SWB); religious/church affiliation	Significant inverse correlations between diastolic blood pressure, SWB, and religious well-being (RWB). No significant relationship between SWB and glycemic control or emotional distress.	18
Fitchett et al. (2004)	To examine religious struggle in diabetic outpatients, congestive heart failure (CHF) outpatients, and oncology patients	237	outpatient 71 with diabetes mean age 59 63% female diabetic patients 58% diabetic patients were white 49% diabetic patients attend worship services weekly or more		Brief RCOPE; frequency of public worship attendance	Negative religious coping was associated with higher levels of emotional distress and depressive symptoms in all patient groups.	22

Table 2. Continued

Author	Purpose of Study	n	Sample Description	Methodology Design & Instruments	Major Findings Related to Religion/Spirituality	MQS Score
Rowe & Allen (2004)	To explore the relationship between spirituality and coping with chronic illnesses	201	community/ outpatient 15% diabetes mean age 47 years 67% female 33% male 82% Caucasian 57% Catholic 28% Protestant 3% Jewish 1% Hindu 11% Other	Spiritual Involvement and Beliefs Scale; religious affiliation	Spirituality was positively associated with positive intrusive thoughts and problem focused coping. Positive intrusive thoughts or having a positive outlook were also a significant predictor of spirituality.	22

Table 3. Methodological Quality Score

Criterion	Scores	Frequency (%)
Study design	Quantitative: Not stated = 0, Exploratory/cross-sectional = 1, Prospective = 2 Qualitative: Not stated = 0; Approach indicated = 1	Quantitative: 66% not stated Qualitative: 40% indicated approach
Study approach	Qualitative/quantitative = 1, Mixed = 2	96% quantitative/qualitative
Population coverage	Non-national = 0, National = 1	96% non-national sample
Sample design	Not stated = 0, Convenience/purposive = 1, Random = 2	50% convenience/purposive
Sample size	$< 100 = 1$, 100-499 = 2, 500-599 = 3, $\geq 1000 = 4$	75% < 100 participants
Sample type	Mixed chronic illnesses = 1, Diabetes = 2	88% individuals with diabetes only
Race/ethnicity/nationality described	No = 0, Yes = 1	83% described
Mixed race/ethnic/national population	No = 0, Yes = 1	38% yes
Gender described	No = 0, Yes = 1	88% yes
Mixed gender population	No = 0, Yes = 1	50% yes
Non-responders to responders	No = 0, Yes = 1	4% yes
Survey response rate provided	No = 0, Yes = 1	21% yes
Instrument use	No/not stated = 0, Self-designed instrument = 1, Pre-tested instrument/interview guide = 2	Quantitative: 67% used pre-tested; Qualitative: 67% used interview guide

Table 3. Continued

Criterion	Scores	Frequency (%)
Assessed religiosity	No = 0, Yes = 1	42% yes
Religion/spirituality was focal variable	No = 0, Yes = 1	46% yes
Multidimensional assessment of religiosity	No = 0, Yes = 1	79% no
Data validity	Qualitative studies: No =0, Yes = 1 Quantitative studies: No = 0, Reported from other studies = 1, Conducted with study data = 2	Quantitative: 44% not reported Qualitative: 100% yes
Data reliability	Qualitative studies: No =0, Yes = 1 Quantitative studies: No = 0, Reported from other studies = 1, Conducted with study data = 2	Quantitative: 44% not reported Qualitative: 100% yes
Data analysis	Univariate/qualitative = 1, Bivariative = 2, Multivariate = 3	21% multivariate
Race/ethnicity/nationality comparison	No = 0, Yes = 1	13% yes
Gender comparison	No = 0, Yes = 1	13% yes
Defined religion/spirituality	No = 0, Yes = 1	21% yes
Theoretical framework usage	Quantitative studies: No = 0, implicit theory = 1; used theory to guide study = 2 Qualitative studies: No = 0, make link to specific theory = 1, Builds up theory = 2	Quantitative studies: 56% no theory; Qualitative studies: 33% no theory

Results

Description of Studies

Of the 24 studies reviewed, nine employed a quantitative approach, 14 employed qualitative methods, and one utilized a mixed-methods approach. Twelve studies focused exclusively on individuals with T2DM, two studies included both Type 1 and T2DM (Landis, 1996; Naeem, 2003), and ten studies did not specify the type of diabetes among study participants (see Tables 1 & 2). Nine studies were conducted outside of the United States (Choe et al., 2001; Dietrich, 1996; Do Rozario, 1997; Hjelm et al., 2003; Iwasaki et al., 2005; Hornsten et al., 2004; Naeem, 2003; Popoola, 2005; Tellez-Zenteno & Cardiel, 2002).

Methodological Concerns

The mean MQS for the reviewed studies was 14.50 (SD = 3.88) with a range of 9 to 22. Although 66% of the quantitative studies did not state study design, 34% employed cross-sectional designs. Data analysis ranged from descriptive statistics to logistic and multiple regression; only 21% conducted multivariate statistical analyses. Qualitative studies utilized ethnographic or phenomenological designs and data analysis included content and phenomenological analysis along with investigator-developed codes or themes. One study was an intervention.

The sample design, sample size, and demographic make-up of participants in the studies varied. Eight studies used convenience and purposive samples, and three studies employed a random sample design (Egede & Bonadonna, 2003; King, Mainous, & Pearson, et al., 2002; Walker et al., 1997). The majority of the samples were obtained

from outpatient populations, and sample sizes ranged from 9 to 10059 (five studies had

more than 100 participants) for the quantitative studies and 4 to 104 for qualitative

studies. Mean age ranged from 44 to 64 years (17 studies reported age of the

participants) with seven studies consisting of an all-female sample (Adams, 2003; Cagle

et al., 2002; Daaleman et al., 2001; Dietrich, 1996; Hjelm et al., 2003; Newlin et al.,

2003; Samuel-Hodge et al., 2000) and one was an all-male sample (Naeem, 2003). The

remaining studies had both males and females represented although two studies did not

report participants' gender (Deatcher, 2002; Do Rozario, 1997).

A majority of the samples involved specific racial/ethnic populations. For

example, six studies exclusively involved African Americans/blacks (Cagle et al., 2002;

Egede & Bonadonna, 2003; Newlin et al., 2003; Samuel-Hodge et al., 2000; Popoola,

2005; Walker et al., 1997) while five studies had a mixed race/ethnic sample (Daaleman

et al., 2001; Fitchett et al., 2004; Hjelm et al., 2003; Landis, 1996; Rowe & Allen, 2004).

Racial/ethnic composition of samples was *not* noted in eight studies.

Use of theory or a theoretical framework was limited among studies. Seven

studies were theory-based, however, only three studies examined R-S within a

theoretical framework (Landis, 1996; Hornsten et al., 2004; Hjelm et al., 2003). The

following theories were utilized: the modeling and role-modeling theory, personal

models of understanding illness, lay theory model of illness, model for health-care-

seeking behavior, health belief model, and perceived locus of control.

Measurement of Religion/Spirituality

Religion/spirituality (R-S) was a focal variable or research question in nine studies (Daaleman et al., 2001; Deatcher, 2002; Do Rozario, 1997; Fitchett et al., 2004; King et al., 2002; Landis, 1996; Newlin et al., 2003; Rowe & Allen, 2004; Zalidvar & Smolowitz, 1994). Fifteen studies, however, did not specifically examine R-S and diabetes coping, thus limiting the discussion of the role of R-S in adjusting to diabetes. Participants' religiosity, measured by religious/church affiliation or attendance at worship services, was noted in 10 studies (Cagle et al., 2002; Choe et al., 2001; Daaleman et al., 2001; de Vera, 2003; King, Mainous, & Pearson, et al., 2002; Naeem, 2003; Newlin et al., 2003; Rowe & Allen, 2004; Tellez-Zenteno & Cardiel, 2002; Young, 1993).

Over two thirds of the studies (79%), however, did *not* employ a multi-dimensional measure of R-S. Measures assessing R-S included Spiritual Well-Being Scale, Spiritual Involvement and Beliefs scale, religious affiliation, Brief RCOPE, and frequency of worship attendance. Tellez-Zenteno and Cardiel (2002) did not provide information regarding how religion was measured. Two studies used frequency of attendance at religious services (Fitchett et al., 2004; King et al., 2002) while eight studies used religious affiliation as the measure of religion (Choe et al., 2001; Daaleman et al., 200; Landis, 1996; Naeem, 2003; Newlin et al., 2003; Rowe & Allen, 2004; Tellez-Zenteno & Cardiel, 2002; Young, 1993).

Diabetes and Religion/Spirituality Relationship

The significance of R-S in the lives of individuals with diabetes was evident throughout the qualitative studies as participants voluntarily mentioned religion/spiritually. Individuals indicated using various religious/spiritual-based tools and practices to cope with the disease (e.g., prayer, meditation, talking to God, reading the Bible) (Daaleman, et al. 2001; Samuel-Hodge, et al., 2000). Church members, pastors, and God were frequently used as sources of emotional and social support (Adams, 2003; Cagle et al., 2002; de Vera, 2003; Dietrich 1996; Hornsten et al., 2004; Popoola, 2005; Samuel-Hodge et al., 2000; Young, 1993), and health-related quality of life involved a belief and trust in a higher being (Choe, et al., 2001). In addition, individuals attributed their diabetes to God (Egede & Bonadonna, 2003; Hjelm et al., 2003; Naeem, 2003; Zalidvar & Smolowitz, 1994) and some relinquished personal control to God or a higher power for controlling their diabetes (Daaleman et al., 2001; Egede & Bonadonna, 2003; Samuel-Hodge et al., 2000; Zaldivar & Smolowitz, 1994).

Reviewed studies also indicated significant relationships among R-S, adjustment to diabetes, and biological markers. Landis (1996) examined the impact of disease uncertainty and spiritual-well being (SWB) on living with diabetes in seven areas: health care orientation, vocational environment, domestic environment, sexual relationships, extended family relationships, social environment, and psychological distress. SWB significantly decreased disease-related uncertainty and problems related to living with diabetes and mediated the relationship between uncertainty and psychosocial adjustment in multivariate regression analyses. Although existential well-being, a subscale of SWB,

had the greatest mediating effect on psychological distress, SWB did not lessen

adjustment problems in the vocational environment (Landis, 1996).

In a nationally representative sample, King et al. (2002) found religious service

attendance predicted lower C-reactive protein levels (CRP). Individuals with diabetes

who reported *not* attending church or religious services (defined as $\geq$ 1 time per year)

had elevated CRP even after adjusting for demographic variables, health status, mobility,

social support, smoking, and BMI. A protective effect was also found for diastolic blood

pressure levels in individuals with higher religious well-being scores (Newlin et al.,

2003). A negative effect of religion/spirituality, however, was noted in Fitchett, et al.

(2004). After adjusting for age and gender, negative religious coping was associated

with higher levels of emotional distress and depressive symptoms. Those attending

services at least once a week, however, reported lower levels of negative religious

coping compared to those never attending services (Fitechett et al., 2004).

In summary, despite the impact of R-S on diabetes outcomes, the findings are

tempered by methodological concerns. Although the research designs were adequate for

the research questions posed, more powerful statistical designs along with the use of

theory, random samples, and diverse racial/ethnic groups could provide a more complete

picture of R-S's impact on diabetes coping. Further, many studies failed to examine

gender and racial/ethnic differences. Research indicates religious practices are greater

among women, older people, married persons, Southerners, those of lower social class,

and certain ethnic groups (Ferraro & Koch, 1994; Levin, Taylor, and Chatters, 1994).

Finally, the uni-dimensional measurement of R-S is problematic as a single item can not

adequately represent the multidimensional nature of R-S (Hood, Spilka, Hunsberger, & Gorsuch, 1996; Idler et al., 2003).

Discussion

The purpose of this systematic review was to identify and examine 1) the use of religion in individuals coping with diabetes, 2) the influence of religion on diabetes outcomes (i.e. glycemic control and quality of life), and 3) the measurement of religion in T2DM populations. The results indicate R-S provides individuals with diabetes with emotional and social support and strategies for dealing with stress (Adams, 2003; Cagle et al., 2002; Daaleman, et al., 2001; de Vera, 2003; Dietrich 1996; Hornsten et al., 2004; Popoola, 2005; Samuel-Hodge et al., 2000; Young, 1993). R-S also impacted diabetes outcomes. Specifically, individuals experienced a greater quality of life and improved psychosocial adjustment to diabetes (Choe et al., 2001; Landis, 1996). Further, religious attendance predicted improved biological markers, particularly C-reactive protein levels and blood pressure (King et al., 2002; Newlin et al., 2003). On the other hand, negative religious coping (i.e., individuals struggling to understand why God gave them diabetes) was associated with greater emotional distress and depressive symptoms (Fitchett et al., 2004). Because R-S may be involved throughout the coping process (Pargament, 1990; Pargament, Ensing, et al., 1990) and achieving positive diabetes outcomes (i.e., glycemic control and quality of life) is difficult, more research examining R-S's influence among individuals with diabetes is critical. This research would add to the diabetes coping literature by providing information for interventions targeting diabetes outcomes.

To strengthen research and statistical designs, future research should consider employing multi-dimensional measure of R-S. Tangible measurable religious and spiritual indicators need to be utilized as there are many dimensions and pathways by which religion and spirituality may impact health outcomes (Idler et al., 2003; Hood et al., 1996).

Second, longitudinal studies and random samples should be utilized. Longitudinal studies using random samples may reveal how religious coping changes over time in individuals with diabetes (Cigrang, Hryshko-Mullen, & Peterson, 2003; Pargament, McCarthy et al., 2004; Siegel et al., 2001). Further, more qualitative research can generate insights into how individuals draw on specific religious activities to find meaning in diabetes, maintain a sense of a just world, or gain a sense of control (Siegel et al., 2001).

Third, more power statistical designs are needed. The use of statistical designs involving not only between-group differences but also within-group variability (e.g., day to day over 30 days) would provide a more complete and informative picture of R-S coping (Slater, Hall, & Edwards, 2001; Thoresen & Harris, 2002). In addition, univariate and single multivariate pathways are too simplistic (Thoresen & Harris, 2002). Controlling for demographic factors such as age, gender, marital status, income, and education would allow researchers to determine religion/spirituality's predictive ability and unique contribution to diabetes outcomes across all population groups.

Fourth, because several of the studies reviewed focused exclusively on a specific racial/ethnic group, little is known about potential racial, cultural, or ethnic differences

in the diabetes and religious coping process. Given the strong role of R-S in some minority populations (i.e., Hispanics and African Americans), racial/ethnic differences are important to consider (Devlin, Roberts, Okaya, & Xiong 2006; Polzer & Miles, 2005). The prevalence of diabetes and the poor health outcomes among minority populations with diabetes signals a need for tailoring R-S coping interventions to minority populations. A better understanding of particular ways R-S influences manifest themselves also would be helpful.

Finally, greater attention to theory may clarify R-S dimensions that influence diabetes outcomes. Theoretical frameworks were limited in specifying, explaining, and predicting the relationship between R-S and diabetes outcomes (Glanz, Lewis, & Rimer, 1997), and few studies provided a theoretical framework for explaining observed associations between aspects of religiosity and health outcomes (Siegel et al., 2001). Using theory to explain the pathways by which R-S mediate or moderate health outcomes will move research to exploring potential moderators (e.g., religious affiliation, geographic location, demographics, and onset of disease) along with positive and negative aspects of R-S that may be important for obtaining or impeding achievement of positive diabetes outcomes (Thoresen & Harris, 2002). This knowledge is critical for developing R-S intervention programs impacting diabetes outcomes.

Implications for Practice

Integrating diabetes into one's daily life and sense of identity is a challenge for individuals diagnosed with diabetes (Muldoon & King, 1991). R-S activities (e.g., prayer, meditation, attendance at church activities) and religious items and rituals,

however, can provide comfort, reduce stress, decrease alienation, and create feelings of calmness (Kaye & Raghavan, 2002). Recognizing the role R-S plays in an individual's coping process is critical as these beliefs and practices impact medical decision-making (Koenig, 2002). Consequently, assessing an individual's R-S would be useful for facilitating, enhancing, and encouraging helpful R-S coping resources while minimizing harmful ones. For example, an individual's faith community can be utilized to assist with physical needs, provide social/emotional support (phone and visit), and prepare meals. Identifying and understanding negative forms of religious coping may help practitioners address religious issues hindering adjustment to diabetes. An individual diagnosed with diabetes, for example, may harbor anger towards God or view the illness as punishment. These views may limit an individual's ability to effectively cope. (Ano & Vasconcelles, 2005: Gordon et al., 2002; Kaye & Raghavan, 2002). Finally, a healthcare provider's acknowledgement and respect of religious coping may not only make it more effective, but also reinforce and enhance the patient-clinician relationship (Harrison et al., 2001)

The findings of this review confirm the significant role of R-S in coping with diabetes. Longitudinal and cross-cultural research, however, is needed to provide a comprehensive understanding of R-S in the adjustment of people with diabetes (Makros & McCabe, 2003). Future research revealing how R-S affects diabetes outcomes would encourage development of self-management education incorporating R-S strategies facilitating achievement of positive diabetes outcomes.

CHAPTER III

RELATIONSHIP AMONG RELIGIOUS COPING, PSYCHOSOCIAL

FACTORS, AND QUALITY OF LIFE AMONG INDIVIDUALS

WITH TYPE 2 DIABETES

Introduction

The ultimate goal of a person diagnosed with diabetes is to achieve good

metabolic control and quality of life (Taylor, Frier, Gold, & Deary, 2003). Many

individuals with diabetes, however, experience stress related to the diagnosis,

symptomatology, and treatment regimen (Coelho, Amorim, & Prata, 2003; Pibernik-

Okanovic, Roglic, Prasek, & Metelko, 1996; Pollock, Christian, & Sands, 1990; West &

McDowell, 2002). To cope with the stress and demand of managing diabetes, individuals

rely on various strategies and resources. These coping resources significantly impact the

integration of diabetes into their lives (Lundman & Norberg, 1993; Smari &

Valtysdottir, 1997).

An individual's ability to respond to and balance the demands of diabetes

predicts successful adaptation to the treatment regimen and impacts the course of the

disease (Coelho et al., 2003; Turan, Osar, Turan, Damci, & Ilkova, 2002). Effective

coping encourages acceptance and integration of the disease into daily life resulting in

positive physiological and psychosocial outcomes (Gordon et al., 2002; Pollock, 1989;

Macrodimitris & Endler, 2001; Sanden-Eriksson, 2000; Sidell, 1997; Trief et al., 1998;

Walsh et al., 2002). Research indicates individuals coping well with diabetes have higher

quality of life, better glycemic control, and less utilization of emergency medical

services (Macrodimitris & Endler, 2001; Sanden-Eriksson, 2000; Walsh et al., 2002). Poor coping, on the other hand, results in higher glycemic levels, anxiety and depression, and poor psychological adjustment (Karlsen, Idsoe, Hanestad, Murberg, & Bru, 2004; Lloyd et al., 1999; Peyrot & McMurray, 1992; Smari & Valtysdottire, 1997; Turan et al., 2002; White, Richter, & Fry, 1992).

Various psychosocial factors (e.g., acceptance, stress, locus of control, social support, depression, self-esteem, and self-efficacy) impact glycemic control and quality of life (Aalto & Uutela, 1997; Gentili, Maldonato, Grieco, & Santini, 2001; Glasgow, Hampson, Strycker, & Ruggiero, 1997; Kneckt, Keinanen-Kiukaanniemi, Knuuttila, & Syrjala, 2001; Karlsen & Bru, 2002; Koopmanschap, 2002; Lloyd et al., 1999; Lloyd, Matthews, Wing, & Orchard, 1992; Mazze, Lucido, & Shamoon, 1984; McDonald, Wykle, Misra, Suwonnaroop, & Burant, 2002; Nouwen, Gingras, Talbot, & Bouchard, 1997; Peyrot, Mcmurry, & Kruger, 1999). Religious coping also is important for adapting to disease symptoms and lifestyle changes and achieving diabetes outcomes (Abraido-Lanza et al., 2004; Acklin et al., 1983; Ferraro & Kelley-Moore, 2000; Harrison et al., 2001; King, et al., 2002; Landis, 1996; George et al., 2002). Previous studies, however, have not comprehensively examined how psychosocial factors work in concert with religious coping to affect diabetes outcomes (Coelho et al., 2003; Karlsen & Bru, 2002; Karlsen et al., 2004; Smari & Valtysdottir, 1997; Turan et al., 2002). Hence, the purpose of this study was to examine the relationship between religious coping, psychosocial factors (social support and acceptance of diabetes), self management behaviors, and diabetes outcomes (quality of life). Understanding the relationships

among these variables is vital to disease management programs designed to enhance patients' coping skills (Rubin & Peyrot, 1999).

Background

Religious Coping

A growing body of evidence indicates religion significantly affects coping outcomes as many individuals rely upon their religious beliefs and practices to help them cope with negative events (Acklin et al., 1983; Ferraro & Kelley-Moore, 2000; Harrison et al., 2001). Religious coping, defined as "the dependence on religious belief or activity to help manage emotional stress or physical discomfort" (Koenig, 1994, p. 161), may contribute to the coping process by providing coping options through the social, interpersonal, cognitive, spiritual, and behavioral aspects of religious faith (Hathaway & Pargament, 1991). Religion may also influence cognitive and behavioral responses for interpreting and handling negative life events (Pargament, 1997). For example, individuals may attribute the diabetes diagnosis as part of God's plan, punishment from God, or unintended by God (Gordon et al., 2002; Jenkins & Pargament, 1988; Pargament & Hahn, 1986; Siegel et al., 2001) which influences disease management behaviors (Nooney & Woodrum, 2002). In addition, during times of serious illness, people may seek out organized religion due to its healing themes, emotional support, and practical assistance (Krause et al., 2001; Pargament, 1997; Siegel et al., 2001).

Religious coping has been shown to influence various health outcomes in HIV, cancer, chronic pain, and heart transplant patients. In particular, religion has been found to decrease depression, anxiety, blood pressure, and morbidity and to improve positive

affect, self-esteem, life satisfaction, psychological well-being, quality of life, and healthy behaviors (Abraido-Lanza et al., 2004; Dessio et al., 2004; Greene Bush et al., 1999; Harrison et al., 2001; Koenig, McCullough & Larson 2001; Lawler & Younger, 2002; Levin, Markides, & Ray, 1996; Makros & McCabe, 2003; Pargament, Smith, Koenig, and Perez, 1998; Pargament, Tarakeshwar, Ellison, & Wulff, 2001).

Limited research on religious coping in diabetes populations indicates religion does impact diabetes coping and management. Landis (1996) reported spiritual well-being in type 1 and type 2 diabetic patients decreased feelings of uncertainty and improved individuals' ability to adjust to living with diabetes. Further evidence indicates church members and pastors provide instrumental and emotional support (Adams, 2003; Cagle et al., 2002; de Vera, 2003; Dietrich 1996; Hornsten et al., 2004; Popoola, 2005; Samuel-Hodge et al., 2000; Young, 1993), and reading the bible and praying reduced daily hassles and stresses (Samuel-Hodge et al., 2000). Among non-Mexican American Hispanic diabetic patients, Zaldivar and Smolowitz (1994) found a belief in God and an individual's perception of God's role in diabetes influenced an individual's perception of diabetes and treatment choices.

Acceptance of Diabetes

Individuals with diabetes have a variety of disease-related physical, cognitive, emotional, and behavioral experiences (Marks, Allegrante, & Lorig, 2005; Siguroardottir, 2005). Many times diabetes elicits anxiety which results in denial of the diagnosis and seriousness of the disease (Garay-Sevilla, Malacara, Gutierrez-Roa, & Gonzalez, 1999). In addition, individuals may attempt to control or avoid disease

experiences which can overwhelm coping strategies promoting self management

practices (Marks et al., 2005; McCracken, Carson, Eccleston, & Keefe, 2004;

McCracken, 2005). Prior studies indicate an association between denial, poor glycemic

control, increased late complications, and reduced adherence to the disease regimen

(Garay-Sevilla et al., 1999; Spiess, Sachs, Pietschmann, & Prager, 1995).

Acceptance, conceptualized as the opposite of denial, however, results in

psychological, physical, and spiritual benefits and adoption of self-care behaviors (Dion,

1990; Haase, Britt, Coward, Liedy, & Penn, 1992; McDonald, Tilley, & Havstad, 1999).

By accepting diabetes, individuals willingly and actively experience disease-related

events (bodily sensations, emotions, and thoughts) without allowing these experiences to

prevent them from participating in healthful behaviors (Hayes et al., 1999; McCracken,

Carson et al., 2004; McCracken, Vowles, & Eccleston, 2004). Thus individuals shift

from controlling their thoughts and feelings to participating in behaviors promoting

disease control. As a result, individuals actively manage the disease, maintain functional

ability, and participate in daily activities despite physical symptoms and emotions

(Garay-Sevilla et al., 1999; Hayes et al., 1999; McCracken, Carson et al., 2004;

McCracken, Vowles et al., 2004; Richardson, Adner, & Nordstrom, 2001;

Siguroardottir, 2005). In chronic pain patients, acceptance was associated with reduced

pain, psychological distress, depression, and physical disability and greater participation,

higher motivation, and better efficacy to perform daily activities (McCracken, 1998;

McCracken, Spertus, Janeck, Sinclair, & Wetzel, 1999; Viane, Crombez, Eccleston,

Devulder, & de Corte, 2004).

Social Support

Social support is also critical for coping effectively with diabetes as it reduces anxiety and depression, thus improving psychological well-being and glycemic control (Ford, Tilley, & McDonald, 1998; Langford, Bowsher, Maloney, Lillis 1997). In conjunction with self efficacy and locus of control, social support influences adherence to self management practices (Rubin & Peyrot, 1999; Tillotson & Smith, 1996; Toljamo & Hentinen, 2001a; Williams & Bond, 2002). Both actual and perceived support from friends and families encourages adherence to disease management and generates better health and well-being of diabetic patients (Aalto, Uutela, & Aro, 1997; Fuknishi et al., 1998; Garay-Sevilla et al., 1999; Hanestad & Albrektsen, 1991; Kvam & Lyons, 1991; Tillotson & Smith, 1996; Toljamo & Hentinen 2001b; Wang & Fenske, 1996). Also, diabetic patients perceiving and utilizing social support have been shown to exhibit good glycemic control (Fukunishi et al., 1998; Toljamo & Hentinen, 2001b; Wang & Fenske, 1996).

Social support is also critical in a patient's acceptance of diabetes. For example, discouraging thoughts and uncomfortable physical symptoms associated with the disease provide an individual with a choice of engaging in or avoiding a health-promoting activity. These experiences and decisions frequently occur in an environment where one's social influences can determine the action taken (McCracken, 2005). Situations in which a significant other interferes with self-management, takes over the diabetic patients' responsibilities, or demonstrates an angry, irritated, or frustrated response decrease the individual's acceptance of diabetes and engagement in health-promoting

activities (McCracken, 2005). Furthermore, diabetes-related thoughts and feelings (e.g., thinking about negative outcomes of diabetes and symptoms; fear; sadness; anger) may cause an individual to disconnect from important people in his/her life. Positive emotional responses to diabetes, however, have been associated with seeking social support (Pibernik-Okanovic et al., 1996). Schussler (1992) found coping strategies and perceptions of disease controllability determined the extent to which individuals sought social support. Hence, acceptance of the disease aids in seeking social support, which leads to emotional stability (Schussler, 1992).

Self Management

Diabetes requires ongoing adaptation, monitoring, and self-management to maintain functional ability and well-being. Diabetes management is critical to achieving glycemic control and reducing diabetes complications which, in turn, improve the quality of life of the diabetic patient (Rubin & Peyrot, 1999). The main components of a diabetic's self- management regimen include medication, diet, exercise, and self-monitoring of blood glucose (Cox & Gonder-Frederick, 1992; de Weerdt, Visser, Kok, & Van der Veen, 1990; Ruggiero et al., 1997; Toljamo & Hentinen, 2001a).

Theoretical Framework

Based on Lazarus and Folkman's Transactional Model of Stress and Coping and prior research, a theoretical model assessing the relationships among religious coping, psychosocial factors (social support and acceptance of diabetes), self-management behaviors, and diabetes quality of life was developed (Maes, Leventhal, & de Ridder, 1996; Schreurs & de Ridder, 1997). Figure 1 illustrates the conceptual framework for

this study. It was hypothesized that (1) higher levels of religious coping, social support, and acceptance of diabetes would increase diabetic patients' adherence to self-management behaviors; and (2) greater adherence to diabetes management behaviors would increase their quality of life. No previous studies have examined the relationship among religious coping, social support, acceptance of diabetes, self-management behaviors, and quality of life using a conceptual model in individuals with T2DM.

Method

Data Collection

A non-random sample of individuals with T2DM were recruited from local health clinics, churches, a diabetes support group, and a diabetes education class in Bryan/College Station, TX. Participants completed the survey while waiting for their appointments or while attending an event (support group/education class) at the respective locations. Inclusion criteria were: diagnosed type 2 diabetes (defined as individuals who had a current diagnosis by a health professional and was indicated on the survey by self-report, age of diagnosis, and listed medications), ≥ 18 years of age, sufficiently literate in English to answer the survey, and residing in the state of Texas. Exclusion criteria included: non-T2DM cases (type 1diabetes and gestational diabetes), < 18 years of age, illiterate or unable to read English, and primary residence not in Texas. Participation was voluntary and participants received a $5 Wal-mart gift card for completing the survey. The study was approved by the Institutional Review Board of
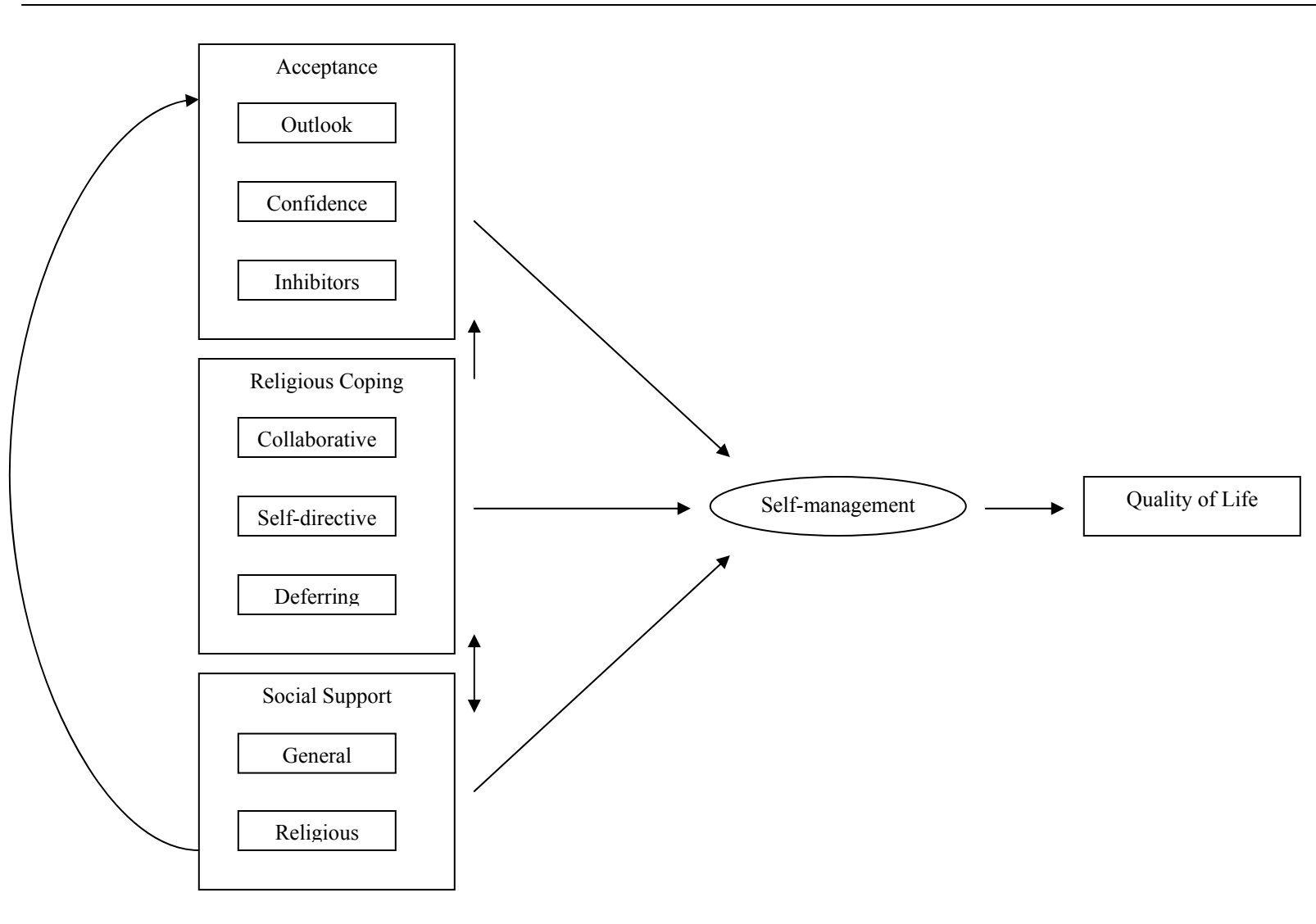
Figure 1. Model of the Hypothesized Relationships Between Predictor Variables and Quality of Life

Texas A&M University. Informed consent was obtained from all participants.

Measures

Religiosity. The Brief Multidimensional Measure of Religiousness/Spirituality: 1999 was used to assess religiosity of participants (Fetzer Institute/National Institute on Aging (NIA), 1999). Five questions pertaining to private religious practices were used. Participants responded to how often they prayed privately, meditated, watched or listened to religious programming, read the Bible or other religious literature, and said prayers or grace before meals. Response options ranged from never to more than once a week or day. A total score was obtained by summing the items and dividing by the total number of items. Cronbach's alpha for the scale was .79 which was similar to previous research (Fetzer Institute/NIA, 1999). Factor analysis of the data using varimax rotation showed one factor explained 51.5% of the total variance.

Religious Coping. The short-form Religious Problem Solving Scale (RPS) (Pargament, Kennell, et al., 1988) measured participants' frequency in using religious strategies to cope with diabetes. The instrument was adapted from chronic pain patients and modified to measure religious coping for diabetes. The RPS (Pargament, Kennell et al., 1988) consisted of 18 items with three religious coping style subscales: collaborative, self-directive, and deferring. Responses were scored on a 5-point Likert scale (1 = never to 5 = always). Reliability and validity of the instrument has been reported in earlier studies (Dunn & Horgas, 2004; Pargament, Kennell, et al., 1988;). For the current study, Cronbach's alpha for collaborative, self-directive, and deferring religious coping subscales were .96, .89, and .91. Factor analysis of the underlying structure of the items

on the scales indicated three factors explained 72.7% of the total variance which was congruent with previous research (Dunn & Horgas, 2004; Pargament, Kennell, et al., 1988).

Acceptance of Diabetes. The Revised Ideas About Diabetes (IAD-R) scale measured participants' acceptance of diabetes (Dion, 1990). The IAD-R is a 20-item scale with three subscales: outlook, confidence, and inhibitors. The outlook subscale measured perceptions about future health and well-being while the confidence subscale measured comfort interacting with others. The inhibitors subscale measured respondents' perception of being limited by their diabetes. Responses were measured in Likert-type format (1 = strongly disagree to 5 = strongly agree).Higher scores on confidence and outlook scales and lower scores on the inhibitors scale indicated greater acceptance of the disease. Validity and reliability of the scores has been established in earlier studies (Dion, 1990). For the current study, Cronbach's alpha for outlook, confidence, and inhibitors subscale scores were .78, .68, and .74. Factor analysis of the underlying structure of the subscale items deviated from previous research and many items had ambiguous loadings. The three subscales, however, were retained from the original instrument since the reliability of the scores was acceptable.

Social Support. Perceived social support was measured with the Personal Resource Questionnaire—PRQ2000 (Weinert, 2003), a 15-item scale in Likert format (1 = strongly disagree to 7 = strongly agree). A total social support score was computed by summing responses to the items and then dividing by the total number items. Higher scores reflect higher levels of perceived social support. Reliability and validity of the

instrument has been established (Weinert, 2003). Cronbach's alpha for the scale's score was .93. Factor analysis showed items loading on two factors and accounting for 59.7% of the total variance. Because five of the 15 items generated ambiguous scores, reliability was tested with these five items removed to see if the integrity of the alpha could be maintained while reducing ambiguity. With a reliability of .89, all 15 items were retained and the total score was used in analysis.

Religious Support. The Religious Support Scale, a 21-item scale, assessed perceived level of support from the congregation, God, and church leadership (Fiala, 1998; Fiala, Bjorck, & Gorsuch, 2002). The responses were measured in Likert-type format (1 = strongly disagree to 5 = strongly agree), and higher scores indicated higher levels of religious support. Reliability and validity of the instrument has been established (Fiala, 1998; Fiala et al., 2002). Cronbach's alpha for the current study's scores was .94. Factor analysis of the underlying structure of the items on the scales indicated three factors explained 74.8% of the total variance. The factor loadings deviated from previous research and nine items had ambiguous loadings (Fiala, 1998; Fiala et al., 2002). The total scale score was used since the reliability of the scores was acceptable.

Self-Care Activities. The Summary of Diabetes Self-Care Activities-Revised scale assessed the frequency of the following diabetes regimen activities: diet, exercise, glucose testing, and medication management over the preceding seven days. Four questions pertained to diet management and specific diet content, two questions were related to physical activity, two questions dealt with self monitoring of blood glucose, two questions involved foot care, and one question dealt with adherence to medications

(Toobert, Hampson, & Glasgow, 2000). Cronbach's alpha for the current study's scores was .74. Seven studies reviewed by Toobert et al. (2000) reported a mean inter-item correlation of .47 for the scales and a mean test-retest reliability of .49.

Quality of Life. The Diabetes Quality of Life Measure assessed participants' quality of life (Diabetes Control and Complications Trial (DCCT) Research Group, 1988; Jacobson & DCCT Research Group, 1994). The measure consisted of 46 items addressing satisfaction with treatment, impact of treatment, worry about the future effects of diabetes, and worry about social/vocational issues. Responses were measured in Likert-type format with satisfaction scores rated 1 (very satisfied) to 5 (very dissatisfied) and impact and worry scales rated from 1 (no impact or never worried) to 5 (always affected or always worried). To ensure that higher scores were equivalent to a higher quality of life, all items were reversed scored except for impact items 8 and 16. A total (mean) score was computed by summing the item responses and dividing by the total number of items. Cronbach's alpha for the quality of life scale's scores was .90 (Jacobson, de Groot, & Samson, 1994). The validity (construct and external) and reliability of this scale have been established in previous studies (DCCT Research Group, 1988; Jacobson & DCCT Research Group, 1994; Jacobson et al., 1994). Factor analysis of the underlying structure of the items on the scales indicated three factors explained 40.7% of the total variance. Because many items had ambiguous loadings, the total scale score was used since the reliability of the scores was acceptable.

Statistical Analysis

Statistical Package for the Social Sciences (version 13; SPSS, Chicago, IL) was used for data analysis. Analysis of the data was done in stages. The first stage involved ensuring accuracy of data entry, dealing with missing values, and assessing fit between distributions and assumptions of normality using descriptive statistics and frequencies. Twelve cases were deleted as they were duplicates, had type 1 diabetes, or were not residents of the state of Texas (n=269). Missing data ranged from 0 to 15% on survey items. Four cases were deleted as they failed to complete one or more scales (n=265), and the use of the mean scale scores reduced the missing data for the study variables (0-1%). Further deletion included three univariate and fifteen multivariate outliers (n=247) (Tabachnik & Fidell, 2001). The three univariate outliers had high z-scores on the religious and general social support scales and the confidence subscale of acceptance. The multivariate outliers were identified through Mahalanobis distance with $p < .001$. Most of the outlying cases were female (67%), single (56%), non-Hispanic white (50%), and did not have a religious preference (72%) or health insurance (78%). The response rate for the survey was 81% (345 surveys were distributed and 281 surveys were returned).

Analysis of Variance (ANOVA) was used to examine differences by gender and ethnicity (White, Hispanic, African American, and Others) among the study variables and Bonferroni adjustment was made to avoid the potential for type 1 error. Violations of homogeneity, assessed by Levene's test, were corrected by using an alpha level of .01 (Tabachnik & Fidell, 2001). Effect sizes (partial eta-square $= \eta_p^2$) were calculated to

show the proportion of variance attributed to each effect plus error (Tabachnick &

Fidell, 2001). Bivariate associations among the study variables (social support, religious

support, religious coping, acceptance of diabetes, self-care activities, and quality of life)

were assessed using Pearson's correlation. Multivariate regression models were used to

test the predictive ability and influence of the independent variables for the outcome

measure (quality of life).

<div align="center">Results</div>

Sample

This study involved a convenience sample of 247 individuals with type 2

diabetes. The mean age of the respondents was 54 years (SD = 12.36; range 21-85 years)

with an average age of diagnosis being 46 years (SD = 12.29; range 17-74 years). The

majority of the participants were women (68%), married (58%), Caucasian (53%) and of

Protestant religious affiliation (58%). Over one-third of the participants (40%) were

employed and 40% did not have health insurance. More than one-half of the participants

reported weekly attendance at religious services (58%), and had a high level of

religiosity (53%) (i.e., prayed, listened to religious programming, and read religious

literature weekly) (see Table 4).

Mean scores and standard deviations for the study variables are presented in

Tables 5 and 6. ANOVA with Bonferroni post-hoc tests showed significant ethnic

differences in religious coping as well as religiosity. African Americans were

significantly more likely than non-Hispanic whites (NHW) and Hispanics to use

religious coping. The magnitude of the effect for group differences in religious coping

ranged from .04 to .12 which is considered a small to medium effect size (Keith, 2006).

African Americans (mean = 3.76) also reported greater religiosity than Hispanics (mean

= 2.97) and NHWs (mean = 3.19). Significant ethnic differences were also found for

acceptance of the diabetes. African Americans reported feeling significantly more

inhibited by diabetes than NHWs. Gender differences were also noted on the following

indicators: religiosity collaborative religious coping and foot care. Females were more

likely than males to be religious, use more collaborative religious coping strategies, and

conduct regular foot care.

Correlations among variables are presented in tables 7 and 8. Significant

correlations (p< .05) existed between acceptance, religious coping, social support, and

quality of life. Specifically, more positive outlook (r = .461, p < .01), greater confidence

in interacting with others (r = .442, p < .01), fewer inhibitors (r = -.483, p < .01), greater

religious (r = .321, p < .01) and general social support (r = .391, p < .01), and greater

collaborative (r = .262, p < .01) and deferring religious coping (r = .134, p < .05) were

associated with higher quality of life. Self-directive religious coping, however, was

associated with poor quality of life (r = -.149, p < .05) and less religious social support (r

= -.300, p < .01).

Table 4. Demographic and Socioeconomic Characteristics of Sample

	n = 247	%		n = 247	%
Gender			**Health Insurance Status**		
Male	79	32	None	98	40.3
Female	168	68	Private	60	24.7
Marital Status			Medicaid/Medicare	38	15.7
Single	39	15.8	Medicaid/Medicare &	31	12.8
Married	144	58.3	private/other		
Divorced/Separated	47	19.0	Other	16	6.5
Widowed	17	6.9	**Religious Affiliation**		
Race/Ethnicity			None	1	0.4
Black/AA	48	19.4	Catholic	78	31.6
Non-Hispanic white	132	53.5	Protestant	143	57.9
Hispanic	53	21.5	Other	25	10.1
Other	14	5.6	**Employment Status**		
Education			Unable to work due to health	56	22.9
Less than high school	28	11.3	Unemployed	31	12.7
High school graduate	86	34.8	Employed	97	39.5
Some college	52	25.1	Retired	61	24.9
College degree	71	28.8	**Income**		
Living Status			< $9,999	66	29.6
Live alone	58	23.6	$10,000 - $19,999	48	21.5
Live with spouse	90	36.6	$20,000 - 29,999	24	10.8
Live with spouse and	65	26.4	$30,000 - $39,000	12	5.4
children			$40,000-$49,000	20	9.0
Live with relatives,	33	13.4	$50,000 +	53	23.7
friends, or significant					
other					

Note. AA = African American

Table 5. Mean Scores, Standard Deviations, and Effect Sizes of Ethnic Differences for

Psychosocial Variables and Diabetes Outcomes

Variable	Total Sample Mean	NHW	AA	Hisp	Other	F (3 df)	P	Effect size (partial eta squared)
Religiosity	3.23 (.129)	3.19[b] (1.19)	3.76[ab] (1.25)	2.97[a] (1.45)	2.81 (1.35)	4.090	0.007**	0.048
Acceptance								
Outlook	3.70 (.79)	3.84 (.81)	3.57 (.82)	3.54 (.72)	3.46 (.77)	3.022	.030*	0.036
Confidence	3.95 (.62)	4.06 (.63)	3.89 (.63)	3.81 (.54)	3.63 (.62)	3.594	.014*	0.042
Inhibitors	1.96 (.74)	1.81[a] (.68)	2.14[a] (.82)	2.07 (.69)	2.29 (.94)	4.253	.006**	0.050
Religious Coping								
Collaborative	3.70 (1.19)	3.45[a] (1.21)	4.17[a] (1.07)	3.80 (1.16)	3.99 (.92)	5.040	.002**	0.059
Self-directive	2.13 (.99)	2.28[a] (1.01)	1.80[a] (.96)	2.11 (.93)	1.96 (.92)	2.936	.034*	0.035
Deferring	2.70 (1.23)	2.38[b] (1.06)	3.48[ab] (1.22)	2.80[a] (1.34)	2.69 (1.08)	10.755	.000**[+]	0.117
Self-management								
Diet	4.07 (1.66)	4.10 (1.75)	4.35 (1.47)	3.76 (1.52)	4.07 (1.86)	1.100	.350	
Physical Activity	2.76 (2.01)	2.81 (2.12)	2.99 (1.92)	2.52 (1.76)	2.39 (2.26)	0.645	.587	
Self Monitoring of Blood Sugar	4.03 (2.69)	3.98 (2.67)	4.01 (2.77)	4.13 (2.75)	4.25 (2.59)	0.067	.977	
Foot care	4.68 (2.59)	4.24 (2.73)	5.03 (2.36)	5.38 (2.22)	4.92 (2.81)	2.933	.034[+]	0.035
Medication compliance	6.01 (2.19)	6.06 (2.25)	6.10 (1.80)	5.96 (2.27)	5.50 (2.65)	0.307	.820	
Religious Social Support	3.97 (.77)	4.00 (.77)	4.09 (.76)	3.88 (.72)	3.56 (.98)	2.038	.109	
General Social Support	5.49 (1.14)	5.62 (1.06)	5.28 (1.40)	5.54 (.99)	4.88 (1.32)	2.440	.065[+]	
Quality of Life	3.27 (.60)	3.28 (.52)	3.32 (.76)	3.25 (.58)	3.20 (.81)	0.187	.905	

Note. NHW = non-Hispanic white; AA = African American; Hisp = Hispanic. [abc] Levels connected

by the same letter are significantly different. [+] $p < .01$ due to violation of homogeneity of variances.

*p<.05, **p<.01

Table 6. Mean Scores, Standard Deviations, and Effect Sizes of Gender Differences

for Psychosocial Variables and Diabetes Outcomes

Variables	Total Sample Mean	Males	Females	F (1 df)	P	Effect size (partial eta squared)
Religiosity	3.23 (1.29)	2.91 (1.25)	3.38 (1.29)	7.447	.007**	0.030
Acceptance						
Outlook	3.70 (.80)	3.72 (.79)	3.69 (.80)	0.052	0.821	
Confidence	3.95 (.62)	4.01 (.62)	3.92 (.62)	1.353	0.246	
Inhibitors	1.96 (.74)	1.94 (.76)	1.96 (.73)	0.074	0.785	
Religious Coping						
Collaborative	3.70 (1.19)	3.36 (1.21)	3.86 (1.15)	9.576	.002**	0.038
Self-directive	2.13 (.99)	2.28 (1.01)	2.06 (.97)	2.721	0.100	
Deferring	2.70 (1.23)	2.57 (1.10)	2.76 (1.28)	1.257	0.263^{+}	
Self-management						
Diet	4.07 (1.66)	3.89 (1.69)	4.16 (1.64)	1.475	0.226	
Physical Activity	2.76 (2.01)	2.73 (1.98)	2.78 (2.04)	0.032	0.859	
Self Monitoring of Blood Sugar	4.03 (2.69)	3.87 (2.76)	4.11 (2.66)	0.405	0.525	
Foot care	4.68 (2.59)	4.18 (2.63)	4.91 (2.54)	4.272	0.040*	0.014
Medication compliance	6.01 (2.19)	6.12 (2.10)	5.96 (2.23)	0.257	0.613	
Religious Social Support	3.97 (.77)	3.96 (.75)	3.97 (.78)	0.013	0.909	
General Social Support	5.49 (1.14)	5.46 (1.14)	5.51 (1.15)	0.082	0.775	
Quality of Life	3.27 (.60)	3.36 (.63)	3.24 (.59)	2.268	0.133	

Note. $^{+}$ p < .01 due to violation of homogeneity of variances.

*p<.05, **p<.01

Table 7. Bivariate Correlation Among Predictor Variables and Quality of Life

	Relig	Outlook	Conf	Inhib	Collab	Self-dir	Defer	SM	Gen SS	Relig SS	QOL
Religiosity	1.000	.195**	.115	-.073	.411**	-.391**	.320**	.245**	.088	.381**	.096
Outlook		1.000	.631**	-.646**	.234**	-.181**	.106	.266**	.408**	.379**	.461**
Confidence			1.000	-.502**	.228**	-.113	.135*	.283**	.394**	.314**	.442**
Inhibitors				1.000	-.149*	.134*	.043	-.186**	-.313**	-.295**	-.483**
Collaborative					1.000	-.507**	.497**	.315**	.212**	.343**	.262**
Self-directive						1.000	-.235**	-.270**	-.123	-.300**	-.149*
Deferring							1.000	.166**	.048	.257**	.134*
Self-management								1.000	.299**	.286**	.265**
General SS									1.000	.572**	.391**
Religious SS										1.000	.321**
QOL											1.000

Note. Relig = religiosity; Inhib = inhibitors; Collab = collaborative religious coping; Self-dir = self directive religious coping; Defer =

deferring religious coping; SM = self-management; Gen SS = general social support; Relig SS = religious social support; QOL = quality of

life.

*p<.05, **p<.01

Table 8. Bivariate Correlations Among Demographic and Predictor Variables

	Age	Gender	Married	Health Insurance
Age	1.000			
Gender	-.032	1.00		
Married	.146*	-.263**	1.000	
Health Ins	.371**	-.255**	-.204**	1.00
Religiosity	.223**	.172**	-.116	-.023
Outlook	.202**	-.014	.136*	.152**
Confidence	.150*	-.074	.087	.139*
Inhibitors	-.121	.017	-.057	-.139*
Collaborative	.070	.194**	-.145*	-.114
Self-directive	-.088	-.105	.111	.157*
Deferring	-.079	.071	-.206**	-.170**
Self-Mgmt	.176**	.095	.043	-.026
General SS	.086	.018	.221**	.057
Religious SS	.195**	.007	.017	.129*
QOL	.140*	-.096	-.021	.033

Note. General SS = general social support; Religious SS = religious social support; QOL = quality of life.

*p<.05, **p<.01

A series of multiple regression analyses were performed to examine religious coping, acceptance of diabetes, and social support as predictors quality of life in T2DM. Demographic variables (age, gender, health insurance, and marital status) were entered in the first model, followed by race, religious preference, and religiosity in the second, third, and fourth models. The theoretical construct variables were then added in the following order: self-care activities, acceptance of diabetes, religious coping, and social support.

A series of multiple regression analyses is more advantageous than hierarchical regression because it provides estimates of the direct effects of the independent variables on quality of life. Hierarchical regression, on the other hand, estimates the variance of the total effects of the independent variables (indirect and direct paths) on quality of life. Thus, the effects of the variables change depending on the order in which they entered into the hierarchical regression. Furthermore, in hierarchical regression, R^2 estimates the variance attributed to the total effect rather than the direct path (Keith, 2006).

Table 9 provides results from the regression analyses. The final model was significant ($F_{(19, 219)} = 7.777$, $p < .001$), with an adjusted R-squared value of 0.351, explaining 35.1% of the variance in quality of life. The significant predictor variables in the model were gender, acceptance of diabetes, and social support. Being male ($\beta = -.139$, $p = .022$), less inhibited by diabetes ($\beta = -.317$, $p = .000$) and having higher general social support ($\beta = .227$, $p = .002$) predicted greater quality of life. Despite prior research indicating the impact of age, marital status, religious coping, and self-management behaviors, they were not significant predictors in the multivariate regression model.

Discussion

This study provided an assessment of religious coping, social support, acceptance of diabetes, and adherence to self management behaviors in predicting quality of life of T2DM patients. Significant predictors of quality of life included respondent's gender, acceptance of diabetes, and social support. The influence of female gender on quality of life among T2DM patients is well noted (Glasgow, Ruggiero, Eakin, Dryfoos, & Chobanian, 1997; Luscombe, 2000; Rubin and Peyrot, 1999). In a review of literature,

Table 9. Multiple Regression Analysis Summary for Quality of Life

Predictors	Model 1 Adj R^2 = .017[a]		Model 2 Adj R^2 = .009[b]		Model 3 Adj R^2 = .001[c]		Model 4 Adj R^2 = -.001[d]	
	β	p	β	p	β	p	β	p
Age	.160	.022*	.172	.016*	.171	.019*	.147	.051
Gender	-.114	.097	-.125	.079	-.135	.063	-.142	.054
Marital status	-.072	.285	-.076	.283	-.082	.253	-.078	.280
Health insurance	-.036	.619	-.030	.689	-.044	.565	-.040	.600
African American			.035	.624	.022	.824	.030	.689
Hispanic			.048	.505			.019	.818
NHW					-.022	.827		
Ethnicity--Other			-.038	.573	-.049	.528	-.033	.632
Catholic					.051	.530		
Other religious affil.					-.009	.900	-.052	.525
No religious affil.					-.053	.426	-.051	.447
Protestant							-.060	.493
Religiosity							.068	.340

Note. NHW = non-Hispanic white; other religious affil. = other religious affiliation; no religious affil. = no religious affiliation.

[a]$F_{(4, 237)}$=2.030, p = .091, [b]$F_{(7, 234)}$=1.310, p = .246, [c]$F_{(10, 227)}$=1.020, p = .427, [d]$F_{(11, 229)}$=.968, p = .476.

* p < .05, **p < .01, ***p < .001

Table 9. Continued

Predictors	Model 5 Adj R^2 = .060		Model 6 Adj R^2 = .306		Model 7 Adj R^2 = .318		Model 8 Adj R^2 = .351	
	β	p	β	p	β	p	β	p
Age	.102	.165	.102	.110	.101	.112	.117	.061
Gender	-.159	.026*	-.124	.044*	-.135	.030*	-.139	.022*
Marital status	-.103	.142	-.094	.121	-.077	.202	-.112	.063
Health insurance	-.021	.775	-.051	.421	-.043	.503	-.035	.574
African American	.001	.989	.105	.103	.027	.754	.061	.475
Hispanic	.017	.834	.092	.193				
NHW					-.075	.392	-.059	.485
Ethnicity--Other	-.042	.528	.038	.512	-.014	.837	.013	.839
Catholic	.037	.639					.071	.303
Other religious affil	-.023	.738	-.007	.919	-.003	.970	.055	.345
No religious affil.	-.046	.478	.014	.810	.024	.669		
Protestant			-.042	.562	-.044	.551		
Religiosity	.017	.813	-.021	.725	-.065	.322	-.054	.413
Self Management	.264	.000***	.122	.040*	.108	.075	.070	.245
Outlook			.135	.108	.139	.098	.099	.230
Confidence			.176	.018*	.143	.057	.107	.143
Inhibitors			-.315	.000***	-.323	.000***	-.317	.000***
Collaborative religious coping					.136	.070	.102	.162
Self-directive religious coping					.046	.489	.043	.511
Deferring religious coping					.020	.760	.026	.691
Religious social support							-.015	.837
General social support							.227	.002**

* p < .05, **p < .01, ***p < .001

Luscombe (2000) and Rubin and Peyrot (1999) noted being female predicted a lower quality of life in diabetic patients. The fact that age did not predict better quality of life in this study may be due to the fact that 52% of the respondents were less than 55 years old and 51% of the respondents have only had diabetes for six years or less. As a result they may not have experienced complications and or a decline in physical functioning which is associated with older age and diabetes (Luscombe, 2000; Rubin & Peyrot, 1999).

Although marital status has been shown to impact diabetic patients' quality of life, it was not a significant predictor in this study. Research indicates single, separated, or divorced individuals experience poorer quality of life (Hough, Brumitt, & Templin, 1999; Jacobson et al., 1994; Rubin & Peyrot, 1999; Walen & Lachman, 2000). It is plausible that when marital status was dummy coded (for the regression model (married vs. single, divorced, and separated) it may have masked within group variances. Lack of adequate sample sizes for each group prohibited dummy coding individual categories of marital status for a more detailed analysis. Further, the finding may be attributed to the sample being largely female with high levels of social support. Women generally receive more support from friends than a spouse and social support is associated with disease management and glycemic control (Fuhrer & Stansfield, 200; Gallant, 2003; Kvam & Lyons, 1991; Shumaker & Hill, 1991). Also, depression, complications, and treatment regimen are associated with marital status, social support, and quality of life. Individuals in this study may have lower levels of depression, fewer complications, and adequate treatment (oral medications or insulin). These items, however, were not assessed in this

study. Jacobson et al (1994) indicated that the treatment regimen and complications

reduce quality of life. Further, Kaholokula, Haynes, Grandinetti, and Chang (2003)

suggest marital status and social support moderate the association between depression

and quality of life. Participants in this study, however, rated their physical (59%) and

mental health (81%) as good to excellent. Although a spouse may be able to provide

support and is aware of the regimen demands, being married may not reflect a supportive

environment (Connell, Davis, Gallant, & Sharpe, 1994). Further research is needed to

clarify this relationship.

Consistent with previous research, social support predicted a higher quality of

among diabetic patients. Social support consistently has been shown to influence

diabetic patients' capability to manage their disease (Franks, Campbell, & Shields, 1992;

Gleeson-Krieg, Bernal, & Woolley, 2002; Trief et al., 1998). Perceived social support is

associated with the use of problem-focused coping and disease management resulting in

successful adaptation to diabetes and the treatment regimen. This leads to greater disease

acceptance as well as an improved quality of life (Karlsen et al., 2004; McCracken,

2005; Trief et al., 1998).

Participants had a high level of acceptance of diabetes. Specifically, participants

had a positive outlook regarding their future health and well-being, were comfortable

interacting with others, and were not limited by their diabetes. Although the effect was

small ($\eta_p^2 = .05$), ethnic differences in acceptance of the disease were noted with African

American participants more inhibited by their disease compared to NHWs and

Hispanics. It is plausible that these individuals experience more difficulty integrating

diabetes into their lives (Fitgerald et al., 1997; Samuel-Hodge et al., 2000; Wanko et al.,

2004). McCracken (1999) indicated the primary component of acceptance was the depth

of individuals' engagement in normal life activities. Acceptance of diabetes among

African American populations may involve maximizing life despite their disease

(Risdon, Eccleston, Crombez, & McCracken, 2003). Further, acknowledging that

disability and hopelessness are not inevitable consequences of diabetes is critical to

accepting the disease and making behavioral changes (Anderson-Loftin & Moneyham,

2000; McCracken, 1998; Risdon et al, 2003; Viane et al, 2003). Hence, culturally

appropriate self-management programs that incorporate individual assessment, symptom

management, goal setting, and problem-solving have the potential to assist all diabetic

patients in adapting to the demands of diabetes which may lead to greater acceptance

and a higher sense of control (Anderson-Loftin & Moneyham, 2000; Becker, Gates, &

Newsom, 2004; Bodenheimer, Lorig, Holman, & Grumbach, 2002; Clark et al, 1991;

Fisher et al, 2005; Glasgow, Toobert, Barrera, & Strycker, 2004; Lorig, Sobel, Ritter,

Laurent, Hobbs, 2001; Shilts, Horowitz, & Townsend, 2004).

Religious support, religiosity, and religious preference were not significant

predictors of quality of life in the multivariate analysis despite significant bivariate

associations. The lack of predictive value of religious coping for quality of life, however,

has practical significance for disease management programs. The religious coping styles

used in this study differ on the locus of responsibility and the level of involvement in the

problem solving process (Pargament,Kennell, 1988). Research examining locus of

control among diabetic patients has been inconsistent (Brooks & Roxburgh, 1999;

Coates & Boore, 1998; Hayes et al, 2000; Macrodimitris & Endler, 2001; Surgenor, Horn, Hudson, Lunt, & Tennent, 2000). Previous research suggests, however, that religiosity and religious coping provide individuals with a sense of control (Krause & Van Tran 1989; Siegel & Schrimshaw, 2002; Tepper, Rogers, Coleman, & Malony, 2001). The high levels of religiosity and religious coping in this study may indicate individuals place great importance on God and involve God more in the problem solving process (Maynard, Gorsuch, & Bjorck, 2001; Phillips, et al., 2004). As a result, participants may have interpreted diabetes "as the will of God" or "as an opportunity for personal or spiritual growth," which, coupled with social support, may have contributed to participants' acceptance of diabetes (Jang & Johnson, 2004; Siegel & Schrimshaw, 2002).

Self-management did not significantly predict quality of life in this sample. Findings regarding self-management's predictive ability for quality of life vary. Aalto, Uutela, et al (1997) found exercise, dietary habits, and monitoring of blood glucose did not predict quality of life while Glasgow, Ruggiero et al. (1997) found the level of physical activity significantly predicted quality of life. Although the magnitude of the effect was small ($\eta_p^2 = .04$), gender differences only existed for foot care (i.e., females checked their feet more often compared to males). Research indicates Hispanics and African Americans experience greater difficulty monitoring their blood sugar, exercising, and adhering to a healthy diet than non-Hispanic whites (Brown et al., 2003; de Groot et al 2003; Harris, Eastman, Cowie, Flegal, & Eberhardt, 1999; Harris, Cowie, Howie, 1993; Whitt & Kumanyika, 2002; Winkleby, Kraemer, Ahn, & Varady, 1998).

No significant ethnic differences existed for quality of life, and ethnicity was not associated with quality of life after controlling for the other independent variables in the regression model. Although studies frequently account for the potential influence of marital status, age, health insurance, and gender on quality of life, few studies control for ethnicity and include multi-ethnic samples (Aalto, Uutela et al., 1997; Glasgow et al., 1997; Jacobson et al., 1994). Rubin and Peyrot (1999) note the predictive ability of race/ethnicity for quality of life is inconsistent. Smith (2004) indicates ethnic/racial differences exist in quality of life for socio-demographic reasons (i.e., less education, employment, and access to health care). Results from this study indicate significant ethnic differences in education ($\chi^2 = 74.6$, p<0.001), employment status ($\chi^2 = 28.7$, p<0.01), and health insurance ($\chi^2 = 84.4$, p<0.001); yet when these were included in the model (not shown) they did not significantly predict quality of life. More research is needed to clarify the relationship between race/ethnicity and quality of life (Rubin & Peyrot, 1999)

Limitations

This study has several limitations. First, the study used self-reported data from a convenience sample of participants (Askimakopoulou & Hampson, 2005), and the cross-sectional design limits causal assessment of the predictor variables. Further, the largely religious sample from a Southern state may have biased information regarding religiosity, religious coping, and religious support. The literacy level of the survey and the participants along with the use of Likert scales needs to be considered as well. Although 54% of the participants had some college education or a college degree, one

third of the participants were only high school graduates (45% of Hispanics; 60% of African Americans; 20% of non-Hispanic whites; 50% of other ethnicities) and may have experienced difficulty understanding the questions and response format. Bernal, Wooley, & Schensul (1997) illustrate the difficulty of using Likert scales in low literate ethnic populations. Finally, use of a $5 incentive may have encouraged participation, especially from low income individuals (51% earned < $20,000), thus limiting the generalizability of results (Dunn & Gordon, 2005).

This study's findings have several practical implications for healthcare providers. To assist patients in coping with diabetes and promote positive diabetes outcomes, healthcare providers need to ensure patients have adequate social support and provide diabetes education that teaches patients how to integrate the disease into their life (Fisher et al., 2005; Harrison et al., 2001; Koenig, 2002; Levin, Chatters, & Taylor, 2005; Marks et al., 2005). These actions could potentially reduce individuals' perceptions of feeling limited by diabetes and promote lifestyle changes and acceptance of the disease. Further, assessment of individuals' R-S beliefs may be valuable for practitioners so that the individual's R-S can be incorporated into the treatment plan (Cigrang et al., 2003).

In summary, the results of this study suggest the importance of gender, acceptance of diabetes, and social support in predicting diabetic patients' quality of life. This study contributes to the literature by exploring previously unexamined psychosocial variables (religiosity, acceptance of diabetes, and religious coping) and their contribution to predicting diabetic patients' quality of life. Although participants' religiosity, religious coping, and religious social support were not associated with self-management

behaviors and quality of life, future studies should explore the impact of R-S in patients'

medical decision-making and whether religious issues hinder an individual's ability to

adjust to diabetes (Koenig, 2002; Medvene et al., 2003; Silvestri, Knittig, Zoller, &

Nietert, 2003). Future research also should examine the relationship of social support,

acceptance of diabetes, religiosity, and religious coping with other psychosocial

variables (i.e., self-efficacy, depression) and clinical outcomes (i.e., hemoglobin A1c).

Further, studies should also employ multi-ethnic samples and examine group differences

given the significance of religion in minority populations (Devlin et al., 2006; Polzer &

Miles, 2005). Finally, utilization of statistical models, such as structural equation

modeling, would examine the mediating and moderating influence of religion on

diabetes outcomes along with determining religious coping's predictive ability and

unique contribution to diabetes outcomes (Chatters, 2000; Thoresen & Harris, 2002).

CHAPTER IV

RELIGION/SPIRITUALITY IN DIABETES MANAGEMENT:

IMPLICATIONS FOR HEALTH EDUCATORS

Diabetes is a debilitating chronic disease causing significant mortality and morbidity among 20.8 million (7%) Americans (CDC, 2005; Sklyar & Oddo, 2002). Minorities (African Americans, Mexican Americans, and Asian Americans) aged 20 years and older are two to three times more likely to have diabetes than non-Hispanic whites of similar age (AHRQ, 2001; CDC, 2005). Diabetes and its associated long-term complications (blindness, amputations, kidney disease, and cardiovascular disease) cost the nation $132 billion in direct and indirect costs in 2002 (CDC, 2005).

The diagnosis of diabetes elicits anxiety, distress, worry, shock, anger, denial, loss of control, and depression (Beeney, Bakry, & Dunn, 1996; Garay-Sevilla et al., 1999; Livneh & Antonak, 2005; Mazze et al., 1984; McDonald et al., 2002; West & McDowell, 2002). Achievement of positive physiological and psychosocial outcomes (e.g., glycemic control and quality of life), however, requires adjusting to disease symptoms and adopting lifestyle changes (Gordon et al., 2002; Pollock, 1989; Sidell, 1997; Taylor et al., 2003; Trief et al., 1998). An individual's ability to respond and balance the demands of the disease influences the treatment regimen and course of the disease (Coelho et al., 2003; Karlsen & Bru, 2002; Turan et al., 2002).

To cope with the disease, individuals with diabetes rely on various coping strategies and resources (e.g., denial, problem solving, and information seeking) (Livneh

& Antonak, 2005) which can determine whether the individual effectively integrates the disease into his/her life (Lundman & Norberg, 1993; Smari & Valtysdottir, 1997). For diabetic patients, successful coping involves achieving good metabolic control and quality of life (Taylor et al., 2003). Research suggests individuals coping poorly with diabetes experience higher glycemic levels, anxiety, depression, and poor psychological adjustment (Karlsen et al., 2004; Lloyd et al., 1999; Peyrot & McMurray, 1992; Smari & Valtysdottire, 1997; Turan et al., 2002; White et al. 1992). Those who cope well, however, have greater adherence to self-care regimen, a higher quality of life, better glycemic control, and less utilization of emergency medical services (Macrodimitris & Endler, 2001; Sanden-Eriksson, 2000; Walsh et al., 2002).

The ecological model of diabetes self-management indicates individual, social, organizational, community, and physical factors influence an individual's ability to manage diabetes (Fisher et al., 2005; Leonard, Liburd, Vinicor, Brody, & Murry, 1999). Recent research suggests religion and spirituality (R-S) may be an important social and environmental factor impacting health outcomes and adjustment to diabetes (Ano & Vasconcelles, 2005; de Ridder & Schreurs, 2001; Folkman & Moskowitz, 2004; Pargament, 1997; Siegel et al., 2001). For some individuals, R-S beliefs and practices provide comfort, hope, and meaning to the disease experience (Pargament, 1997; Pargament, 1990). Evidence also suggests R-S may affect the coping process by impacting behavioral and cognitive efforts to manage the emotional and physical responses to diabetes (Hathaway & Pargament, 1991; Krause et al., 2001; Newman & Pargament, 1990; Pargament, 1997; Siegel et al., 2001). For example, R-S may affect

whether the individual attributes the diabetes diagnosis as part of God's plan, punishment from God, or unintended by God (Gordon et al., 2002; Jenkins & Pargament, 1988; Pargament & Hahn, 1986; Siegel et al., 2001). Religious/spiritual involvement and attendance also can facilitate access to social support and enhance social integration (Ellison & George, 1994; Krause & Wulff, 2005; Nooney & Woodrum, 2002; Siegel et al., 2001). Further, through prayer, individuals may develop a personal relationship with God that promotes hope, self esteem, and feelings of control (Jenkins & Pargament, 1988; Narayanasamy, 2002; Siegel et al., 2001). Finally, people might seek R-S for healing, emotional support, and practical assistance (Krause et al., 2001; Pargament, 1997; Siegel et al., 2001).

The increasing prevalence and costs associated with type 2 diabetes require health educators to provide culturally appropriate self-management programs to achieve positive diabetes outcomes (Anderson-Loftin & Moneyham, 2000; Becker et al., 2004; Bodenheimer et al., 2002; Clark et al, 1991; Fisher et al, 2005; Glasgow et al., 2004; Lorig et al., 2001; Shilts et al., 2004). Providing culturally appropriate diabetes programming, however, may require understanding the value of an individual's religious/spiritual beliefs and practices. This knowledge can assist in determining the influence of religious beliefs and practices on an individual's adjustment to the illness and adherence to a treatment regimen (Kennedy, DeVoe, Henry, & Kowalski, 1999; Rowe & Allen, 2004; Zaldivar & Smolowitz, 1994). The strong role of R-S in some minority populations, especially Hispanic and African Americans, makes it an important factor to consider in diabetes programs (Devlin et al., 2006; Polzer & Miles, 2005).

Hence, the purpose of this article is to briefly review the impact of R-S in adjustment to diabetes and provide recommendations for health educators on how to incorporate diabetic patients' R-S beliefs in the treatment regimen.

Definition of Religion and Spirituality

The terms "religion" and "spirituality" are conceptually different despite being used interchangeably (O'Neill & Kenny, 1998; Rowe & Allen, 2004; Tanyi, 2002; Zinnbauer et al., 1997). Religion refers to an organized system of beliefs, practices, and congregational activities related to God or a higher being (Plante & Sherman, 2001; Thoresen & Harris, 2002). Spirituality, on the other hand, is a broader term consisting of diverse and numerous definitions. McSherry and Cash's (2004) taxonomy indicates spirituality ranges from the religious to the existential and mystical. Definitions of spirituality frequently include a search for meaning and purpose in life along with a connectedness to others and God (McSherry & Cash, 2004). Although spirituality and religion overlap, an individual can be spiritual without being religious (Rowe & Allen, 2004; Tanyi, 2002). Both religion and spirituality have been found to influence diabetes coping and outcomes (Baldacchino & Draper, 2001; Narayanasamy, 2004; Potts, 1996; Rowe & Allen, 2004).

Religion/Spirituality and Diabetes Management

Religion/spirituality is an integral component of many individuals' lives. Although characterizing R-S beliefs and worship attendance in the United States is problematic (Hadaway & Marler, 2005; Hadaway, Marler, & Chaves, 1993), the Gallup Organization (2006) reports that many American adults believe in God (80%), are

members of a church or synagogue (64%), attend religious services weekly (35%) and

view religion as very important in their life (59%). Further, in a nationally representative

sample of U.S. adults, Barnes, et al (2004) found 43% used prayer for health reasons.

With R-S as a part of individuals' worldviews and life context, R-S becomes

particularly salient for individuals facing illness, disability, and death (Acklin et al.,

1983; Ferraro & Kelley-Moore, 2000; Harrison et al., 2001; Laubmeier et al., 2004;

Miller & Thoresen, 1999; Stroebe, 2004). Spirituality and spiritual well-being have been

shown to provide inner strength and decrease feelings of uncertainty among individuals

with diabetes (Becker, Gates, & Newsom, 2004; Landis, 1996). Religious practices, such

as fasting, affect drug compliance and calorie intake (Hawthorne & Tomlinson, 1993),

while reading the bible and praying lessen the impact of daily hassles and stresses

(Samuel-Hodge et al., 2000). Further, church members and pastors provide instrumental

and emotional support (Adams, 2003; Cagle et al., 2002; de Vera, 2003; Dietrich 1996;

Hornsten et al., 2004; Popoola, 2005; Samuel-Hodge et al., 2000; Young, 1993) and a

belief in God may influence individuals' treatment choices (Zaldivar & Smolowitz,

1994).

Despite increasing prevalence of research indicating the importance of R-S

beliefs in patient's coping efforts and well-being, addressing R-S is a challenging issue

for health educators. R-S is a personal issue (equal to sexual practices, sexual preference,

and use of addictive substances) requiring sensitivity and careful handling (Koenig et al.,

2001). Not being aware of a patient's R-S beliefs, however, can damage the educator-

patient relationship and lead to dissatisfaction with treatment decisions (Silvestri et al.,

2003; Post, Puchalski, & Larson, 2000). Hence, health educators need to be familiar with

the R-S values, beliefs, and practices of the patient population he/she is serving and

develop a proficiency in cultural sensitivity (Miller & Thoresen, 1999). A health

educator knowledgeable about the R-S beliefs and practices of his/her patient population

will be able to create an environment in which the patient feels comfortable discussing

R-S issues. With this knowledge, a health educator can develop a nonjudgmental and

empathetic relationship with the patient. Further, he/she will be better prepared to initiate

a discussion that is comfortable for the patient and be more proficient in recognizing

opportunities to incorporate the patient's R-S beliefs in the treatment regimen. This

openness and willingness to discuss R-S beliefs may improve a patient's adherence to

self-management behaviors and improve diabetes outcomes. Finally, a culturally

competent health educator can recognize when a patient needs R-S counseling or other

treatment specialists (e.g., psychologists, marriage and family counselors) (Miller &

Thoresen, 1999; Quinn, Cook, Nash, & Chin, 2001).

Health educators can develop cultural competency in R-S to respond to the needs

of individuals with diabetes in several ways. First, a R-S history of the patient will

provide information about the patient's religious background, R-S activities regularly

practiced, beliefs and practices affecting diabetes management, and whether these beliefs

and practices are a resource or burden for coping with diabetes (Ano & Vasconcelles,

2005; Koenig et al., 2001; Pargament, Zinnbauer, et al., 2003; Polzer & Miles, 2005).

Several validated instruments are available to assess R-S (Fetzer Institute/NIA, 1999;

Gorsuch & Miller, 1999; Koenig et al., 2001; Sherman & Simonton, 2001). Second,

health educators should be attuned to verbal and nonverbal clues indicating the significance of R-S to the patient. These clues can help the health educator support or encourage R-S beliefs helpful for the patient as well as inform the patient about religious resources available in his/her community (Koenig et al., 2001). Finally, health educators in hospital settings may consider including hospital chaplains as part of the health care team (Koenig et al., 2001).

<div align="center">Ethical Considerations</div>

Addressing R-S in diabetes populations requires some caution and ethical considerations. A health educator may face an ethical dilemma when he/she does not share the patients' spiritual perspective or religious belief. A heath educator, however, does not need to be a believer or share the patient's religious beliefs to discuss R-S issues with a diabetic patient. Respect for spiritual, religious, and cultural diversity is required along with recognizing the limits of his/her expertise, role, and training (Lo et al., 2002). Referrals to specialists (e.g., chaplains) are appropriate when the patient's concerns exceed the health educator's ability to address them. (Chirban, 200; Miller & Thoresen, 1999; Koenig et al., 2001; Post et al., 2000). Further, careful consideration should be given to patient requests for prayer. Post, et al (2000) recommend prayer be led by the patient or a religious leader that is not part of the medical team.

Health educators also should be objective regarding their own religious beliefs, attitudes, and biases when working with patients and clergy of different R-S beliefs (Levin, Chatters, Ellison, & Taylor, 1996). Partnering with clergy and religious institutions of various R-S beliefs can be beneficial for providing health promotion

programming for underserved and minority populations (Dehaven, Hunter, Wilder, Walton, & Berry, 2004; Hathaway & Pargament, 1991; Peterson, Atwood, & Yates, 2002). By virtue of his/her expertise, however, a health educator possesses a significant amount of influence (Brown, Garcia, & Winchell, 2002). Consequently, one does not want to impose his/her beliefs on a patient nor coerce a patient into participating in R-S practices (Brown et al., 2002; Levin et al., 2005; Lo et al., 2002). Therefore, inquiries into an individual's R-S life should not be made for the point of linking R-S practice with better health outcomes. For example, a health educator would not "prescribe prayer three times a week" in order to decrease depression (Harrison et al., 2001; Koenig et al., 2001; Sloan, Bagiella, Vandecreek, & Poulos, 2000; Sloan, Bagiella, & Powell, 1999). Further, it is not the task of the health educator to nurture faith, but to consider it in light of behavioral change and clinical outcomes (Chirban, 2001). Spiritual/religious advice and direction should be provided by a chaplain or the patient's clergy (Koenig, 2001).

Providing culturally sensitive care is critical to increasing trust and promoting self-management behaviors in individuals with diabetes (Polzer & Miles, 2005; Anderson-Loftin & Moneyham, 2000). R-S is an integral part of diabetic patients' adaptation to the disease and asking patients about their R-S may make them feel the healthcare team is interested in him/her as whole person (Dein & Stygall, 1997; Post et al., 2000). In fact, few individuals report being offended by inquiry into their R-S beliefs (Ehman, Ott, Short, Ciampa, & Hansen-Flaschen, 1999; Ellis & Campbell, 2004). Inquiring about diabetic patients' R-S beliefs and practice may provide an opportunity to improve the self-management practices of patients with strong R-S beliefs.

Consequently, health educators capable of recognizing and inquiring about the importance of R-S beliefs in patients coping with diabetes can better assist patients in integrating diabetes into their life. Discussing R-S issues, however, requires the health educator to be knowledgeable about when and where to refer patients for R-S issues and avoid imposing their R-S beliefs on patients.

CHAPTER V

CONCLUSION

The purpose of this dissertation was to explore the significance and impact of religious coping on quality of life. The first phase examined past research regarding the influence of religion on diabetes adjustment and outcomes. Although associations between R-S and adjustment to diabetes were found, methodological issues (i.e., uni-dimensional measurement of religion/spirituality, lack of or limited use of theoretical frameworks, and failure to examine gender and racial/ethnic differences), limited findings, as well as the generalizability of these studies. These results prompted an investigation of religious coping, psychosocial factors, and quality of life. The study employed theory, multidimensional assessment of religiosity, and two psychosocial factors hypothesized to influence diabetes quality of life.

The results of the study revealed gender, acceptance of diabetes, and social support predicted higher quality of life among individuals with T2DM (F (19, 219) = 7.777, p < .001). Although prior research indicates age, marital status, religious coping, and self-management behaviors are predictors of quality of life, they were not significant predictors in this study. Ethnic and gender differences were found for religiosity, religious coping, acceptance of diabetes, and diabetes self-management. Specifically, African Americans and women were significantly more likely to be religious and use religious coping. African Americans also reported feeling more inhibited by diabetes. Further, women were more likely to examine their feet regularly.

The final phase of the research discussed recommendations for health educators regarding the inclusion of religion/spirituality in diabetes management and programming. The increasing prevalence of type 2 diabetes among various ethnic groups requires health educators to be culturally competent when conducting self-management programs. Cultural sensitivity increases trust and promotes self-management behaviors in individuals with diabetes. Health educators should be knowledgeable about the R-S beliefs of the population they are serving and be capable of creating an environment in which individuals coping with diabetes are comfortable discussing his/her R-S beliefs. Finally, health educators should avoid imposing their R-S beliefs on patients and recognize when to refer patients to specialists to deal with R-S issues that are beyond their training.

This study comprehensively assessed religious coping, social support, acceptance of diabetes, and adherence to self management behaviors in predicting quality of life of T2DM patients. Few studies have examined coping and the mechanisms by which religion influences an individual's response to diabetes. Health care providers can reduce individuals' perceptions of feeling limited by diabetes and promote lifestyle changes by ensuring patients have adequate social support and providing culturally competent diabetes education that teaches integration of the disease into patients' lives. Future research should examine the relationship of religiosity and religious coping with other psychosocial variables (e.g., self-efficacy, depression) and clinical outcomes (i.e. hemoglobin A1c), employ multi-ethnic samples, and utilize statistical models that examine the mediating and moderating influence of religion on diabetes outcomes.

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