

AN EXAMINATION OF THE RELATIONSHIP AMONG PATIENT FACTORS,
PATIENT-PHYSICIAN INTERACTION, AND UTILIZATION OF HEALTH
SERVICES IN ADULTS WITH DIABETES

A Dissertation

by

DESIREE AVIA RIVERS

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

May 2007

Major Subject: Health Education

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ABSTRACT

An Examination of the Relationship Among Patient Factors, Patient-Physician Interaction, and Utilization of Health Services in Adults with Diabetes. (May 2007)

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In this study, patient-physician interaction, patient socio-demographic factors, health literacy, sources of care, and use of diabetes-related health services, were examined to assess the relationships to patients' satisfaction with the quality of health care they received in the past 2 years. By examining the relationship among patient, physician and environmental systems' factors, research findings will be used to develop interventions that will inform patient education and physician training and foster patient and physician behavior change that ultimately leads to improved health outcomes for adults with diabetes. To answer the research questions, univariate and multivariate logistic regression analyses were conducted to assess the predictability of the 5 groups of dependent variables: 1) socio-demographic factors, 2) sources of care "factors", 3) health literacy "factors", 4) patient-physician interaction "factors", and 5) use of diabetes-related services "factors". Individually these groups comprised thirty-two dependent variables. Three dependent variables, specifically confidence and trust in doctor; doctor spend as much time as wanted; and had a hemoglobin A1c in the last 6 months, were statistically significantly predictive of a relationship with patient satisfaction with quality of health

care. This study provides insight regarding the specific aspects of patient-physician interaction and use of diabetes-related services that impact patient health outcomes. By knowing that a statistically significant relationship exists among confidence and trust in a doctor, being able to spend as much as time as wanted with a doctor, having a hemoglobin A1c in the last 6 months, and satisfaction with quality of health care, future investigators know which influences are perhaps most influential and deserve further exploration to predict satisfaction with quality of health care.

DEDICATION

To all those who have gone before me and paved the way

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Father GOD, in the name of Jesus, I thank you. I thank you for sending your precious son, Jesus, to die for me. I thank you for salvation. I appreciate all the many blessings you've given me throughout my life, and I am especially grateful for how you've sustained me throughout this doctoral program, particularly the dissertation "process". Without your peace that surpasses all understanding, and your wisdom and insight, none of this would be possible.

To my parents, no amount of recognition or praise can adequately convey how much I appreciate your sacrifices and support. I'm sure I'll never know how much you've cared for me and prayed for my success. Thank you for "going along for the ride" as I decided what I would "do with my life". Thank you for loving me enough to allow me to "try my hand" at a few professions before deciding on one (or allowing it to decide upon me). I appreciate how you've always been my greatest cheerleader! I hope I've made all your sacrifices worth it.

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To my baby girl Kayla, you are my kiss from heaven. From your conception to now, you have been perfect. I thank GOD for blessing me with you. You have taught me so much about myself and the world around us. You are an extremely gifted child. Continue to grow in the love and joy that GOD has given you. From your presence alone you bring joy and appreciation for life to others. Thank you for teaching me what's important in life.

To my family, especially my siblings, I love and appreciate each of you! You are more than I could ever have prayed for.

To those who've assisted me along the way, I believe everyone we meet is brought into our lives for a specific reason, during a particular season. Of those I've been fortunate enough to share portions of my life, I thank you. I've learned so much, mostly vicariously, by others sharing their experience, so I thank you for trusting me with your life.

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all (in the US and abroad). From medicine, I learned the value of specialized training. From health education, I learned I could write, teach (present), and study (research) health in ways that would allow me to blend each of my strengths in ways that would benefit the health of all, such that no group or condition would be less important than any other.

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CHAPTER I

INTRODUCTION

Diabetes is the sixth leading cause of death in the United States (National Center for Health Statistics, 2000). Type 2 diabetes disproportionately affects ethnic/racial minorities, the elderly and those overweight or obese (National Center for Chronic Disease Prevention and Health Promotion, 2000). Access to & utilization of health care services have been suggested as possible explanations for the differential incidence and mortality rates, currently experienced by adults with diabetes (Institute of Medicine, 2003). Communication and engagement in interactions between patients and providers are especially influential on patients' health outcomes. In this study, patient-physician interaction, patient socio-demographic factors, health literacy, sources of care, and use of diabetes-related health services, were examined to assess their relationship to patients' satisfaction with the quality of health care they received in the past 2 years. By examining the relationship among patient, physician and environmental systems' factors, research findings will be used to develop interventions that will inform patient education and physician training and foster patient and physician behavior change that ultimately leads to improved health outcomes for adults with diabetes.

Purpose & Significance

The purpose of this study is to examine the relationship among patient-physician factors, such as patient socio-demographic factors, health literacy, sources of care,

This dissertation follows the style of *The Health Educator*.

utilization of diabetes-related health services and patient-physician interaction to assess the influence on patient satisfaction with quality of health care. Specifically, the aim of this research is to assess both individual and environmental factors that influence satisfaction. The individual factors hypothesized to affect satisfaction include socio-demographics, utilization of diabetes-related health services, and health literacy. The environmental factors include sources of care and patient-physician interaction. The assessment of each of these potential influences is undertaken using a nationally representative sample of U.S. adults.

While considerable research has been conducted assessing patient satisfaction with quality of health care, additional research is needed to assess 1) the specific antecedents to satisfaction, such as effective patient-physician interaction, patient health literacy and socio-demographic factors; 2) intermediate/parallel influences, such as sources of care and utilization of diabetes-related health services as well as 3) the extent of influence on patient health outcomes, such as self-reported health status.

Research, to date, suggests that many factors influence patient satisfaction with health care, direct and indirectly (Kaplan, Greenfield, & Ware, 1989), and these factors should be assessed in tandem due to their overlapping influence (Hausman, 2004). Thus, given findings from this study and others that assess the common role of influences such as patient & physician behaviors and patient health status, educational interventions and health programs can be developed that integrate the current research findings from multiple disciplines and fosters interdisciplinary collaboration to improve the health of all adults with diabetes.

Likewise this study is a significant analysis of a national sample of patients with diabetes designed to assess the relationship between both individual and environmental factors on patient satisfaction with their quality of health care. To date, most researchers examining the relationships between individual and environmental factors on satisfaction have not assessed specific indicators of each factor, nor have they done so with a population of this size, and health condition. Using multivariate logistic regression analysis, this research will be used to predict significant relationships among a set of variables, without making direct and indirect causal effect assumptions.

Definitions of Terms

Patient-Physician Interaction

Patient-physician interaction has been characterized in three dimensions: communication, decision-making, and interpersonal style. Communication describes general clarity, elicitation of and responsiveness to patient problems and concerns, explanations of condition and medical care, and empowerment. Interpersonal style describes friendliness, respectfulness, and emotional support.

Patient-physician interaction has also been characterized as a dynamic, creative, socially constructed event (Street, 2003). Although certain technical activities transpire, such as a physical examination, *talk* is considered the primary activity in which the physician and patient exchange information about health-related concerns; share decision-making, and preferably develop sustainable relationships characterized by rapport, trust, and respect (Street, 2003). As a part of patient-physician interactions (or patient-physician communication), patients and physicians actively participate by

choosing, modifying, and negotiating information exchange to achieve their individual and mutual goals (Street, 2003).

Often “physician” in the term, patient-physician interaction describes the primary health care professional involved in treating diabetes. Even so, recognition is made of several health professionals that assist patients in managing the daily care of diabetes, including paraprofessionals and trained community members (Glasgow, Davis, Funnell, & Beck, 2003). Additionally, commonly, health educators educate and train patients how to manage diabetes, following physician referral or upon engagement in chronic disease management programs (Glanz, Rimer, & Lewis, 2002). Thus, a growing body of research akin to patient-physician interaction has also been studied as patient-provider communication.

In this study, patient-physician interaction was operationally defined as patients’ perception of physicians’ general clarity during their encounter, including how effectively information was communicated, explanations were provided of diabetes and medical care, how carefully physicians’ listened to and responded empathically to patients’ problems and concerns about diabetes management. Seven dimensions of patient-physician interaction were assessed including 1) doctor listening, (2) patient understanding, (3) patient question asking, (4) patient confidence and trust in doctor’s treatment, (5) doctor treating patients with respect and dignity (6) doctor involving patients in decisions, and (7) doctor spending time with patients.

Theoretical Model

Despite approximately four decades of research assessing patient-physician interaction, no theory has been proposed and tested that adequately characterizes this unique encounter. Despite such, an “ecological model of communication in medical encounters” has been proposed as a means to conceptualize the various influences on patient-physician interaction. These influences include measures affecting the many contexts in which an encounter takes place, such as the organizational, interpersonal, political/legal, media and cultural contexts (Street, 2003). Given that the patient-physician interaction takes place in the midst of these myriad contexts, aspects of patients’ socio-demographic traits, sources of care, health literacy, utilization of diabetes-related health services, and specific aspects of patient-physician interaction will be assessed as compared to patient satisfaction with quality of health care. Each influence will be collectively assessed as a part of this research.

Background of the Problem

Chronic diseases—such as cardiovascular disease (primarily heart disease and stroke), cancer, and diabetes—are among the most prevalent, costly, and preventable of all health problems, while more than 90 million Americans live with these illnesses (Centers for Disease Control and Prevention, 2003).

Epidemiology

Approximately 20.8 million have diabetes: 14.6 million are diagnosed, and 6.2 million are undiagnosed (Centers for Disease Control and Prevention, 2005). There are several types of diabetes. Type 2 diabetes mellitus is the most common (Centers for

Disease Control and Prevention, 2005). It accounts for about 90% to 95% of all diagnosed cases of diabetes.

Risk Factors and Racial Disparities in Incidence

Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for Type 2 diabetes and its complications. Clinically-based reports and regional studies suggest that Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently, particularly in American Indians, African Americans, and Hispanic/Latino Americans (Centers for Disease Control and Prevention, 2005). The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) *STRATEGIC PLAN on Minority Health Disparities* found that within the United Kingdom Prospective Diabetes Study (UKPDS), for Type 2 diabetes, some of the racial differences in diabetic complications were explained by differences in the availability and quality of health services. There also may be differences in racial-ethnic and socioeconomic status in self-care practices, health care provider practices, and/or access to quality health care and prevention services (National Institute of Diabetes and Digestive and Kidney Diseases, 2003).

Clinical Presentation of Diabetes

Diabetes is considered a group of diseases marked by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. Type 2 diabetes was previously called non insulin-dependent diabetes mellitus (NIDDM) or adult-onset

diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin. In general, diabetes is characterized by elevated blood glucose levels, impairment of pancreas and liver cells that over time destroy blood vessels and nerves throughout the body.

Disease Treatment and Management

Persons who suffer from this debilitating condition are faced with limited treatment options, and at this time there is no cure. Many people with Type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Many also need to take medications to control their cholesterol and blood pressure. Among adults with diagnosed diabetes, 16% take insulin only, 12% take insulin and oral medication, 57% take oral medication only, and 15% do not take either insulin or oral medications (Centers for Disease Control and Prevention, 2005). Diabetes can affect many parts of the body and can lead to serious complications such as blindness, kidney damage, and lower-limb amputations or premature death, but people with diabetes can take steps to control the disease and lower the risk of complications, by actively managing their disease.

Diabetes self-management education (DMSE) is an integral component of patient care. Working together, people with diabetes and their health care providers can reduce the occurrence of diabetes complications by controlling the levels of blood glucose, blood pressure, and blood lipids, and by receiving other preventive care practices in a timely manner. Such efforts are facilitated by collaborative patient education and disease

treatment among health educators, patients, physicians, and other health professionals engaged in equipping patients with the skills and resources to best care for their diabetes.

Diabetes Interventions

The Diabetes Prevention Program (DPP), was an intervention that involved more than 3,200 adults, 25 years or older, at increased risk of developing Type 2 diabetes. It represented the first major clinical trial of Americans at high risk for Type 2 diabetes. The results from the program demonstrated that lifestyle changes in diet and exercise and losing a little weight could prevent or delay the disease for participants of all ages and all ethnic groups (Centers for Disease Control and Prevention, 2004). Likewise, the American Diabetes Association (ADA) established Standards of Medical Care in Diabetes that emphasized the role of physicians and other health professionals in facilitating the work, commonly provided by health educators, of encouraging lifestyle changes among patients (American Diabetes Association, 2002). The Standards note those with the power to influence public health messages, namely health care professionals and health care systems, should wield their influence to encourage behavior changes to achieve a healthy lifestyle (American Diabetes Association, 2002). Specifically, by raising awareness of the collaborative work of educators and physicians, it becomes more apparent the need to conduct referrals from doctors to health educators and to educate patients and physicians regarding the influential aspects of patient-physician interaction that foster or hinder patient behavior change.

By so doing, congruent efforts are employed as with the national initiative, entitled, *National Diabetes Education Program*, that evaluated the role of patients and providers in the care of patients with diabetes (National Institute of Diabetes and

Digestive and Kidney Diseases, 2006); findings demonstrate that when informed patients take an active role in managing their diabetes, and providers are prepared, proactive, and supported with time and resources, their interaction is likely to be productive (Bodenheimer, Wagner, & Grumbach, 2002). Ultimately, this patient-centered interaction leads to better diabetes care, more efficient and effective practices, healthier patients, and more satisfied patients and providers.

Lifestyle “interventions” and behavior change strategies often need the support of many health professionals, including health educators and physicians. For instance, physicians often refer patients to health educators for disease management. Even so, little research directly describes the collaborative relationship between health educators and physicians in encouraging patient behavior that leads to improved health status. This paucity in the current body of research is puzzling given the fact that within each discipline lifestyle “interventions” are widely advocated. Unfortunately, across disciplines, insufficient translational research is conducted. Chronic disease management programs that foster interdisciplinary collaborative research and practice would prove indispensable in addressing the multi-faceted nature of caring for patients with diabetes and involving all affected parties. This study examines several, specific, influential factors on patient satisfaction with quality of health care, including patient-physician interaction and use of diabetes-related services; these study findings will prove insightful for multi-disciplinary interventions that address the myriad contributors to health outcomes.

Research Questions

The research questions guiding this research state, given a national sample of adults with diabetes: (1) What is the role of patient-physician interaction, use of diabetes-related services, sources of care, health literacy and patient socio-demographic factors in determining patient satisfaction with quality of health care, in adults with diabetes? (2) Are specific aspects of patient-physician interaction, use of diabetes-related services, sources of care, health literacy and patient socio-demographic factors significantly more likely to predict patient satisfaction with quality of health care, in adults with diabetes?

Hypotheses

The hypotheses for this study were developing considering a statistically significant association as measured using a *P* value of 0.05. The following hypotheses were developed:

- (1) There is a relationship among patient-physician interaction, use of diabetes-related services, sources of care, health literacy, patient socio-demographic factors and patient satisfaction with quality of health care, in adults with diabetes.
- (2) Specific aspects of patient-physician interaction, use of diabetes-related services, sources of care, health literacy and patient socio-demographic factors are more likely to predict patient satisfaction with quality of health care, in adults with diabetes.

Summary

The influence of patient-physician interaction, use of diabetes-related services, health literacy, sources of care, and patient socio-demographic factors will be assessed for their effect on patient satisfaction with quality of health care utilizing a three-prong approach. Namely, first, a literature review of patient-physician interaction will be conducted. Subsequently, two articles will be developed: 1) characterizing the role of patient-physician interaction in diabetes care, and 2) the impact of patient-physician interaction, among other factors, on patient satisfaction with quality of health care. Finally, the findings from this study will be summarized and discussed in the context of the study limitations, recommendations for future studies, and implications for health education.

CHAPTER II

LITERATURE REVIEW

Healthy People 2010 objective 11-6 established a national goal to increase the proportion of persons who report that their health care providers have satisfactory communication skills (Department of Health and Human Services, 2000). In accordance, the purpose of this review of the literature is to assess patient-provider communication and its relationship to patient factors that influence health, particularly the health of adults with Type 2 diabetes. Patient-provider communication is especially significant for adults with Type 2 diabetes because findings from the National Diabetes Education Program suggest when informed patients take an active role in managing their diabetes, and providers are prepared, proactive, and supported with time and resources, their interaction is likely to be productive (Bodenheimer, Wagner, & Grumbach, 2002); this patient-centered interaction can lead to better diabetes care, more efficient and effective practices, healthier patients, and more satisfied patients and providers (National Institute of Diabetes and Digestive and Kidney Diseases, 2006).

Providers, in the form of doctors, nurses and health educators interact with patients in health care settings, participating in a unique interaction that involves the offer, request, provision, receipt and/or refusal of information, commonly affecting patient health care. By interacting in a dynamic interplay of power, expertise, and agendas (Street, 2003; Kaplan, Greenfield, & Ware, 1989), patients and providers participate in patient-provider communication that, unlike an informal conversation, involves more than the exchange of information. This unique interaction involves a

power differential and vulnerability on the part of patients to trust that the information shared will be “heard” and valued and the information received from providers will be appropriate given the specific needs of the patient and presented in a way that is respectful and compassionate (Ong, et al., 1995; Street, 1991a, 1992a).

Germane to patient-provider communication are such “technical” exchanges as question asking. Likewise, personal interactions, in the form of establishing trust, listening and comprehension, and empathic care also transpire (Charon, 2001). Aspects of patient-provider communication can be either empowering or demeaning, such that patients can either feel in control and in partnership, or ashamed (Roter & McNeilis, 2003). Likewise, providers can act as facilitators or hindrances to patients’ behavior change. Ultimately, the varying actions of providers and patients interplay in a dynamic relationship known as patient-provider communication (Kaplan, Greenfield, & Ware, 1989). Charon (2001) challenges those involved in patient-provider communication to consider “a scientifically competent medicine alone cannot help a patient grapple with the loss of health or find meaning in suffering. Along with scientific ability, physicians need the ability to listen to the narratives of the patient, grasp and honor their meanings, and be moved to act on a patient’s behalf” (Charon, 2001, p. 1897).

Qualitative & Quantitative Research Methods

The two “worlds” in which patient provider communication is studied involves 1) a process-oriented view of the techniques and behaviors and 2) an outcome-based perspective; these methodologies are also distinguished by qualitative and quantitative research methods (Roter & McNeilis, 2003). Although traditionally considered

incompatible, Roter & McNeilis (2003) describe their distinctions and suggest ways of highlighting their complementarities. Thus, numerous examples are cited of the widespread use of both methods in health communication research and practice. By describing qualitative research as involving data collection through in-depth interviews, participant observations, recordings and diaries, and data analysis as metaphor and narrative analysis, discourse analysis and conversational analysis; and by highlighting systems that combine qualitative and quantitative methods, emphasis is placed on the range of communication strategies (Roter & McNeilis, 2003). Narrative analysis will specifically be discussed in this review. Likewise, quantitative research, involving coding systems; enumerations of statistical summaries; and correlates of objectively measured patient and provider behaviors, (Roter & McNeilis, 2003) will also be explored.

Qualitative Research (specifically narrative analysis)

Narrative analysis, like most qualitative research, illuminates the nature of patient provider communication as more than the exchange of information. Health and disease are described as more than a biomedical phenomenon. Indeed patient's meanings and conceptualizations are equally important in a holistic understanding—from the patient and provider point of view (Charon, 2001; Sharf & Poirier, 1988). Patients understand their health or disease in ways that make sense to them; of importance are their “stories” or accounts of what's happening to them (Sharf, 1990; Street, 1991a). Therefore, providers should actively engage in discussions of care and explain disease processes and treatment options in ways that consider the roles, preferences, expectations, and understandings of patients (Charon, 2001). This intermingling of perspectives is essential

to effective communication (Sharf & Vanderford, 2003) as well as to developing patients' ability to actively engage in decision-making and illness management (Sharf, Haidet, & Kroll, 2005; Haidet, Kroll & Sharf, 2006).

To further explain the process of how a patient makes sense of an active participant role, Sharf, Haidet, & Kroll (2005) explored the connection between the creation of a health narrative and the meaning of an active participant in health care. Using the narrative of a patient with diabetes, struggling to maintain as much control as possible over her daily life and care decisions, while acquiescing to her doctor's knowledge of recommended self-care strategies, Sharf, Haidet, & Kroll (2005) outline an empowerment continuum upon which patients vacillate, depending on many factors, such as the stage of disease. Of note, study findings also suggest that patients might wield the greatest control by allowing their doctors to make the appropriate care decisions—although not making health care decisions, the patients have exercised control by choosing to relinquish their medical decisions to their providers (Sharf, Haidet, & Kroll, 2005).

In a similar narrative analysis of several patient illness narratives, Haidet, Kroll & Sharf, (2006) described four themes related to patient participation in patient-provider interactions. Specifically, patients' perspectives were characterized by a) how *central* a patient's illness is to their life in general; b) the degree to which an *illness could change* for the better; c) the extent of *illness-related activities* employed by patients, and d) the *role of partnership* between patient and physician in decision-making and illness management (Haidet, Kroll & Sharf, 2006). Within this work, the concept of "active patient participation", as recommended by Cegala, McClure, Marinelli, & Post (2000), is

expanded to provide concrete “measures” of activation for patients involved in patient-provider interaction (Haidet, Kroll & Sharf, 2006). Thereby, we understand additional complexities involved in patient-provider communication, particularly patient perspectives and actions to assist in caring for themselves (Haidet, Kroll & Sharf, 2006).

Quantitative Research

In an effort to study the patterns of behaviors involved in patient provider communication, researchers have also implemented quantitative research strategies that assist in “capturing the moment—as is” for later review and analysis, such as video- or audio-taping the encounter. The choice of recording mechanism is largely based on the type research pursued. Namely, research for physician training and medical education typically involved videotaping, whereas audio-taping was employed for general research (Roter & McNeilis, 2003).

To analyze patient-provider communication, interaction analysis approaches and coding systems exist (Wasserman & Inui, 1983). These ‘interaction analysis systems’ or observation instruments have been utilized to provide “methodic identification, categorization and quantification of salient features of doctor-patient communications”... given the rationale that “aspects of these interactions can modify important components of the health care process” (Ong, et al., 1995, p. 905). In practice, many researchers utilize separately-developed analyses; however, others have adapted commonly-accepted coding systems, such as the Bales’ Process Analysis System, the Roter Interaction Analysis System (RIAS), or the Patient-Centered Method. A brief overview of each will be presented in this review. For more information, see Ong, et al., 1995 or Roter & McNeilis, 2003.

Coding Systems

The original design of the Bales' Process Analysis System was to explore the process and structure of communication among persons in a group assessing how they distinctly participate in problem solving (Roter & McNeilis, 2003; Wasserman & Inui, 1983). This system is considered a 'cure' system, employing task focused behaviors such as information exchange, to assist patients and providers in achieving 'the need to know and understand' (Ong, et al., 1995). Whereas, the Patient-Centered Method is considered a 'care' system in which affective (socio-emotional) behaviors are measured in an attempt to fulfill patients and providers 'need to feel known and understood' (Ong, et al., 1995). In an effort to study both types of behaviors, the Roter Interaction Analysis System has been utilized (Ong, et al., 1995). Finally, of the available coding systems, at least 1 more should be mentioned among these previously discussed. Namely, a novel system exists that integrates qualitative and quantitative research methods to assess patient participation in medical interviews (Street & Millay, 2001). Such integration is certain to provide the most insight into patient provider communication. More "mix-methods" assessments are needed (Roter & McNeilis, 2003).

Theoretical Framework

Additionally, despite the wealth of quantitative and qualitative research, additional research is needed to identify a theory that explains patient-provider communication. To date, no overarching theory has been developed (Street, 2003). Alternatively, Street (2003) proposed an "ecological model of communication in medical encounters" (Street, 2003, p. 65). This model frames patient-provider communication in

the context of the myriad influences that impact its occurrence, such as 1) the organizational, 2) the media, 3) the interpersonal, 4) the political-legal as well as, 5) the cultural contexts (Street, 2003).

Appreciating the impact of each influence is essential to understanding the scope of patient-provider communication. Perhaps, more importantly, being attuned to the interaction of the differing contexts offers the greatest insight into comprehending patient-provider communication and its role in affecting the health and well-being of patients (Street, 2003). This is particularly indicative for patients with chronic illnesses such as diabetes, who are frequently involved in patient-provider communication (Street, 2003; Thorne, 2006). One particular means of gaining insight into patient-provider communication is to consider the specific communicative behaviors involved in the interaction (Roter & Hall, 1991; Kaplan, Greenfield, & Ware, 1989). This examination provides insight into the influence that these behaviors have on resultant patient behaviors and health outcomes (Ong, et al., 1995; van Dam, van der Horst, van den Borne, Ryckman, & Crebolder, 2003; Kaplan, Greenfield, & Ware, 1989).

Influences on Patient-Provider Communication

Considerable research exists examining the behaviors involved in patient-provider communication. Likewise, numerous strategies of influence have been studied. Several will be discussed in this literature review. Specifically, *communication styles* of patients and providers have been studied (Street, 1991a, 1992a, 2002; Berry, Wilkie, Thomas, & Fortner, 2003; Helme & Harrington, 2004). Others have assessed *patient perceptions* (Street, 1991b, 1992b) and *patient preferences* (Thorne, Harris, Mahoney, Con, &

McGuinness, 2004; Wikblad, 1991; Allen, 2001; Street, Gold, & McDowell, 1994; Street, Cauthen, Buchwald & Wiprud, 1995a; Roter, 2000; Golin, DiMatteo, Duan, Leake, & Gelberg, 2002). Additional research has assessed *the relationship between communication and patient health outcomes* (Stewart, 1995; Stewart, Brown, Boon, Galajda, Meredith, & Sangster, 1999; Heisler, Vijan, Anderson, Ubel, Bernstein, & Hofer, 2003; Page, Verstraete, Robb, & Etwiler, 1981; Graber, Wooldridge, & Brown, 1986; Street, Piziak, Carpentier, Herzog, Hejl, Skinner, & McLellan, 1993; Freeman & Loewe, 2000; Love, Mainous, Talbert & Hager, 2000; Piette, Schillinger, Potter, & Heisler, 2003; Aiken, Bingham, & Piette, 2005). The relationship between communication and provider outcomes, such as medical mal-practice lawsuits, has also been studied, but it will not be detailed in this review. Finally, a growing body of research assesses the *role played by patients* (Street, Voigt, Geyer, Manning, & Swanson, 1995b; Street & Voigt, 1997; Street & Millay, 2001; Burke, Earley, Dixon, Wilke, & Puczynski, 2006) and *providers* (Roter, Hall, & Katz, 1987; Hall, Roter, & Katz, 1988; Smith, DeVellis, Kalet, Roberts, & DeVellis, 2005) in the patient-provider relationship, in addition to studying the *interventions* to optimize patient-provider communication (Flaherty & Sharf, 1981; Sharf, 1988; Daltroy, 1993; Kamel, Badawy, El-Zeiny, & Merdan, 1999; Larivaara, Kiuttu, & Taanila, 2001; Beck, Daughtridge, & Sloane, 2002; Roter, 2003; Parker, Davison, Tishelman, & Brundage, 2005; Weiner, Barnet, Cheng, & Daaleman, 2005; Dutta-Bergman, 2005; Trevena, Davey, Barratt, Butow, & Caldwell, 2006). In the following sections, these varying strategies will be presented and discussed in the context of patient-provider communication.

Communication Styles and Provider Perceptions

Both the communication style of patients and providers affect the dynamics of patient-provider communication. Street (1991a) concluded that 2 salient factors affect the amount and quality of information shared between patient and provider; the influential factors are 1) patient's communicative style and 2) provider's perceptions of patient's personal characteristics. Patient's communicative style can be characterized as question-asking, opinion-giving, and expression of concern. The personal characteristics of patients that affect providers' perceptions work by influencing information sharing (Street, 1991a). Such that, the relationship between patients' communication styles and providers' perceptions manifest as (1) more health information, such as diagnoses, is disseminated based on patient's anxiety, education, and question-asking; (2) the amount of treatment information is affected by patient's question-asking and expression of concerns, and (3) physician use of partnership-building communication strategies that facilitate patient questioning and expression of concerns and opinions is strongly correlated with patients' assertiveness and expressiveness. Additionally, younger and more educated patients tended to receive more diagnostic information. Overall, Street (1991a) demonstrated that patient communication styles and personal characteristics greatly affect the amount of information providers share in medical consultations (Street, 1991a).

Patient Perceptions

Likewise, patient's perception of physician's communication style is also influential. In an assessment of parents' evaluation of physicians' communication in pediatric consultations, Street (1991b & 1992b) studied whether parents' satisfaction of

care was dependent on their perception of physicians' informativeness, interpersonal sensitivity, and partnership-building, and whether parents' response to physicians' communicative style varied depending on parent's education and anxiety level or length of time the physician cared for the parents' child (Street, 1991b; Street 1992b).

Informativeness was characterized by the quantity and quality of health information doctors provided. Interpersonal sensitivity was a measure of the doctor's attention and interest in the parent's and child's feelings and concerns. Additionally, partnership-building represented the extent to which physicians facilitated patient and parent involvement through question asking and opinions and suggestion sharing. Street (1991b) found that parents who perceived doctors as providing more interpersonal sensitivity in response to their expressions of worry were more likely to be satisfied with the care provided to their children. Similarly, doctor's informativeness was correlated with greater satisfaction among parents whose children received more care from the same physician (Street, 1991b; Street, 1992b). From these studies, one notes the perspectives patients and providers have of patient-provider communication greatly influences the messages that are conveyed via verbal and non-verbal communication (Street, 1991b, 1992b), such as question asking and eye contact or visual cues.

In a similar assessment of *communicative styles* and *provider & patient perceptions*, Ong, et al. (1995) organizes the behaviors involved in patient-provider communication as groups of instrumental and affective utterances. Instrumental behaviors involve giving information and directions; counseling; discussing test results, side effects; and explaining reasons for treatment or non-treatment. Affective behaviors are manifested as being very encouraging, relaxed, friendly, open and honest; showing

concern, approval, empathy; and introducing self, touching patients and engaging in small talk (Ong, et al., 1995). Of note, much of the literature examines the instrumental behaviors. These behaviors and perceptions have been studied as they relate to personal attributes such as age, gender, preference and expectations. A discussion of each is provided in this review.

Personal Attributes

Age

A patient's age significantly affects the way in which they interact with health professionals. Older adults interact with health care providers in very different ways as compared to younger adults (Nussbaum, Ragan & Whaley, 2003). Within a patient-provider interaction, older adults assert themselves less often, asked fewer questions, were given less information and need extended amounts of time to ask about important health-related information (Nussbaum, Ragan & Whaley, 2003). Consequently, the older patient's treatment compliance is greatly impacted. A daunting example of this is witnessed with the manifestation of multiple chronic conditions and subsequent complex drug treatments commonly found among older adult patients. Thus, interdisciplinary teams, trained to educate patients about chronic disease management and effective patient-provider communication are rapidly becoming the normal care providers for older adults needing continuous care for extended periods of time (Nussbaum, Ragan & Whaley, 2003).

In a comparable assessment of parent communication style and physician information sharing practices, Street (1992a) found differences in the amount of information physicians shared with pediatric patients based on the communication styles

of parents and parents' personal characteristics. Thus, among the very young, generally, Street (1992a) found that physicians spend the bulk of the consultation providing information, including medical directives and much less time soliciting information, discussing social or emotional concerns, or engaging in partnership-building activities. Also, parent attributes influenced provider behavior, such that parents who asked more questions and were more affectively expressive received more information and more directives. These parents tended to be more educated, more worried and have fewer previous visits with the doctor (Street, 1992a).

Provider Gender

Street (2002) also found that gender may be influential to the extent that it affects patient and provider goals, skills, perceptions, emotions and adaptations made while communicating with one another (Street, 2002). Of the differences noted, the magnitude was small and highly influenced by social and ecological factors typically found within the larger context of male-female interactions. More importantly, the differences were amenable to change by patient communicative behaviors, such that patients' assertiveness facilitates information gathering, support, and involvement in decision-making, regardless of physician gender (Street, 2002).

In an assessment of pain associated with cancer, patients relayed their experiences with physicians, noting that more than half of the conversation included physician talking. Male physicians focused on symptom questions and female physicians focused on sensory pain. Physicians used close-ended questioning and interruption of patient discourse to direct the medical consultations. Despite cancer patients' abilities to convey their experience of pain and symptoms, physicians still dominated the conversation with

treatment information and provider perspectives of patient symptoms and side effects. Conversely, Berry, et al. (2003) found in consultation with cancer patients, patient-provider communication is typically physician dominated, with few differences shown based on physician gender.

Patient Gender

In a meta-analysis of the role of patient gender on patient-provider communication, Hall and colleagues found a significant difference in patient behaviors compared by gender (Hall, Roter, & Katz, 1988). Specifically, physicians of both genders gave more information to female patients (Hall, Roter, & Katz, 1988). Perhaps, this resulted from female patients who tended to ask more questions and talk more than male patients. It is presumed that women are more concerned with and more knowledgeable about health issues, necessitating their behavior (Nussbaum, Ragan & Whaley, 2003).

Among patients with diabetes, gender differences in communication styles were equally evident. Because patients with diabetes must interface with health care providers more often and report self care regimens, these patients may be more impacted by provider perceptions and communication styles (Helme & Harrington, 2004). While describing their self-care habits, patients with diabetes use varying reasons for noncompliance (Helme & Harrington, 2004.) These differences are based on preferences among genders to establish and maintain relationships with providers, such that provider understanding and acceptance of patient behavior influences how patients relay their ability to follow doctor's orders. If patients desired to foster relationships with providers, they were more likely to employ strategies that would be viewed as less threatening, thus

facilitating partnership building and problem-solving among patient and provider (Helme & Harrington, 2004).

Patient Preferences

Thorne, Harris, Mahoney, Con, & McGuinness (2004) argued that similarities exist in patient preferences for communication with health care professionals. Courtesy, respect and engagement were considered the salient aspects of patient-professional communication and effective chronic illness care among patients with end-stage renal disease (ESRD), non-insulin dependent diabetes mellitus (NIDDM), multiple sclerosis (MS) and fibromyalgia (FM). Respect was reported critical for patients with NIDDM. Generally, patients prefer to be responsible for themselves, needing only to be assisted by medical care teams, as in the case of patients with diabetes (Wikblad, 1991). Patients prefer to be engaged in the decision-making process and given considerable information with which to make a decision without being told what to do and expected to follow doctor's orders without explanation (Allen, Petrisek, & Laliberte, 2001). Good communication skills possessed by patients and members of care teams help facilitate expressions by both parties. Patients understand and appreciate the knowledge that providers have regarding caring for and managing chronic diseases. Alternatively, they also realize that there is considerable uncertainty in diagnosing and treating many conditions, such as breast cancer (Allen, Petrisek, & Laliberte, 2001). Patients want education on their condition, but they want it to be provided at a level and in amounts that are comprehensible and disseminated over time, in consultations that provide applicable information for daily practice (Wikblad, 1991).

Furthermore, patients prefer to be engaged in discussions about various aspects of health status, such as patient's perceptions of health in general and specifically, about pain, energy & the will to live, and any disabilities or limitations due to their illness (Street, Gold, & McDowell, 1994). If patients felt discussion of such "sensitive topics" was within the scope of physicians' jobs, then they were much more likely to discuss aspects of health-related quality of life issues (Street, et al., 1995a). Accordingly, patients who were more likely to discuss their overall well-being and physical health were more satisfied with the care they received from their physicians who facilitated the discussions (Street, et al., 1995a).

Likewise patients have clear preferences regarding the amount and type of information they prefer to receive from their health care provider (Roter, 2000). Involving patients in decision-making fosters a belief among patients in their ability to make trustworthy medical decisions (Roter, 2000). Additionally, patients are more satisfied if they are allowed to participate in treatment decisions (Golin, et al., 2002). This was the case in a study of impoverished patients with diabetes who were assessed for post-visit satisfaction following enhanced involvement in patient-provider communication (Golin, et al., 2002).

The Role of Patients

Patient's role in medical encounters has been extensively explored (Street, et al., 1995b; Street & Voigt, 1997; Street & Millay, 2001; Burke, et al., 2006). In assessing the patient role in patient-provider communication, Street & Millay (2001) established three forms of speech that are useful for patients to employ in patient-provider communication. The three forms include asking questions, expressing concerns, and assertive utterances

(Street, 1991a, 1992a; Street, et al., 1995b; Street & Voigt, 1997). Street & Millay (2001) concluded that these actions are important both for their immediate and eventual effect. During the medical consultation, these actions have the potential to influence the direction of the patient-provider dialogue, to preferably address any concerns and questions of the patient. Additionally, patients should be able to more readily request and obtain provider resources, including information and advice which, hopefully, will assist the patient in attaining better health outcomes following the interaction (Street & Millay, 2001).

The immediate effect of patient participation in the patient-provider interaction is that patients are able to achieve the task goals they have set for medical interviews (Burke, et al., 2006). Patients are able to ask questions about lab results, obtain explanations about self care behaviors, and receive information about other resources, such as nutrition education and support groups (Burke, et al., 2006). Additionally, patients act to develop relationships with providers in which they feel comfortable expressing their feelings and setting goals and learning how to best care for themselves (Burke, et al., 2006).

To analyze patient participation in medical interviews, Street & Millay (2001) employed a combined qualitative and quantitative analysis to assess the role of patient assertive behavior on physician use of partnership-building and supportive talk. Findings demonstrate doctors, who use patient-centered behaviors, such as partnership-building, had patients who were more assertive, more freely expressed their concerns, and asked more questions. Research also exists demonstrating that patients who actively participate in medical consultation are more satisfied (Street & Millay, 2001). More importantly,

Street & Millay (2001) suggest that “the relation between patient-centered behavior and patient participation was sometimes bidirectional”, meaning that patient participation seemed to encourage physicians to be more patient-oriented (Street & Millay, 2001, p. 68). Thus, in studying the role of patients, one notes the commensurate role of the provider in the patient-provider interaction.

The Role of Providers

Considerable research has been conducted assessing the role of providers in patient-provider communication (Hall, Roter, & Katz, 1988; Roter, Hall, & Katz, 1987; Roter, 2000; Smith, et al., 2005). Hall, Roter & Katz (1988) conducted a meta-analysis of studies to assess provider behaviors in medical encounters. One significant contribution of this work was to create categories for several operational definitions of provider behaviors that had been described in the literature as early as 1967 by Korsch (Hall, Roter & Katz, 1988). The categories included “information giving, questions, competence, partnership building and socioemotional behaviors” (Hall, Roter & Katz, 1988, p.659). When these provider behaviors were compared to patient attributes, “patient satisfaction had the most consistent relationship” (Hall, Roter, Katz, 1988, p. 665; Kaplan, Greenfield, & Ware, 1989). Specifically, patient satisfaction was predicted by “the amount of information given by providers, greater technical and interpersonal competence, more partnership building, more immediate and positive nonverbal behavior, more social conversation, more positive talk, less negative talk, and more communication overall” (Hall, Roter, Katz, 1988, p. 666).

From Roter, Hall, & Katz (1987), we understand that providers who demonstrate more patient-centered skills, such as giving information and counseling as opposed to

those who possess more physician-centered skills, such as giving directions and asking questions, were more likely to solicit patient satisfaction, recall and make a positive impression. In a study of nurses, Street, et al. (1993) found use of controlling, informative or physician-centered communication significantly affected patients' outcomes. Patients with diabetes interacting with nurses who used controlling and directive communication had poorer metabolic control (Street, et al., 1993). Alternatively, nurses' use of patient-centered communication facilitated patient's expression of feelings and decision making behaviors (Street, et al., 1993).

Additionally, Roter (2000) later found that providers play a significant role in patient-provider communication. Notably, the communication strategies employed by physicians can act to either "reinforce an experience of patient dependence or patient self reliance" in regard to the patient provider relationship with particular influence on treatment decision-making" (Roter, 2000, p.20). Therefore, the effective use of communication strategies should be the goal of treatment decision-making and therapeutic relationship building between patients and providers (Roter, 2000). This can be accomplished by physician communication strategies that enhance patient's involvement in conversation such as engaging patients in problem posing and solving.

Whether using communication strategies to inform patients about treatments or involve them in medical decision making, physicians employ numerous tactics to achieve behavior change among patient populations (Smith, et al., 2005). One such method physicians may use to encourage patients to comply with a recommended treatment is to employ "compliance-gaining strategies", defined as "subtle differences in the ways people use language when the goal is to influence someone else's behavior" (Smith, et

al., 2005, p. 62). Smith, et al. (2005) found that physicians tend to use more strategies if the patient involved in the patient-provider interaction was female. Also, the strategies tended to be more indirect [necessitating inference] and more complete [including justification] if the patient was female (Smith, et al., 2005). Physicians tailored their approach to obtain a desired effect. The effect that is witnessed has also been characterized as outcomes of patient-provider communication. Brown, Stewart, & Ryan (2003) organize these outcomes by those affecting patients and providers, respectively. Within this review, patient outcomes, such as satisfaction, adherence to treatment (via self management and recall of health information) will be explored. Likewise, possible adverse outcomes will also be examined. Provider outcomes will not be discussed, per se.

Outcomes Related to Patient-Provider Communication

Self-management

Many aspects of patient-provider communication influence patient care (Stewart, 1995). For instance, information must be disseminated in a way that is easily understood and valued by patients. It must be relevant and of interest to patients. Additionally, information should be presented when it is most likely to be received. When information is shared that is appropriate and comprehensible, it is much more likely to be used to enhance patients' health (Stewart, 1995). Thus, effective patient-provider communication involves the exchange of information to facilitate patient-centered health care, i.e., medical decision making. From these interactions patients understand, recall and use information and skills to properly care for themselves.

Particularly, in the case of patients with diabetes, the ability to recall precise, medical instructions and use them in the daily decision making needed for their care, demands effective comprehension and motivation. In an assessment of patient and physician agreement on treatment goals and strategies, Heisler, et al. (2003) found that in cases where physicians and patients shared decision making and patients possessed a greater belief in their abilities to treat diabetes, patients were more likely to practice self-management. Physicians, in these studies, tended to conduct extensive discussions with patients, and patients shared responsibility for the treatment decisions (Heisler, et al., 2003).

Patient's Ability to Recall Health Information

To adequately care for themselves, patients are expected to recall large amounts of information. Page, et al. (1981) assessed the amount of recorded instructions patients recalled following appointments with a team of health professionals. The findings demonstrate health team members shared numerous recommendations for self care, but patients were not able to remember the instructions immediately following the discussion. The authors suggest that team members need to work together to limit the number of recommendations given in any one visit and assess pre- and post-visit the amount of information patients possess to care for themselves (Page, et al., 1981). Perhaps, these interventions will facilitate the recall and use of information that will enhance patient health outcomes.

Compliance and Enhanced Communication

Research demonstrates timing, characterized by the number of encounters, is another aspect of patient-provider communication that affects patients' ability to care for

themselves (Graber, Wooldridge & Brown, 1986). Frequent exposure to healthcare recommendations facilitates patient health outcomes. In a study assessing home glucose monitoring among patients with insulin dependent diabetes, increased two-way communication in between regular office visits improved patient compliant behavior (Graber, Wooldridge & Brown, 1986). Likewise, possessing an established relationship with a health care provider leads to enhanced communication. In a Veterans Administration population, patients with diabetes who received most of their diabetes care from a single, primary care provider with whom they'd established a long term relationship, reported greater patient-provider communication, in general and diabetes, specific (Piette, et al., 2003; Aiken, Bingham, & Piette, 2005). This was also true for a population of adult patients with asthma (Love, et al., 2000).

Adverse Outcomes

Alternatively, for patients lacking the knowledge or skills to participate in effective patient-provider communication, such as those with low health literacy, adverse consequences may ensue regarding their health status. Adults with low health literacy lack the ability to effectively communicate with health professionals. They tend not to appreciate the need to disclose health information. Nor are they able to distinguish pertinent information likely due to their difficulty in understanding their condition and the overall healthcare experience (Bernhardt & Cameron, 2003). This practice of non-disclosure establishes the setting for misdiagnosis and subsequent adverse health outcomes. A number of studies concur that people with low health literacy have difficulty understanding health information and instructions, which can lead people to ignore disease warning signs, misuse medications, fail to comply with treatment

regimens, incorrectly manage a disease, or fail to get needed care within an appropriate period of time (Parker, Baker, Williams & Nurss, 1995; Williams, Baker, Parker, & Nurss, 1998). For example, among a group of patients with diabetes, only 50% with low health literacy could recognize the symptoms of hypoglycemia (Williams, et al., 1998).

Of the strategies used by physicians that hindered communication, use of terms with differing meanings was a significant barrier. Among patients with diabetes, patients' and physicians' differing views of the term "control" was especially problematic (Freeman & Loewe, 2000). Specifically, physicians tend to conceptualize control as measure of a patient's metabolic, blood glucose state, while patients viewed it as a term describing how well they balanced each of the many responsibilities needed to care for themselves and others. This misunderstanding fosters indifference and engenders lack of enthusiasm on the part of patients to best care for their diabetes.

Patient-Provider Communication in Chronic Conditions

Solowiejczyk & Baker (1981) explored the unique needs of patients with chronic illnesses, such as establishing effective, supportive communication with health care providers. The authors argued that diabetes is a model example of a chronic illness in which patients must bear considerable responsibility for self care (Solowiejczyk & Baker, 1981). To establish effective patient-provider communication, providers need recognize and appreciate the knowledge and skills patients have in daily managing their illnesses. Both parties must respect the expertise of the other to facilitate optimal care.

Chronic disease management requires that the traditional medical model, in which providers act as the sole authority, be updated (Thorne, 2006). Anderson (1985) purported that the traditional medical approach was inappropriate for diabetes (Anderson,

1985). He argued that the self-care demands of the illness necessitate a more interactive, commensurate relationship between patients and providers. These interactions influence the eventual self care practices of patients, such as the use of advice or skills learned in patient provider interactions. Accordingly, Anderson (1985) contends that noncompliance is likely a factor of poor communication of expectations on the part of providers rather than patient behavior. Gleaning from counseling psychology, he proposes that an educational approach is more appropriate. The educational approach establishes patient and provider as allies, working together to assist patients in realizing their capacity to make decisions and accept the consequences of actions to facilitate treatment and self care practices. Even still, Anderson (1985) recognizes that most people with diabetes benefit from a combination of medical and educational approaches. Utilization of such, demands that providers possess a working knowledge of both approaches and skills in implementing them. Self awareness on the part of diabetes educators regarding their theoretical and philosophical approaches to patient care is instructive of how they employ either the medical or educational approach to patient care; thus affecting patient-provider interactions.

Tailored Interventions

Many researchers argue that instead of developing communication interventions that are generally universal, strategies should be developed, tailored specific to the needs of the patients to be involved in patient-provider interactions (Dutta-Bergman, 2005). These unique interventions would take the form of tailored print materials, decision aids, consultation summaries or instructions, provided via audio or video- tape, written or verbal, and interactive computer aids/touch screens, etc (Trevena, Davey, Barratt, Butow,

Caldwell, 2006). Programs might be developed that specifically address health conditions, such as diabetes, and are advantageous given that current research suggests “although a number of useful studies have been conducted on clinical interventions for Type 2 diabetes, the literature is disappointingly sparse on communication interventions to change behavior related to the prevention and treatment of diabetes in diverse populations...noting few published examples of systematically evaluated communication interventions for diabetes” (Institute of Medicine, 2002, p. 154). A similar story is among populations with diverse races and ethnicities.

Patient-Provider Communication in Diverse Populations & Targeted Interventions

In “Speaking of Health: Assessing Health Communication Strategies for Diverse Populations”, researchers studied whether there is any added benefit in addressing the behaviors associated with health disparities by using communication that takes diversity into account (Institute of Medicine, 2002). The analysis ensued following three federal initiatives to examine health disparities, namely the Eliminating Racial and Ethnic Disparities in Health campaign, *Healthy People 2010*, and the Minority Health and Health Disparities Research and Education Act of 2000 (Institute of Medicine, 2002). To date there was reasonably good evidence that health communication campaigns could influence health behavior; however, there was little evidence on the enhanced impact of health campaigns planned with special attention to addressing the needs of diverse audiences (Institute of Medicine, 2002). This did not mean that health communication campaigns had not taken diversity into account (Institute of Medicine, 2002). Conversely, the report’s major finding concluded despite considerable emphasis on diversity within communication programs, there was limited data demonstrating

effectiveness in addressing health disparities, thus additional comparative research is needed (Institute of Medicine, 2002).

Interventions in Patient-Provider Communication

Patient & Provider Training

Of the interventions developed to address patient-provider communication, many focus on provider and/or patient training. Given patient knowledge and use of self care behaviors is largely a factor of the information and skills taught to them during patient-provider interactions, it is deemed essential that interventions be conducted that assess the level and quality of information and skills of patients and providers (Weiner, Barnett, Cheng, Daaleman, 2005), particularly patients who use health information and skills to care for themselves daily. Patients with diabetes are one such group that must daily assess health information and make decisions that affect their health. In a study to describe the level of knowledge about their illness among patients with diabetes, it was found that a majority of patients had poor knowledge about the disease, associated complications, and understanding how the disease might be controlled (Kamel, Badawy, El-Zeiny, Merdan, 1999). Kamel, et al. (1999) argued that this lack of knowledge suggested that providers need be trained in more effective ways to educate patients about their illness so that patients will be able to make informed health decisions.

Numerous interventions have been proposed to equip patients and providers to effectively participate in optimal communication. Evidence of the effectiveness of patient-provider interventions has been documented in chronic disease studies, such as studies of educational programs involving physicians and their patients with arthritis (Daltroy, 1993). Organized programs and educational counseling have been employed to

equip rheumatic disease patients with the skills and knowledge necessary to monitor and manage their disease (Daltroy, 1993). Similarly, among physicians who treat patients with asthma, Clark, Gong, Schork, Maiman, Evans, Hurwitz, Roloff, & Mellins (1997) found that the doctors involved in [health education] educational programs were more apt to teach patients how to care for their illness and assesses patient's self efficacy in performing the action alone. Among physicians who care for patients with hypertension, those tutored as managers and educators, achieved increased patient knowledge and more appropriate beliefs about hypertension among their patients, resulting in improved compliance and better control of hypertension (Inui, Yourtee, & Williamson, 1976).

Other patient-provider trainings address communication styles. Larivaara, Kiuttu, Taanila (2001) described trainings for medical students that teach patient-centered interviewing. Among those equipped to train medical professionals in interviewing skills include communication specialists (Flaherty & Sharf, 1981). The training strategies are designed to foster patient's use of resources that assist in patient healing. To address the necessary components of patient-provider trainings, Beck, Daughtridge & Sloane (2002) assessed previous studies of verbal and non-verbal communication and found that there was an association between behaviors and patient health outcomes. The list of verbal communication that was positively associated with health outcomes include empathy, reassurance, support, various patient-centered questioning techniques, encounter length, history-taking, explanations, both dominant and passive physician styles, positive reinforcement, humor, psychosocial talk, time in health education and information sharing, friendliness, courtesy, orienting the patient during examination and summarization and clarification (Beck, Daughtridge & Sloane (2002). The nonverbal

behaviors that were positively associated include head nodding, forward lean, direct body orientation, uncrossed legs and arms, arm symmetry, and less mutual gaze. Explanation and demonstration of each of these behaviors need be included in patient-provider interventions (Beck, Daughtridge & Sloane, 2002).

Likewise, patient trainings, such as one designed to enhance patients' communication skills in information exchange, demonstrated that trained patients facilitated a more patient-controlled style of communication (Cegala, et al., 2000). Specifically, patients were more effective and efficient in seeking information and were better able to provide detailed information to physicians about their conditions. Additionally, by being direct, assertive, and engaged, patients were able to disseminate and interpret more information and verify comprehension (Cegala, et al., 2000). Thus, patient-provider relationships were fostered and partnerships were formed (Cegala, et al., 2000). According to a landmark study by Kaplan, Greenfield & Ware (1989), examining *functional status* and *patients' subjective evaluations of their health status*, along with traditional *physiologic outcome measures*, the researchers investigated the effectiveness of physician-patient communication and evaluated the impact of an intervention designed to improve this communication. "The goal of this experimental program was to change the behavior of physicians as well as that of patients by training patients to take a more active role in their care" (Kaplan, Greenfield & Ware, 1989, p. S113).

Future Advancements

Regarding the future of patient-provider communication, Roter (2003) suggests the need to expand the current knowledge of effective patient-provider communication. The use of technology is a proposed mechanism to assist in doing so. Turner (2003)

characterizes telemedicine as the use of telecommunications technologies to facilitate health care delivery across distances, as it relates to clinical practice of patient care. Telemedicine has many forms, such as facsimile; data transfer via modem; and real-time interactive television (Turner, 2003). Studies of telemedicine and other technologies utilized in patient provider communication will be discussed.

Use of Instruments and Devices

Of the current literature, Heinzelmann, Lugn & Kvedar (2005) assess the role of telemedicine on patient-provider communication. They found given the current advancements in technology and communication, such as mobile communications, it is only a matter of time before we witness the same type exponential growth in the use of technology devices that impact healthcare (Heinzelmann, Lugn & Kvedar, 2005). Indeed, currently, numerous technological advances have been made in medical care, within hospital, clinic and physician office settings such that patients and providers now use electronic media for appointment scheduling, transmission and receipt of laboratory results, and brief messages (Heinzelmann, Lugn & Kvedar, 2005; Weiner, Barnet, Cheng, & Daaleman, 2005). Heinzelmann, Lugn & Kvedar (2005) argues that similar advances will soon take place in the homes and daily lives of those who need continual, daily medical care. In particular, “diabetic patients in the future, for example, will probably perform not only glucose testing at home, but also risk assessment through hemoglobin A1c measurement and urine microalbumin screening—each of which may become part of accepted self-care practices” (Heinzelmann, Lugn & Kvedar, 2005, p.388).

Interactive Computerized Software

In a pilot study of chronic illness self-management software used to assess customer satisfaction, patient-provider communication, and user confidence, Carl & Gribble (1995) found that access to home monitoring tools and information facilitates documentation, thus enhancing patient provider communication, since management of chronic illness necessitates continual, meticulous evaluation, problem-solving and solution finding for patients of chronic illnesses; allowing them to record and monitor their care and eventually share these practices with their providers (Carl & Gribble, 1995). These authors suggest that theirs and others research demonstrates the significance of health education, particularly self-care information and practices, in reducing unnecessary medical costs, by avoiding unnecessary visits while encouraging and facilitating necessary ones. The internet has also been proposed as a technological advance that might facilitate patient provider communication.

Internet

In a nationally representative telephone survey to determine Internet usage to acquire health information; views of quality and effect of information availability; appraisal of information; impact of information on the physician-patient relationship; and impact on health service utilization, Murray, Lo, Pollack, Donelan, Catania, White, Zapert, & Turner (2003) found several trends among sociodemographic factors. Specifically, persons of a younger age, higher income & educational status were more likely to use the Internet and other multimedia technologies to obtain health information (Murray, Lo, Pollack, Donelan, Catania, White, Zapert, & Turner, 2003; Street, Van Order, Bramson, & Manning, 1998). African Americans were less likely than whites to

seek information on the Internet. Persons rating their health as good in addition to having a proactive approach to health care information, and rating quality of care from a regular doctor as fair or poor were also associated with looking for health information on the Internet.

From the information sought, those deemed proactive and being in poor health were more likely to find information considered relevant. African Americans were the least likely to find information relevant to their health needs. Persons who acted on the acquired information by taking it to their physician did so generally as a part of their regular visit, seeking medical advice about the information and rarely to request a specific treatment option. Generally, information-seekers felt positively about their behavior, citing physician reaction and communication skills as integral to whether the action facilitated or hindered the patient-provider interaction. The authors argue that more research needs to be conducted to assist persons in obtaining relevant, trustworthy information such that non-combative discussions can take place between patients and providers, in an attempt to establish greater patient satisfaction and participation in health care (Murray, Lo, Pollack, Donelan, Catania, White, Zapert, & Turner, 2003).

In a self-administered, paper & pencil survey, of 300 patients from four community-based primary care practices in Rhode Island, Sciamanna, Clark, Diaz, & Newton (2003) similarly assessed the association of patients' interest in using the Internet for general and quality-oriented information, as well as regarding patient attitudes about communications with health care provider(s). Investigators delineated the research findings based on patient access to Internet services. Within the population, two-thirds reported access to Internet, with highest access among the young, more formally educated

and those self-reporting better health. Among those with Internet access, non-Whites and those self-reporting better health possessed a heightened interest in using the Internet for health related activities. Among those without access, greater interest in use was found among patients who either felt their doctor gave them less information or engaged them more in decision making. The authors propose 2 possible explanations for these findings: patients without Internet access may seek Internet usage to compensate for an aspect of patient-provider communication they feel is lacking, while those with Internet access, may use it as a “ trusted second opinion” (Sciamanna, Clark, Diaz, & Newton, 2003, p. 6).

Grant, Cagliero, Chueh & Meigs (2005) assessed frequency of Internet use based on demographics, self-care behaviors and diabetes-related risk factor control and found congruent results as the earlier studies (Grant, Cagliero, Chueh & Meigs, 2005). Generally, younger age, better insurance status and higher educational attainment were found among those more likely to use the Internet for different health-related activities, if confidentiality of personal health information was protected. Current non-users were less likely to use the Internet to obtain access to protected information. In a cohort of patients with access to primary care, Internet users and non-users had few clinical differences regarding self-care activities and diabetes-related risk factor control. Internet usage is currently limited in reaching vulnerable populations, such as the elderly, the uninsured, and those with poorly controlled diabetes, suggesting novel approaches must be employed to reach those in greatest need of web-based health information prior to any widespread adoption of technological advances in patient-provider communication (Grant, Cagliero, Chueh & Meigs, 2005).

Literature Analysis

Of the research to date, at least 2 categories of patient-provider communication literature exists (Burke, et al., 2006). One body of literature describes the components of the dynamic patient-provider interaction. Another offers suggestions for improvement within patient-provider interactions that will facilitate communication, particularly among patients with chronic illnesses. The “descriptive” literature explores the communication styles, skills and strategies for behavior change utilized by providers and patients or the lack thereof. The “prescriptive” literature documents, in many instances, the somewhat ineffectiveness of patient-provider interaction and proposes adaptations that might improve these relations. Whether examined in the context of clinical settings, among sociodemographically variant peoples, across differing chronic illnesses, patient-provider communication need take the form of exchange of information and preferences that engender mutual respect and understanding of needs and expectations. Some have argued that these requirements can only be met by inclusion of multiple health care professionals, within non-traditional medical/clinical settings, among providers and patients trained in effective communication strategies (Sharf & Street, 1997). Still others argue that use of effective strategies is only useful if it fosters behavior change that improves the health status, particularly of the chronically ill. Health educators, trained in behavior change theory and communication, can act as providers, advocating and facilitating patient education and provider interaction that is optimal and ensures effective patient-provider communication that informs and enhances patient self care practices.

Conclusion

“Health communication strategies are defined as approaches that seek to persuade or motivate people to change their behavior in order to improve their health” (Institute of Medicine, 2002, p. 12). Patient-provider communication is a unique subset of health communication. As early as the 1960s, studies have been conducted assessing patient-provider communication (Hall, Roter, & Katz, 1988). To date, no theory has been developed to explain patient-provider communication; alternatively an ecological model, developed by Street (2003), has been proposed. Of those conducting research on patient-provider communication, most have studied physicians as providers, while a growing minority has included studies of health communication specialists, health educators, nurses, and other members of the health care team. Of those that describe the physician as provider, acknowledgement is generally made of the importance of multidisciplinary teams that facilitate effective patient-provider communication (Nussbaum, Ragan & Whaley, 2003; Wikblad, 1991).

Of the numerous studies assessing patients, many consider the role of patient-provider communication in the care of patients with chronic illnesses, such as arthritis, asthma, cancer (prostate and breast), depression, diabetes and end-stage renal disease. Within many patients’ studies, gender differences are noted as well as trends among races, ages and income levels. Across groups, interventions to enhance the patient-provider communication have been proposed that look to the future role of technology in patient-provider interactions.

In summary, research has demonstrated that the key elements of patient-provider communication influencing satisfaction include a caring and understanding manner on the part of the health care provider, medical competence, a balanced inquiry into psychosocial and biomedical concerns, continuity of the patient-

provider relationship, and the expression of patient and provider expectations. These findings have implications for both training and clinical practice. (Brown, Stewart & Ryan, 2003, p. 144).

Two philosophies of patient-provider communication exist (Burke, et al., 2006).

One organizes patient-provider communication as a “descriptive”, more traditional, instructive methodology, while another characterizes a “prescriptive”, more dynamic, more responsive method. Likewise, a distinction is made between past methodologies that tend to be more doctor-focused and current or future proposed methods, which are more patient-focused, such as patient-centered interview styles (Sharf & Street, 1997). The significance of the styles and forms of patient-provider communication is elucidated in the link that interaction and relationship building has with patient’s health outcomes (Department of Health and Human Services, 2000). A direct link has been established between patient satisfaction, adherence, and subsequently, health outcomes (Institute of Medicine, 2003). These implications are even more important for minorities involved in patient-provider interactions because many are female patients with diabetes, less educated and possessing lower incomes (Department of Health and Human Services, 2000; Institute of Medicine, 2002; Institute of Medicine, 2003). The health status of these individuals is likely to be greatly impacted by patient-provider interactions.

The establishment of effective patient-provider communication requires the interplay of many individuals who are skilled in strategies and sensitivities that facilitate dialogue and behavior adaptations. Behavioral models and program interventions offer strategies to those interested in improving the current system. A demand exists for more theoretically based interventions and targeted programs that meet the needs of populations frequently involved in patient-provider interactions. For patients with

diabetes, this is particularly true, such that “understanding the various perspectives on diabetes and how they may affect one another is essential to creating communication programs that are effective in changing patterns of behavior to improve diabetes control” (Institute of Medicine, 2002, p. 156).

CHAPTER III

ENHANCING PATIENT-PROVIDER COMMUNICATION AMONG PATIENTS WITH DIABETES: IMPLICATIONS FOR HEALTH EDUCATION RESEARCH AND PRACTICE

Daunting statistics characterize the number of individuals living with chronic diseases (Centers for Disease Control and Prevention, 2003). Particularly, those with diabetes account for more than 20 million Americans. To manage these conditions, individuals must undertake considerable responsibility. For many, this new found responsibility is unwanted and often accompanied by formidable barriers to care, such as ineffective communication between patients and physicians. As a result, individuals with chronic diseases may a) not be equipped with the knowledge or resources to effectively manage their disease; b) be at increased risk for poor health outcomes; and c) experience a lower quality of life. Thus, the need exists to explore the unique dynamics involved in effective communication, particularly between physicians and patients with chronic diseases, such that a greater appreciation can be gained regarding the link between patient behaviors and subsequent patient health outcomes (Street, 2003). To this end, this paper will address three aspects of patient-physician interaction. Specifically, first, an examination of the role of patient-physician interaction in diabetes care will be provided. Secondly, patient-physician interactions will be examined in the context of an explanatory model, health programming, and the role played by health educators. Finally, the need for additional theory-based intervention research addressing patient-provider interactions will be explored.

Patient-Physician Interaction

In recent decades, the roles played by patients and physicians involved in medical interactions has evolved considerably (Heisler, Bouknight, Hayward, Smith & Kerr, 2002). In the past, the physician was deemed the expert and the primary disseminator of information and directives to assist patients with their care. Presently, internal and external influences on the clinical encounter, such as institutional regulations and insurance policies, greatly limit the autonomy and decision-making authority of physicians such that patients have been ushered into an era of patient consumerism, i.e., a non-traditional and unfamiliar role of responsibility and accountability for providing much of their own care (Roter & Hall, 1991). In this section of the paper, this evolving role of patient-physician communication will be examined as it relates to diabetes care.

Often, during a clinical encounter, patients are faced with unfamiliar, uncomfortable decision-making expectations; some possessing immediate, ominous implications. Of the vast array of decisions made during a patient-physician interaction, the most meaningful and important often entail patients' decisions about how and to what extent the information shared will be incorporated into their daily lives. Operating from the philosophy *to do no harm*, physicians are commissioned to ensure that appropriate amounts and quality of information are disseminated in order to equip patients with the skills and encouragement needed to adhere to clinically proven recommendations. In an effort to ensure effective communication, Kaplan, Greenfield & Ware (1989) found if physicians offer recommendations in ways that are persuasive and encouraging to patients, compliance and implementation is more likely to be realized.

Diabetes provides an illustrative example of the challenge patients and physicians experience in actualizing effective patient-physician interaction that results in improved patient health outcomes. Like most chronic diseases, diabetes demands considerable disease management and participation by patients and physicians. Without such involvement and partnership, patients with diabetes experience inadequate management and subsequent poorer health outcomes. To ensure favorable health outcomes, further improvements are needed in patients' abilities to perform self-care. Additionally, a growing need exists for opportunities to encourage patient active participation in decision-making.

A national initiative, entitled, the *National Diabetes Education Program*, evaluated the role of patient and provider in the care of patients with diabetes (National Institute of Diabetes and Digestive and Kidney Diseases, 2006). The program suggested that when informed patients take an active role in managing their diabetes, and providers are prepared, proactive, and supported with time and resources, their interaction is likely to be productive (Bodenheimer, Wagner, & Grumbach, 2002). This patient-centered interaction would lead to better diabetes care, more efficient and effective practices, healthier patients, and more satisfied patients and providers. The National Diabetes Education Program advocates patient-centered care based on the *Quality Chasm* report (Institute of Medicine, 2001) by reviewing the following dimensions of patient-centered care as they relate to people with diabetes: respect for patients' values, preferences, and expressed needs; coordination and integration of care; information and communication; education — including strategies for providers to help patients manage their diabetes; physical comfort; emotional support — relieving fear and anxiety; and involvement of

family and friends (National Institute of Diabetes and Digestive and Kidney Diseases, 2006).

For patients to experience the recommended patient-centered care and to actualize improved health outcomes, several factors need to be present and operative—structurally, fiscally, and psychosocially. For instance, within the clinical environment, patients need to be able to engage in enlightening interactions with knowledgeable and competent health professionals. To do so, patients need to possess self-efficacy, behavioral intentions, problem-solving and coping skills (Glasgow, Fisher, Anderson, LaGreca, Marrero, Johnson, Rubin, & Cox, 1999). Therewith, patients will demonstrate a willingness and capacity to learn to care for themselves by utilizing available resources (Piredda, 2004). Having these components in place, patients are more likely to be empowered, cooperative, and experience increased satisfaction and improved health outcomes. Equally important for improved patient health outcomes are physicians and other health professionals who can assist patients in caring for themselves. Within a growing body of research that considers the role of patient-physician interactions and health care system factors, Glasgow, et al., (1999) suggests that identifying the characteristics of medical practices and physicians associated with quality care and effective interventions in different clinic settings, will prove essential to improvements in patient health outcomes. Likewise Clark, Nothwehr, Gong, Evans, Maiman, Hurwitz, Roloff, & Mellins, (1995), suggest:

Interventions for physicians that appear to have the best chance of benefiting their patients with chronic disease and that deserve further study should be based on theoretical principles of behavior change, should address the unique nature of partnerships between physicians and patients with chronic disease, and should acknowledge that communication and patient education are as crucial to good clinical outcomes as diagnosis and drug therapy (p. 958).

As such, health educators participate in patient-physician interactions by using theories to design, implement and evaluate health programs, and to provide education to patients to assist them in making behavior changes and participating in medical encounters.

The Role of Health Educators

Through the utilization of theory, health educators make recommendations to physician groups regarding interventions needed to improve the clinical as well as patient education settings (Salmon & Young, 2005). To date, health education theory applications have been essential in patient education interventions and would likewise be instrumental in patient-physician communication interventions. Accordingly, within a systematic literature review from 1980 through 2001, van Dam and colleagues (2003) found that interventions on the patient-physician interaction are most effective if they support patient participation in diabetes care and self-care behavior; alternatively, interventions which focused solely on changing the behavior of the physician were less effective. It has also been found that patient participation is directly enhanced by assistant-guided patient preparation for encounters with their physician (van Dam, van der Horst, van den Borne, Ryckman, & Crebolder, 2003). Preparatory mechanisms that patients benefited from included patient empowerment group education, group consultations, or automated telephone management with nurse or other health professional support (van Dam, et al., 2003).

The Role of Health Programming

Patient education programs highlight these roles and responsibilities of patients, such as self-management, while also emphasizing the importance of support, supervision and reinforcement of behaviors (Glasgow, et al., 1999). Accordingly, Kate Lorig suggests applications of theoretically-based interventions in diabetes research as well as research involving other chronic diseases which have proven highly efficacious, as in her social cognitive theory-based program that demonstrated health behavior and health outcome benefits in clinical trials (Glanz, Rimer, & Lewis, 2002). Even so, more research will need to be conducted to establish a theoretical basis for patient-physician interaction.

Theoretical Applications

To date, no overarching theory has been developed adequately characterizing patient-physician communication (Street, 2003; Roter & Hall, 1991). This limitation in the literature has been deemed especially striking when viewed from a health education perspective. Namely, “despite the centrality of the patient-physician relation of health education, theory-driven research on its dynamics is rare” (Roter & Hall, 1991, p. 185). Emphasis on antecedents or consequences of health behavior have discouraged the address of *processes* of change within the medical encounter (Roter & Hall, 1991), such that patient-physician communication that involves self-management education is narrowly focused instead of conceptualizing patient education services as provided on a continuum from knowledge development to complex behavior change, matched to the patient’s needs (Redman, 1993).

Alternatively, Street’s *ecological model of communication in medical encounters* is the most prominent overarching framework to describe patient-physician

communication (Street, 2003). It describes patient-physician communication in the context of the various influences that impact its occurrence, such as a) the organizational, b) the media, c) the interpersonal, d) the political/legal as well as e) the cultural contexts (Street, 2003); suggesting the impact of each influence is essential to understanding the scope of patient-physician interaction. More so, the interaction of the differing contexts offers the greatest insight into comprehending patient-physician communication and its role in affecting the health and well-being of patients. For example, “peri-consultation” interactions, such as patient education, take place outside the medical encounter but greatly impact a patient’s utilization of services, satisfaction with care, commitment to treatment, and use of alternative medicine, among other things (Street, 2003). These effects are particularly evident for patients with chronic illnesses such as diabetes, who are frequently involved in these exchanges (Street, 2003). To date, most research addressing patient-physician communication has focused on the individuals involved, without much consideration of the environmental factors that affect the individuals engaged in the interaction (Street, 2003). Given the acceptance that there are many influences impacting patient-physician communication, Street’s model affords the opportunity to conceptualize more than the patient and the physician participating in an encounter. It is recognized that numerous factors impact participants’ behaviors (Street, 2003) such that within patient-physician communication, patients make health care decisions by weighing their ability to act and the consequences/expectations of the activity given *environmental influences*, such as the value placed on the goals/recommendations adopted in a medical encounter and/or the reinforcements received through patient counseling and social support. Thus, even if these factors are

addressed, many other institutional and policy factors, still not considered, may influence patient-physician communication (Street, 2003; Mullen & Leifer, 1982). Therefore, additional consideration of appropriate theories should be explored, capable of capturing the full extent of influences and their impact on achieving the most advantageous health behavior for patients involved in patient-physician interaction.

Given that physicians can significantly influence patients' behaviors by addressing compliance-related beliefs during the office visit", (Clark, et al., 1995), the process by which physicians communicate risks and benefits should be further explored. Indeed, "although most of diabetes education is provided by nurses and health educators, the relationship patients have with their physicians may be a unique setting in which patients develop a commitment to follow their treatment plan (Golin, DiMatteo, & Gelberg, 1996, p. 1153)". Additionally, upon enhancing patient-physician communication strategies and shared decision making skills, patients have been shown to experience greater satisfaction and adherence to agreed upon treatment plans, frequently resulting in improved health outcomes, such as higher self-reported health status, emotional health, symptom relief, and physiological measures of disease control (Kaplan, Greenfield, & Ware, 1989; Stewart, 1995). Each of these known associations should be capitalized upon.

Conclusion

The purpose of this article was to present an examination of the role of patient-physician interaction in diabetes care; review an explanatory model and health programs considering the role of health educators in patient-physician interactions; while

encouraging the advancement of theory-based interventions that address patient-physician interaction and diabetes care. From this discussion, a better understanding is gleaned regarding the dynamic interaction of patient-physician communication and its associated influences, participants and outcomes. Additionally, emphasis is placed on the many roles and responsibilities of health educators, including collaborative researcher/educator and program facilitator. Health professionals possess the ability to favorably impact the intricate dynamics of patient-physician communication. Physicians and educators are in a pivotal role to provide patients with the assistance and resources to care for themselves and to prevent the onset of additional morbidity or associated complications. Therefore, leaders of health professional organizations and care facilities as well as policy makers would benefit from understanding how doctors and educators can best interact with patients with diabetes to assist them in caring for themselves (Golin, DiMatteo, & Gelberg, 1996).

Understandably, interdisciplinary research and collaborations among many health professionals and patients is needed to champion the role of patients and providers involved in patient-physician interaction. Even so, more than collaborative research and practice is needed to actualize improved health outcomes for patients suffering with chronic disease. Systems-level, structural changes need to be adopted that facilitate physicians' abilities to provide patient-centered care; health educators' abilities to develop and sustain health programming; and patients' abilities to participate in medical exchanges in which their needs are met and their conditions are improved (Epstein, 2006). Additionally, by utilizing theory-based intervention research, health educators can demonstrate how to effectively engage patients and physicians in patient-physician

interaction that improves the health and well-being of all involved. Given the dire need to improve health outcomes of the excessive number of patients caring for chronic diseases, such as diabetes, remedial action is paramount.

The next decade of behavioral research will involve extending the questions, methodologies, and approaches that have proven promising with individuals and families to larger levels of influence (Glasgow, et al., 1999). Likewise, given the nature of such overarching, interdisciplinary work, health educators will need to collaborate with others, such as health communication specialists, in conducting research and influencing practice by assessing specific aspects of patient-physician interaction (Roter & Hall, 1991).

“Given the paucity of well-planned and well-evaluated programs for communication of behavior change related to primary and secondary prevention of diabetes, these factors should be considered in developing such interventions in the future—currently they are proposed as reasonable goals, lacking validation, but guided by experience and insight” (Institute of Medicine, 2002, p. 175). With these recommendations, health educators can develop strategies to improve the health of patients with diabetes involved in patient-physician interaction and sustain effective behavioral research. Thereby, patients and providers will be more likely to engage in effective communication that facilitates improved health status for those managing chronic diseases, such as diabetes.

CHAPTER IV

USING THE COMMONWEALTH FUND'S SURVEY ON DISPARITIES IN QUALITY OF HEALTH CARE TO ASSESS PATIENT SATISFACTION WITH QUALITY OF HEALTH CARE

According to national estimates, more than 17 million Americans have diabetes, and over 200,000 people die each year from diabetes-related complications (National Center for Chronic Disease Prevention and Health Promotion, 2002). In the year 2000, diabetes was the sixth leading cause of death in the United States (National Center for Health Statistics, 2000). Presently, it is projected that Type 2 diabetes accounts for 90 to 95 percent of all diagnosed cases of diabetes (National Center for Chronic Disease Prevention and Health Promotion, 2002), and African Americans, Hispanic/Latinos, American Indians and Alaskan Natives are several times more likely to have Type 2 diabetes than Whites of similar age (National Center for Chronic Disease Prevention and Health Promotion, 2000). The potential reasons for these disparities in diabetes incidence and death rates include cultural barriers, literacy, income, and quality of care (Institute of Medicine, 2003). Given the alarming rate of diabetes incidence, prevalence and associated complications, particularly among minorities, prevention efforts such as early detection, improved care, and education on diabetes self-management are highly recommended (Office of Minority Health, 2007). Additionally, physicians and other health professionals are encouraged to educate patients about making proper diabetes self-management a regular part of their daily lives (Office of Minority Health, 2007;

American Diabetes Association, 2002; National Institute of Diabetes & Digestive & Kidney Diseases, 2006).

Significance

In recognition of the critical role of patient-physician interaction on patient health outcomes, *Healthy People 2010* established a national mandate to increase the proportion of persons who report that their health care providers have satisfactory communication skills (Department of Health and Human Services, 2000). The overarching intent of this goal was to address the role of effective communication in the context of patient-physician interactions. It is well documented that patients, who have productive relationships with providers, as measured by open lines of communication, respect and shared decision-making, fare better in health outcomes (Kaplan, Greenfield, & Ware, 1989; Stewart, 1995). Among patients with chronic diseases, such as diabetes, effective communication is integral to proper disease management. Patients with diabetes are more likely to engage in discussion, decision-making and negotiation within frequent encounters with providers that inform their daily medical self-care (Golin, DiMatteo, & Goldberg, 1996). Having established, informative encounters with providers, patients are able to adopt self-care practices that ensure improved health status.

The specific skills and expertise that patients and physicians need to effectively engage in patient-physician interaction, leading to improve health outcomes, include: patient self-efficacy, behavioral intentions, coping skills, provider empathy, acknowledgement of patient preferences, and willingness to share decision-making (Golin, DiMatteo, & Goldberg, 1996). If these components are in place, patients are

more likely to report their treatment goals and expectations, while providers feel better informed about patients' desire to participate in the care process (Golin, DiMatteo, & Goldberg, 1996). Likewise, given health care structures, such as insurance and prescription drug coverage, patients are more likely to engage in caring for their disease or health condition. Specifically, individuals with diabetes are more likely to perform various self-management routines including glucose-testing, dietary meal planning, exercising, and regular consultation with physicians and other health care professionals (Golin, DiMatteo, & Goldberg, 1996). Such patient-physician interaction is particularly significant for adults with diabetes given findings from the National Diabetes Education Program that suggest when informed patients take an active role in managing their diabetes, and providers are prepared, proactive, and supported with time and resources, their interaction is likely to be productive (Bodenheimer, Wagner, & Grumbach, 2002); this patient-centered care leads to better diabetes care, more efficient and effective practices, healthier patients, and more satisfied patients and providers (National Institute of Diabetes & Digestive & Kidney Diseases, 2006).

Literature Review

Trends in previous research assessing patient health outcomes have identified both intermediate and long-term influences. As an intermediate outcome to improved health status, patient satisfaction has been considered an essential measure of effective patient-provider communication (Kaplan, Greenfield, & Ware, 1989). Additionally, compliance is another intermediate outcome that has been assessed for its effect on effective patient-provider communication and improved health outcomes. Unlike patient

satisfaction; however, the research findings do not show a clear relationship; therefore, compliance is considered necessary but insufficient to produce optimal health outcomes (Kaplan, Greenfield, & Ware, 1989).

Additionally, several other influences have been studied for their effect on patient-physician interactions or as an outcome of these encounters. Patient self-reported health status is one such outcome measure. Accordingly, Kaplan, Greenfield & Ware (1989) examined functional status and patients' subjective evaluations of their health status, along with traditional physiologic outcome measures, both to assess the effectiveness of physician-patient communication and to evaluate the impact of an intervention designed to improve this communication. Golin, DiMatteo, & Goldberg (1996) suggests health status offers an overall assessment of patient-physician interaction by detailing the goals of effective patient-physician communication, such as enhancing patients' self-efficacy to perform usual daily routines and their overall sense of well-being. Thus, if carried out, patients experience improved health status. Likewise, Ettner (1999) examined the effect of having a usual physician on health behaviors leading to better patient outcomes.

Purpose

Using the Commonwealth Fund's *Survey on Disparities in Quality of Health Care*, this study sought to explore the relationship among patient socio-demographic factors, patient-physician interaction, health literacy, sources of care, utilization of diabetes-related health services, and satisfaction with quality of health care among a national sample of adults with diabetes. Acknowledging the multiplicity of factors

impacting patient-physician encounters, several influences were examined akin to previous research in this area (Saha, Arbelaez, & Cooper, 2003; Kaplan, Greenfield, & Ware, 1989; Golin, DiMatteo, & Goldberg, 1996). Each of the possible contributors to patient health outcomes were examined for their differential effect on patient satisfaction with quality of health care received in the past 2 years.

Method

Instrumentation

The Commonwealth Fund *Survey on Disparities in Quality of Health Care* was conducted via random-digit-dial telephone interviews, among a nationally representative sample of adults age 18 years and older, living in the United States. As the sponsoring agency for the survey, the Commonwealth Fund conducted this assessment to examine national trends in disparities in quality of health care. Specifically, this private foundation sought to explore disparities experienced based on the racial/ethnic background of adult patients and physicians, in the quality of health care received in the past 2 years within health systems in the United States. Similar explorations were underway as reported in the Institute of Medicine's *Unequal Treatment* report (Institute of Medicine, 2003).

The survey results were based on a disproportionately stratified random-digit dialing technique used to sample households and weight the responses to reflect national parameters. Interviews in the respondents' preferred language were conducted by Princeton Data Source of Princeton Survey Research Associates and Interviewing Service of America, Inc., during the period of April 30 through November 5, 2001 with as many as 20 attempts made to establish contact. The reported response rate for the *Survey* was

54.3%. Questions asked in the *Survey* assessed respondents' socio-demographic factors, sources of care, health literacy, use of health services, patient-physician interaction, and satisfaction with quality of health care. Upon receiving public access to the survey results in 2006, the featured analysis was developed to assess the relationship among patient factors, patient-physician interaction, and satisfaction with quality of health care, among adults with diabetes.

Analytic Variables

The primary independent variable for this analysis was the diagnosis of diabetes. The additional independent variables included eleven demographic measures, two measures of health literacy, five measures of sources of care, seven measures of patient-physician interaction, and seven measures of use of diabetes-related health services. These thirty-two independent variables were each independently included in the analysis. The “groupings” (according to subject headings, i.e., patient-physician interaction) do not represent true sections of variables and thus were not weighted, nor given a composite score, nor coded collectively. As such, the dependent variable was also separately compared to each independent variable. For this analysis the dependent variable was satisfaction with quality of health care.

Data Analysis

The scaled measure for satisfaction was dichotomized between the highest rating and all others (i.e., very satisfied with health care vs. less than very satisfied) due to the positively skewed distribution of responses to this item; as well, in congruence with previous research (Saha, Arbelaez, & Cooper, 2003). The reference employed for the analysis was 1= less than very satisfied with quality of health care and 0= very satisfied.

Similar to satisfaction, the patient-physician interaction measures were dichotomized based on the distribution of responses.

Descriptive statistics were calculated for each variable. Exploratory analyses were conducted to determine whether any observed differences in satisfaction with quality of health care were attributable to differences in respondents' socio-demographic makeup, health literacy status, sources of care, patient-physician interactions, or utilization of diabetes-related health services. A series of binary logistic regressions were performed to assess the independent effect of satisfaction on each of the outcome measures. Unadjusted odds ratio (OR) values and 95% confidence interval (CI) scores were examined. A *P* value of 0.05 was established as a threshold for statistical significance. To identify the variables that would maintain their significance when compared to all other variables found to be significant in the univariate analysis, multivariate logistic regression was performed. Adjusted OR and 95% CI were then examined to re-assess significance. Each of the analyses were conducted with Statistical Analysis System (SAS, V9.2, 2006) survey procedures. These survey procedures are able to account for a multi-stage sampling option by including the design factors (i.e., the stratum and primary sampling unit levels) into the analytical model.

Results

Frequencies

Among a sample of adults ages 18 years and older, 8.8% have been given a diagnosis of diabetes in the past 5 years. Of those who reported a diabetes diagnosis, the adults are largely US born, White females, younger than age 65 years, married, not

working, and have completed high school or some college. This is a relatively “well off” group—possessing health insurance coverage for at least 12 months; the majority have a regular doctor or health professional that they visit in their office or private clinic, with the choice to receive services in several locations. Many have established long-term relationships with one or more usual providers and are very satisfied with the quality of care they have received in the past 2 years.

Regarding the skills and services used by these adults with diabetes, a positive trend is observed. The respondents report experiencing little or no problems reading and understanding instructions on prescription bottles how to take a medicine and very little difficulty reading and understanding information or booklets provided by doctors to help manage their care. This sample of adults is proactive, participating in most diabetes-related health services, with the exception of a program offered by their doctor or other health professional to assist in caring for themselves or having a doctor or someone else call them at home to see how they are doing.

Regarding specific patient-physician interaction measures, most respondents, felt the doctor (they last saw within 2 years) listened to everything they had to say, and they understood everything the doctor said to them. These adults felt they were treated with a great deal of respect and dignity, and they were involved as much as they wanted in decisions about their care. They had a great deal of confidence and trust in the doctor treating them (during a visit within the last 2 years to a doctor or clinic or admittance to the hospital). Likewise, most of these adults reported they did not have questions they wanted to discuss but were not able to do so, and they felt the doctor spent as much time as they wanted with them during their last encounter (within 2 years).

Regression Models

The main effects for satisfaction with quality of health care (dependent variable) as a function of demographic variables, sources of care, health literacy, patient-physician interaction, and utilization of diabetes-related health services (independent variables) was assessed via logistic regression models. Among this sample of adults with diabetes, a statistically significant relationship exists among several factors as outlined in Table 1. These findings are summarized below. For instance, those with fair/poor health status were more likely to report being less than very satisfied with the quality of their health care (OR= 2.18, $P=.04$). As well, several other factors were more likely to report being less than very satisfied with the quality of health care received in the past 2 years, including: those with very little choice of location of care (OR= 2.277, $P=.04$); those with no regular doctor or other health professional (OR=2.466, $P=.01$); those with difficulty reading and understanding the instructions on a prescription bottle about how to take a medicine or didn't receive any information from their doctor (OR= 4.246, $P=.00$); those with difficulty reading and understanding information or booklets or didn't receive any information from their doctor (OR= 2.439, $P=.02$); those whose doctor listens to less than everything (OR= 3.82, $P<.00$); those who understand less than everything their doctor says (OR= 2.829, $P=.00$); those who report not having a great deal of confidence and trust in their doctor (OR= 4.478, $P<.00$); those who report not being treated with a great deal of respect and dignity (OR= 3.794, $P<.00$); those who report being involved not as much as wanted in decision-making (OR= 3.698, $P<.00$); and those who report the doctor spends not as much time as wanted (OR= 5.268, $P<.00$)

Similarly, a statistically significant relationship exists among those who report no to having questions that were not discussed as compared to those report yes to having questions that were not discussed (as the referent group); those who report no are less likely to report being less than very satisfied with the quality of their health care (OR= .399, $P=.01$); likewise, those who report having a hemoglobin “A one C” within the last 6 months (OR= .264, $P=<.00$); and those who report having a foot exam in the last year (OR= .529, $P=<.03$) were also less likely to report to being less than very satisfied with the quality of health care received in the past 2 years.

In a multivariate logistic regression analysis only three factors remained significant, including those who report the doctor spent not as much time as wanted (OR= 5.213, $P=<.00$) and those who report having confidence and trust in their doctor (OR=2.747, $P=.04$). These were more likely to report being less than very satisfied with their quality of health care. Conversely, those who had a hemoglobin “A one C” exam in the last 6 months were less likely to report being less than very satisfied with the quality of health care received in the past 2 years (OR= .233, $P= .00$).

Conclusion

Given the research questions, “what is the role of patient-physician interaction, use of diabetes-related services, sources of care, health literacy and patient socio-demographic factors in determining patient satisfaction with quality of health care, in adults with diabetes”, and “are specific aspects of patient-physician interaction, use of diabetes-related services, sources of care, health literacy and patient socio-demographic factors significantly more likely to predict patient satisfaction with quality of health care,

in adults with diabetes”, the aforementioned analyses were conducted. Of the findings describing a significant relationship, the largest predictive ability of a relationship between patient-physician interaction and satisfaction with quality of health care was found with “doctor spent not as much time as wanted” (OR=5.213, $P<.00$) and patients reporting being less than very satisfied with their quality of health care. With these study findings one notes there is a relationship between patient-physician interaction, use of diabetes-related services and patient satisfaction with quality of health care.

Summary of Findings

In this sample of adults with diabetes,

- Most have a usual provider (with an established relationship); a choice of location of services, insurance to cover costs and ease with which to utilize services.
- Most interact with physicians in commensurate ways. Although the assessment of physician interaction was made of the last physician patients’ saw, the “sources of care” measures were of patients’ usual doctor. Even so, given that this sample has a predominance of usual providers, perhaps it can be deduced that the provider involved in the last visit (for these patients) is their usual provider. Given the nature of the questions this cannot be definitively assessed. However, arguably, having a usual provider might best explain the positive trend of health care quality and services use among this group (Ettner, 1999).
- Most are very satisfied with the quality of their health care.

- Most readily utilizes diabetes-related services with the exception of participating in a special program. This might be explained by considering the history of diabetes education, known to heavily rely on didactic, verbal, and written methods of dissemination, with a “one-size-fits-all” format. The effectiveness of this approach has been modest, often plagued by scheduling problems, lack of trained facilitators and a need for tailored interventions. For these and other reasons, this trend is common that patients with diabetes often have never attended a diabetes class or program (Glasgow, Fisher, Anderson, LaGreca, Marrero, Johnson, Rubin, & Cox, 1999).
- Most are health literate.
- Surprisingly, the respondents were predominately White, female, older, married, non-working, college-educated, and insured. Although not consistent with national trends and other studies of disparities in diabetes incidence by race, a possible explanation for these results is that this sample comes from a survey with incomplete participation (Saha, Arbelaez, & Cooper (2003). Thus, of the questions used to assess patient satisfaction with quality of health care, among a sample of respondents reporting a diabetes diagnosis, the majority reflect these trends.

Discussion

Several factors have been assessed for their impact on patient-physician interaction and their role in affecting patient health outcomes. Kaplan, et al. (1989) & Stewart (1995) suggest enhanced patient-provider communication and shared decision-

making leads to increased patient satisfaction, adherence to treatment, and ultimate improved health outcomes, such as self-reported health status (Kaplan, Greenfield, & Ware, 1989; Stewart, 1995). Additionally, Kaplan, et al., suggests generic measures of patients' health, in addition to available physiologic measures, are logical outcomes of which to assess effective physician-patient communication (Kaplan, Greenfield, & Ware, 1989).

Within this study, patient satisfaction was assessed as a function of several socio-demographic factors, measures of patient-physician interaction, patient health literacy, sources of usual care, and utilization of recommended diabetes-related health services. Congruent with other study findings, patients who reported satisfaction with the quality of health care they received (in the past 2 years) were more likely to participate in diabetes-related care practices and to report better health status. Additionally, these patients reported enhanced patient-physician interactions, including confidence and trust in their doctor which explains their satisfaction, and could lead to improved health outcomes.

Therefore, it can be concluded, the extent to which patients spend as much time as wanted with their doctor; establish confidence and trust in their doctor; and have a hemoglobin A1c exam in the last 6 months affects the level of satisfaction experienced with the quality of health care received in the past 2 years. Thus, by studying patient satisfaction, one might become more aware of the influences on patients' decisions to participate in patient-physician interactions, such as their willingness to follow treatment regimens or participate in self-care activities and the influence of continuity of care (having a relationship with a provider that facilitates trust and uninhibited discussion).

Girded with such knowledge, interventions can be developed that will improve the health outcomes of those affected by debilitating chronic illnesses, such as diabetes.

Study Limitations

Even so, these conclusions should be interpreted in light of several limitations: These analyses are based on a single telephone survey. Respondents had to have a working telephone in their home to complete the survey, so the sample disproportionately excludes persons who were homeless and of lower income. The data is cross-sectional; therefore, no causal relationships can be established. The data was obtained via self-report, and were not validated. Among the questions that assess patient-physician interaction, those addressing specific aspects of patient-physician interaction, such as shared decision-making describe an encounter with the last physician seen; however, the questions assessing sources of care, such as having a regular doctor describe encounters with a usual provider. Due to this inconsistency in the survey questions, it is not possible to make inferences between patients' usual experience versus a most recent experience with a physician or other health professional. Another limitation of the survey questions is that there is no distinction made between the type of diabetes with which patients have been diagnosed. However, since the population is largely age 50 and older, it can be assumed that Type 2 diabetes is the largest type prevalent, although, it can not be verified. Further limitations of this research include the inability to address the specific role of other health professionals in patient-physician interaction, such as health educators. Within the survey, no questions assess patient-health educator interaction, with the exception of a question that inquires about patients' involvement in a special program offered by a doctor or other health care provider to help manage a health

problem. It might be deduced that this assessment was not made due to the current lack of health education research that characterizes the impact of health education involvement in improved patient health outcomes, such as the interrelationship between patient-physician interaction and patient education (Roter & McNeilis, 2003). This trend persists despite well-known health education interventions, such as chronic disease management programs, into which patients are often referred by physicians to learn from health educators how to manage their care (Glanz, Rimer & Lewis, 2002).

Implications for Practice and Areas for Future Research

Research such as this examining the role of patient-physician interaction should be expounded to increase its practical utility. Additional research should be conducted to assess patient-physician interactions, both during medical visits as well as afterwards, to better understand which self-care strategies patients implement or fail to implement in the daily decisions to care for themselves (Kaplan, Greenfield, & Ware, 1989). Research should describe the specific aspects of patient-physician interaction styles that are most effective in promoting improved self-management among different groups of patients (Golin, DiMatteo, & Gelberg, 1996). This research would provide insight for training programs designed to encourage behavior change of physicians and patients. Program findings would inform teaching strategies used to direct physician communication styles, and ultimately improve health outcomes by enhancing patient-physician interaction (Roter & McNeilis, 2003). Additionally, longitudinal studies of large numbers of patients and physicians that employ health status assessment measures will provide insight regarding the specific behaviors that can be altered or enhanced to improve patient health outcomes (Kaplan, Greenfield, & Ware, 1989).

More remains to be understood regarding the role of continuity of care and its effect on long-term patient-physician interaction (Roter & McNeelis, 2003). This type of research would complement existing efforts, including patient education and training commonly provided by health educators. For instance, Roter (1977) conducted health education interventions to increase patient question-asking in medical encounters. Roter (1977) found successful efforts to increase patient activation need also increase physicians' willingness to allow patients to actively participate by encouraging such behaviors (Roter, 1977 as cited in Institute of Medicine, 2003). Perhaps, well-established relationships between patients and physicians will facilitate interactions in which patients can actively participate (via question-asking) and physicians will welcome this engagement.

Additionally, Roter and colleagues (1998) found that among health education interventions, patient education strategies, such as individual and group teaching, encouraged skills building and were more successful if they combined education and behavior change strategies rather than only employing single-focus interventions (Roter, Hall, Merisca, Nordstrom, Cretin, & Svarstad, 1998). Taken together, interventions to improve the health outcomes of patients must have components that provide education and behavior change strategies, such as skills building for patients as well as physicians.

From the current research, one notes patients are more likely to be satisfied with their health care if they can actively participate in a productive relationship with a physician that spends as much time as wanted and with whom confidence and trust can be established. Additionally, as health educators, trained to provide patients with the skills to make & sustain lifestyle changes, we must also engage patients and work

collaboratively to design, implement, and evaluate programs that foster education and behavior change; thus leading to improved patient health outcomes.

CHAPTER V

CONCLUSIONS

Over the course of more than four decades of research, patient-physician interaction has been extensively studied. As a means to conceptualize the various influences on patient-physician interaction, the “ecological model of communication in medical encounters” has been proposed. This model describes various influences affecting the many contexts in which a medical encounter takes place, such as the organizational, interpersonal, political/legal, media and cultural contexts (Street, 2003). As such, aspects from the organizational and interpersonal context were explored in this study and recommendations for exploration of other contexts are made based on the study findings. Likewise, given the need exists to explore the unique dynamics involved in effective communication, particularly between physicians and patients with chronic diseases, this study focused on patients with diabetes, such that a greater appreciation can be gained regarding the link between patient behaviors and subsequent patient health outcomes (Street, 2003). This study was designed to assess the relationship among the patient socio-demographic factors, health literacy, sources of care, utilization of diabetes-related health services, and physician-patient interaction, among a nationally representative sample of adults with diabetes. To assist in this exploration, the following questions and hypotheses were examined:

- (1) What is the role of patient-physician interaction, sources of care, health literacy, use of diabetes-related health services, and patient socio-

demographic factors in determining patient satisfaction with quality of health care, in adults with diabetes? For this study, the investigator hypothesized that patient-physician interaction, sources of care, health literacy, use of diabetes-related health services, and patient socio-demographic factors will significantly affect patient satisfaction with quality of health care, in adults with diabetes. By individually assessing each variable that characterized the aforementioned “groups of variables”, the multivariate logistic regression demonstrated that only three variables from the 2 “groups of variables” patient-physician interaction and use of diabetes-related services were significant in predicting patient satisfaction with quality of health care. The hypothesis was not fully supported regarding sources of care, health literacy and patient socio-demographic factors.

- (2) Are specific aspects of patient-physician interaction, sources of care, health literacy, use of diabetes-related services and patient socio-demographic factors significantly more likely to predict patient satisfaction with quality of health care? For this study, the investigator hypothesized that seven aspects of patient-physician interaction, five aspects of sources of care, two aspects of health literacy, seven aspects of diabetes-related services, and eleven aspects of socio-demographic factors were likely to predict statistically significant relationships with satisfaction with quality of health care. Of the thirty-two aspects considered, three produced statistically significant relationships; multivariate logistic regression

results demonstrate that patient confidence and trust in their doctor, doctor spending as much time as wanted, and patient having had a hemoglobin A1c exam in the last 6 months each have statistically significant relationships with quality of health care received in the past 2 years. The hypothesis was thus not fully supported for many aspects of health literacy, patient socio-demographic factors, sources of care and some aspects of patient-physician interaction and use of diabetes-related health services.

Conclusions from the Data Analyses

To answer the research questions, univariate and multivariate logistic regression analyses were conducted to assess the predictability of the 5 groups of dependent variables: 1) socio-demographic factors, 2) sources of care “factors”, 3) health literacy “factors”, 4) patient-physician interaction “factors”, and 5) use of diabetes-related services “factors”. Individually these groups comprised thirty-two dependent variables: employment status, marital status, race, age, gender, educational attainment, income, poverty threshold, health insurance coverage, health insurance and prescription drug coverage, health status, continuity of coverage, location of usual source of care, choice of location of care, regular doctor or other health professional, length of relationship with regular doctor, ability to read and understand prescription bottle, ability to read and understand information or booklets provided by doctor, doctor listen, understanding doctor, having questions not discussed, confidence and trust in doctor, treated with respect and dignity by doctor, involved in decisions, doctor spend as much as wanted,

number of diabetes checks, received a hemoglobin A1c, received a foot exam, received an eye exam, received a blood pressure check, doctor or someone else call at home, and take part in a special program to manage a health problem. Each of these factors were compared to the independent variable patient satisfaction with quality of health care received in the last 2 years. Logistic regression assisted in ascertaining the importance of each dependent variable, by assessing the odds ratios. Three dependent variables, specifically confidence and trust in doctor; doctor spend as much time as wanted; and had a hemoglobin A1c in the last 6 months, were statistically significantly predictive of a relationship with patient satisfaction with quality of health care. The adults with diabetes that reported not having a great deal of confidence and trust in their doctor were more likely (OR= 2.747, $P=.0483$) to report being less than very satisfied with the quality of health care they received in the past 2 years. The adults with diabetes that reported that their doctor spends less than the amount of time desired were more likely (OR=9.653), $P=<.0001$) to report being less than very satisfied with the quality of health care received in the past 2 years. Also, finally, the adults with diabetes that have had a hemoglobin A1c in the past 6 months were less likely (OR=.147, $P=.0033$) to report being less than very satisfied with the quality of health care received in the past 2 years.

Summary

Despite the apparent benefit of effective patient-physician communication in the overall care of patients with diabetes, to date, there remains a paucity in the current body of literature addressing the specific role and impact of patient-physician interaction on diabetes care and how it is assessed and performed in clinical settings (Glasgow, Fisher,

Anderson, LaGreca, Marrero, Johnson, Rubin, & Cox, 1999). Much additional research needs to be done to tease out which aspects of patient-physician interaction are most effective in promoting improved health outcomes among patients with diabetes (Golin, DiMatteo, & Gelberg, 1996). Additional research is needed to ascertain the specific role of providers, including physicians and educators. From the current body of literature, we know health care providers and significant others have considerable impact on patient behavior, to the degree that these individuals can assist patients in maintaining control over their diabetes, thus preventing complications, and increasing quality of life, through daily informed decision-making. What is not readily known is the process of this effect and to what degree it is modifiable, nor the extent to which organizational and institutional influences impact patient-physician communication, resulting in patient health outcomes (Street, 2003; Mullen & Leifer, 1982). This study provides insight regarding the specific aspects of patient-physician interaction and use of diabetes-related services that impact patient health outcomes. By knowing that a statistically significant relationship exists among confidence and trust in a doctor, being able to spend as much as time as wanted with a doctor, having a hemoglobin A1c in the last 6 months, and satisfaction with quality of health care, future investigators know which influences are perhaps most influential and deserve further exploration to predict satisfaction with quality of health care.

Limitations

This study is limited by several factors. The instrumentation used posed several constraints. Given the research question guiding this study, several areas for

improvement and expansion were noted. Namely, the survey assessed patient-physician interaction using seven questions that asked about the last physician patients saw. Conversely, questions that assessed patients' relationships with physicians and other health professionals were asked about "usual provider" or someone to whom patients have established relationships. Given such differences in the way the questions were posed, associations could not be developed about interactions with usual providers, for instance. Even so, given that more than two-thirds of this population possessed a usual provider to whom they had established a relationship, it could be deduced that the last physician they patroned (and to whom they referred when answering the patient-physician interaction questions) was the same physician. If so, more could be understood about the relationship between patients with diabetes in this sample and the physicians that care for them. However, given that this question was not asked directly, this assumption can not be proven.

A similar limitation of this study relates to the instrument used for the analysis. Specifically, given that the research question assesses patient health literacy, this instrument lacks the depth of questioning that would be necessary to adequately assess this construct. The two questions on the survey that inquire about health literacy assess patients' ability to read and understand written materials. There is no assessment of patients' actions once obtaining and processing the material. Also, there is no assessment how the written material may or may not have affected the patients' health.

An additional limitation exists in the investigators' ability to assess 1) the role of other health professionals involved in patient-provider communication; as well as 2) patient self-care practices that also might influence patient satisfaction with quality of

health care. Given that research exists highlighting the role of several health professionals in patient-provider communication, including health educators, nurses, and trained laypersons, this analysis would have been strengthened by an assessment of health professionals, in addition to physicians, that assist patients in caring for themselves and influence patients' satisfaction with the quality of care they receive. Likewise, given the current body of literature, including national recommendations, that demonstrate a direct link between patient self-management practices, including dietary changes, exercise and modest weight loss, and patient health outcomes, this analysis would be more meaningful if these factors could have been assessed for their influence of patient satisfaction with quality of health care.

Finally, this study might have been strengthened by an assessment of the influence of one dependent variable on another. For instance, an analysis of the influence of patient-physician interaction on use of diabetes-related services, might highlight a mediating or moderating effect of one dependent variable on another, given the independent variable of patient satisfaction with quality of care.

Implications for Research

Given the findings from this study, in the context of its limitations, several implications for future research exist. Specifically, additional research is needed to test the findings of this study amongst different populations of patients to determine consistency across groups. Within this study, all patients with diabetes were assessed for their satisfaction with the quality of health care received. Future research could group patients according to type of diabetes, age at diagnosis, and/or duration of diagnosis and

treatment. For instance, research on newly diagnosed adults with Type 2 diabetes might exhibit different findings than similar research with adults with Type 1 diabetes that have been diagnosed since childhood.

In a similar fashion, research that examines each of the known persons that influence patient behavior and subsequent patient health outcomes, would be insightful. For instance, in medical care settings, such as managed care, in which patients are often referred to health professionals that assist patients with decisions regarding diet, exercise, weight management, etc., an assessment of satisfaction with quality of health care needs to consider each contributor to the overall health care “experience”. Likewise, factors that influence patients’ access to and utilization of health care services, such as type of insurance and eligibility, and preference for providers, would also be influential contributors to satisfaction.

Recommendations

Further research examining the role of patient-physician interaction, use of diabetes-related health services, health literacy, sources of care and health literacy in affecting patient satisfaction with quality of health care should be conducted. As a part of this research, the following recommendations should be considered:

1. Utilization of an instrument that consistently assesses patient-physician interaction (both with a usual provider and with the last provider seen).
2. Utilization of an instrument that adequately measures influences on patient outcomes such as health literacy and diabetes self-management practices.

3. Implementation of both qualitative and quantitative research methods (Roter & McNeilis, 2003), such that further insight might be gained regarding the dynamics of patient-physician interaction and its impact on patient health outcomes, including satisfaction with quality of health care.

4. Research should be designed to assess patient-provider communication longitudinally and across various settings, such as in times of stress and outside the context of routine primary care. Likewise, research that considers the role of continuity of care, end-of-life planning, clinical trials participation and genetic testing, will prove areas for considerable research (Roter & McNeilis, 2003). Given the cross-sectional data utilized in the current study, no causal relationships could be assessed. Nor can any assumptions be made other than those made based on the questions asked in the survey. However, longitudinal studies would provide more insight regarding long-term influences on patient satisfaction with quality of health care, in various settings and across changing conditions.

5. Future research should consider the myriad of influences on patient satisfaction with quality of care, including technological advances in routine patient-provider communication, particularly regarding diabetes care. For instance, this research will prove essential to meet the growing needs of the aging “baby boomer” population as well as the savvy, “millennium generation”. Both groups may challenge current patient-provider interactions in ways not yet fully explored. Likewise, with the “browning of America”, studies of providers’ racial and/or ethnic background and its influence on patients deserve more attention (Roter & McNeilis, 2003).

Implications for Health Education

The following implications for health education are deduced based on the study findings, conclusions from the data analysis, and investigator recommendations:

1. Health educators should design programs to improve the health status of patients that involve physicians, ensuring that physicians are aware of the role of time spent with patients, establishing confidence and trust with patients, and recommending diabetes-related services, such as hemoglobin A1c at least every 6 months. Additionally, health educators should facilitate discussions among patients regarding preferences and participation in medical encounters to ensure improved health status. Finally, programs should compare the role of physicians to that of health educators to assess if time spent, confidence and trust, and use of services are as important for health educators as for physicians.

2. Theory-based research should be developed that illuminates the relationship among patient-physician interaction factors and (patient-health educator interaction). Thereby, educational and intervention efforts can be developed that can be employed across different settings and among varying populations.

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APPENDIX A

Table 1

Univariate Logistic Regression

	Unadjusted Odds Ratio	95% CI	χ^2	<i>P</i>
Health Status				
Fair/Poor	2.180	(1.019, 4.666)	4.0307	.04 ^a
Good	1.479	(.662, 3.303)	.9091	.34
Choice of Location of Care				
No Choice	1.027	(.0356, 2.957)	.0024	.96
Some Choice	1.367	(.696, 2.687)	.8228	.36
Very Little Choice	2.277	(1.021, 5.079)	4.0427	.04 ^a
Regular Doctor or Other Health Professional				
No	2.466	(1.220, 4.988)	6.3125	.01 ^a
Read and Understand Prescription				
Difficult or Didn't Get Any Info From Doctor	4.246	(1.515, 11.899)	7.5606	.00 ^a
Read and Understand Information or Booklets				
Difficult or Didn't Get Any Info From Doctor	2.439	(1.116, 5.329)	4.9948	.02 ^a
Doctor Listen				
Less than Everything	3.820	(2.096, 6.962)	19.1655	<.00 ^a
Understand Doctor				
Less than Everything	2.829	(1.580, 5.064)	12.2460	.00 ^a
Questions, Not Discussed				
No	.399	(.190, .838)	5.8879	.01 ^a
Confidence and Trust in Doctor				
Not a Great Deal	4.478	(2.394, 8.374)	22.0243	<.00 ^a
Treat with Respect and Dignity				
Not a Great Deal	3.794	(1.949, 7.385)	15.3993	<.00 ^a
Involved in Decisions				
Not as Much as Wanted	3.698	(1.986, 6.886)	16.9901	<.00 ^a
Spend Time				
Not as Much as Wanted	5.268	(2.901, 9.565)	29.8043	<.00 ^a
Hemoglobin "A1c" in Last 6 months				
Yes	.264	(.110, .635)	8.8507	.00 ^a
Foot Exam in Last Year				
Yes	.529	(.291, .962)	4.3550	.03 ^a

^a Significant at the .05 level

APPENDIX B

Table 2

Multivariate Logistic Regression

	Adjusted Odds Ratio	95% CI	P
<i>Patient-Physician Interaction</i>			
Doctor Listen	1.035	(.430, 2.490)	.93
Understand Doctor Questions, Not Discussed	1.438	(.596, 3.466)	.41
Confidence and Trust in Doctor	1.614	(.638, 4.083)	.31
Treat with Respect and Dignity	2.747	(1.008, 7.488)	.04 ^a
Involve in Decisions	.946	(.372, 2.409)	.90
Doctor Spend Time	1.111	(.506, 2.439)	.79
	5.213	(2.358, 11.523)	<.00 ^a
<i>Diabetes-Related Services</i>			
Hemoglobin "A1c"	.233	(.081, .675)	.00 ^a
Foot Exam in Last Year	.893	(.379, 2.105)	.79
<i>Sources of Care</i>			
Choice of Location of Usual Care			
No Choice	.668	(.197, 2.264)	.51
Some Choice	.964	(.434, 2.139)	.92
Very Little Choice	1.149	(.417, 3.168)	.78
Regular Doctor or Other Health Professional	1.782	(.773, 4.107)	.17
<i>Health Literacy</i>			
Read & Understand Prescription	1.350	(.336, 5.421)	.67
Read & Understand Information or Booklets	1.273	(.457, 3.550)	.64
<i>Demographics</i>			
Health Status			
Fair/Poor	2.235	(.898, 5.563)	.08
Good	1.283	(.512, 3.218)	.59
	$\chi^2 = 53.0577$	DF=17	$p = <.00^a$

^a Significant at the .05 level

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