Diet Adherence Factors Affecting Diabetic Older Adults

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Diet Adherence Factors Affecting Diabetic Older Adults

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Abstract

Diabetes is a chronic disease which affects a significant portion of the United States population. Effective management requires adherence to a prescribed dietary regimen. Many diabetics have difficulty adhering to their recommended diet. This descriptive study explored diabetic diet adherence in older adults. The following research question guided the study: What are the factors that affect diabetic diet adherence in older adults? Sr. Callista Roy’s adaptation theory provided direction for the study. Thirty-two diabetic patients age 45 years and older in Louisiana comprised the sample. The sample included rural and urban patients of a home health agency and a primary care clinic. Data was collected utilizing a modified version of the Travis (1997) Diabetic Diet Questionnaire. Frequency distributions were used for data analysis. Factors that were predominately found to have a positive effect on dietary adherence included understanding the diabetic diet, motivation, and knowing which foods to buy. The factors that were reported to have a predominately negative effect on dietary adherence included the holidays and Southern cooking. Meal cost and emotions or feelings were reported to have a predominately neutral effect on dietary adherence. The findings of this study support the need for
dietary teaching for diabetic clients. The Nurse Practitioner has a responsibility to explore factors in a client’s internal and external environment which may play a role in dietary adherence when providing instruction to diabetic clients. Recommendations for further research should investigate the following: (a) a larger, more culturally diverse population, (b) qualitative research methods, (c) beliefs of nurse practitioners regarding factors affecting diabetic dietary adherence, and (d) adherence after individualized diabetic dietary teaching which explores factors found to effect adherence.
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Chapter I
The Research Problem

With the advances in medical research, the United States population is living longer with chronic illness. Diabetes mellitus is a chronic illness that affects nearly six percent of the United States population (Centers for Disease Control and Prevention, 1997). Diabetes has been described as a lifelong disease in which patients are responsible for over 95% of their care (Anderson, Fitzgerald, & Oh, 1993). Effective management of this disease requires adherence to dietary guidelines, physical activity recommendations and possibly, a medication regimen. The most difficult lifestyle change has been found to be dietary modification which is also considered the most important facet of diabetes control (Travis, 1997). The focus of this study was diet adherence in older adults who have diabetes mellitus.

Establishment of the Problem

According to the Centers for Disease Control (CDC), diabetes affected over 15 million United States residents in 1997. Each year over 700,000 new cases of diabetes are diagnosed. This disease has cost health care in the U.S. approximately 92 billion dollars for 1992, resulting in approximately 15% of the total U.S. health care costs.
According to the CDC’s National Center for Health Statistics (1997), diabetes contributed to 187,800 deaths in 1995 alone.

Healthy People 2000 identified the increasing numbers of older adults as having the largest impact on health care and accounting for the largest amount of health care spending (U.S. Department of Health and Human services, 1992). The CDC’s National Center for Health Statistics reported 53,894 deaths caused by diabetes in 1993 in the United States. Of that number, 51,429 deaths occurred in people that were over 45 years of age (1995). Type 2 diabetes, accounting for 90-95% of all cases of diabetes, usually occurs over age 45 years (American Diabetes Association, 1997a).

Although there is no cure for diabetes, researchers have suggested that glycemic control may reduce morbidity, mortality, complications, and treatment costs of diabetes. This glycemic control may be achieved through adherence to dietary and physical activity regimens, taking medications, and monitoring blood glucose levels (Susman & Helseth, 1997). When diabetes is not controlled, it can lead to many serious and life-threatening complications. Many individuals with diabetes end up with heart disease, peripheral vascular disease, retinopathy, and renal disease which may lead to blindness, lower extremity amputations, or kidney failure requiring dialysis or transplant (Nurymberg, Kreitler, & Weissler, 1996).
Although dietary therapy has been seen as the cornerstone to diabetes control, this is the area in which patients have been found to have the lowest incidence of adherence (Ary, Toobert, Wilson, & Glasgow, 1986). Dietary therapy is seen as one of the most difficult aspects of the diabetes regimen (American Diabetes Association, 1997b). Adherence to a dietary regimen requires that a patient must learn specific dietary requirements and understand the ramifications of non-adherence. Thus, the patient must be able to alter their lifestyle to promote proper eating habits (Boehm, Schlenk, Funnell, Powers, & Ronis, 1997). Adhering to dietary guidelines means choosing foods appropriately in constantly changing family, work, and peer environments (Schlundt, Rea, Kline, & Pichert, 1994).

In regard to health care, adherence has been described as "the extent to which a person's behavior coincides with medical advice" (Travis, 1997, p.152). A more elaborate description of adherence relates it as "a collaboration or active alliance between a health care provider and patient in which both endeavor to guarantee the patient's self sufficiency in the self-management of his or her condition" (O'Brien, Petrie, & Raeburn, 1992, p.435).

Many factors can effect adherence. These factors include personal motivation, ethnic background, emotions, schedule, family, friends, holidays, and financial resources (Travis, 1997). Patients' attitudes or feelings about their illness also can have an influence on their
level of adherence. Some of these factors may facilitate the patient’s progress, while others can be barriers (Travis, 1997). Changes in lifestyle may result in patient's feeling that they are losing a sense of freedom in their life. This threatened loss of freedom may result in poor or partial adherence to the prescribed diabetic regimen resulting in poor glycemic control (Burke & Dunbar-Jacob, 1995).

Non-adherence, a common phenomenon, is most predominant during the first year of treatment (Burke & Dunbar-Jacob, 1995). "The reasons cited most often are complexity, inconvenience, and duration of the regimen; changes in lifestyle required by the regimen; occurrence of side effects; cost of treatment; and skills needed for implementation of the regimen" (Burke & Dunbar-Jacob, 1995, p.63). In a survey of over 600 diabetic patients, nearly two-thirds agreed that following the recommendations for diabetes care was not easy. Of these patients, only 20% claimed to strictly follow dietary advice (Roper Starch Worldwide Survey for Eli Lilly, 1996). Non-adherence occurs in all ages, ethnic groups, socioeconomic classes, and with both acute and chronic illnesses (Burke & Dunbar-Jacob, 1995).

German (1988) explained that non-adherence had a negative effect on the course of treatment, increased the need for costly diagnostic procedures, and threatened the reliability of effectiveness evaluations. Non-adherence has
been found to have a significant impact on morbidity and overall cost of healthcare (Mason, Matsuyama, & Jue, 1994). For this reason, this study examined factors that have been found to affect diabetic diet adherence.

Significance to Nursing

Adherence to a prescribed regimen has a major impact on the outcome of diabetes mellitus. Promoting adherence includes education to provide the patient with rationales for his/her plan and exploration of fears and hesitations toward change in lifestyle (Travis, 1997). Patients have the option to play a role in determining the outcome of treatment and the quality of life. The clinician has the responsibility of making sure the patient is informed and understands the recommended diet (Arnold et al., 1996). “The most well established health care regimens are worthless if a patient chooses not to comply with the recommendations of the health care system” (Cameron, 1996, p.245).

The clinician should not believe that education alone guarantees adherence to recommendations (Burke & Dunbar-Jacob, 1995). Adherence should be viewed as a continuum and should be frequently re-evaluated. Adherence should not be taken for granted if a patient was adherent with a regimen in the past. Each lifestyle change may be looked upon differently and should be discussed with the patient (Mason et al., 1994).
According to the American Diabetes Association (ADA), there is no one "ADA" or "diabetic" diet, instead the primary care provider must collaborate with the patient to devise the recommended dietary regimen. This should be based on the patient’s individualized assessment and goals of therapy (1997b). If the patient participates in the decision-making process, adherence is likely to be improved (Susman & Helseth, 1997).

Nurse practitioners (NP), as primary care providers, need to be cognizant of the strengths or weaknesses of the patient when providing instruction. The NP needs to explore the patient’s perceptions to barriers of adherence before completing the education process (Cameron, 1996; Travis, 1997). Considerations should be given to a patient’s age, surroundings, daily schedule, eating habits, social situations and personality, and cultural background (ADA, 1998). With this vital information, the clinician and patient can work together to create a plan of care with reasonable, agreed upon goals that are individualized for that particular patient (Travis, 1997).

Further research and theory development exploring issues regarding adherence may enhance patient education. Little research has been conducted in the South where many cultural traditions revolve around food. Therefore, the current study may provide information which could enhance teaching strategies of nurses to promote levels of dietary adherence (Kavanagh, Gooley, & Wilson, 1992).
Theoretical Framework

“Chronic illness represents a challenge in adaptation reaching far beyond mere biochemical or physical changes to alterations in the way one perceives and interacts with those within the environment” (Larkin, 1987, p.540). The Roy adaptation model for nursing served as the theoretical framework for this study. Roy believed that nursing as a science related processes by which a person is positively affected by their health status (1976). Brower and Baker (as cited in Marriner-Tomey, 1994) believed that Roy’s model provided direction for practice, education and research because it considered goals, values, the client, and practitioner interventions.

Diabetes mellitus is a chronic illness which affects many aspects of a person’s lifestyle (Burke & Dunbar-Jacob, 1995). Sr. Callista Roy views person as a living system that is always adapting to internal and external environmental stimuli to attain the optimum level of wellness (1976). A person diagnosed with diabetes is faced with his or her illness on a daily basis, including dietary concerns, physical activity, and medications (Susman & Helseth, 1997). Roy (as cited in Marriner-Tomey, 1994) believed that adaptive behavior can promote the integrity of the person, leading to health. Adaptation to lifestyle changes can promote health for the diabetic patient (Burke & Dunbar-Jacob, 1995).
Roy’s (as cited in Marriner-Tomey, 1994, p.280) view of environment includes “all the conditions, circumstances, and influences surrounding and affecting the development and behavior of persons or groups”. Roy (as cited in Marriner-Tomey, 1994) believes that in order to respond positively to environmental changes, the person must adapt. This research explored factors in a patient’s internal and external environment that affect diabetic diet adherence. These factors, such as friends, family, and schedule, are what Roy calls confronting stimuli. Roy believes that patients can attain the optimum level of wellness if they are able to adapt to confronting stimuli (Roy, 1976).

Roy (as cited in Marriner-Tomey, 1994, p. 250) sees health as “a state and a process of being and becoming an integrated and whole person. Lack of integration represents lack of health”. A diabetic patient is faced with a complex regimen to achieve glycemic control in order to prevent or delay complications. This control includes adhering to a dietary regimen, following exercise recommendations, and complying with medications (Burke & Dunbar-Jacob, 1995). Roy (as cited in Marriner-Tomey, 1994) believes that as man moves along the health-illness continuum, obstacles will be met requiring adaptation.

Roy believes that it is the nurse’s role “to assess patient behaviors and factors which influence the adaptation level and to intervene by manipulating the influencing factors” (Roy, 1976, p.7). For diabetic
patients focusing on dietary concerns, the nurse practitioner assists the patients in identifying those factors that influence their diet adherence negatively or positively (Schlundt et al., 1994).

Roy recommends a six-step nursing process to administer nursing care to promote adaptation in situations of health and illness, such as diabetes. In this process, the nurse practitioner first, assesses behaviors, such as eating habits, and then, assesses the stimuli or factors that are affecting those behaviors. Next, the nurse makes a diagnosis of the person's adaptive state, adherence or non-adherence, and sets goals to promote adaptation. These goals include glycemic control, weight control, and prevention or delay of complications (Burke & Dunbar-Jacob, 1995). Nursing interventions are targeted at managing the stimuli to promote adaptation. The last step of this process includes evaluation of glycemic control and dietary adherence. Roy (as cited in Marriner-Tomey, 1994) feels that if this process is applied, the stimuli will be managed, not the patient, thereby promoting health.

The onset of chronic illness creates a scenario in which patients and those close to them are faced with major life-style adaptations (Thorne, 1990). Roy's view of the adaptation process is "man's positive response to a changing environment" (Roy, 1976, p.12). Following a restricted dietary regimen, such as that in diabetes, requires adaptation (Schlundt et al., 1994). By knowing
what factors may play a role in diet adherence, diabetic education can be tailored to the individual patient. If the plan of care is approached in this manner, levels of adherence could be improved upon (Travis, 1997).

Assumptions

For the purpose of this study the following assumptions were identified:

1. The responses given by the research participants are truthful.

2. The responses given by the participants are representative of diabetic older adults.

3. Adherence to the prescribed diabetic diet is important in the management of diabetes.

4. Person is a living system that is always adapting to environmental stimuli to obtain an optimum level of wellness.

Statement of the Problem and Purpose of the Study

"A serious problem in the management of chronic illness is the low level of adherence to the treatment schedules that are prescribed by the health care worker" (Kavanagh et al., 1992, p.509). “To facilitate adherence, sensitivity to cultural, ethnic, and financial considerations is of prime importance" (American Diabetes Association, 1998, p. S32). Due to the severity of complications, diabetic diet adherence is vital for quality of life (El-Kebbi et al., 1996). Researchers have found that instruction alone does not guarantee adherence (Burke
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& Dunbar-Jacob, 1995). Many factors may influence a diabetic’s eating habits (Travis, 1997). People make food choices for a variety of reasons, such as income, convenience, cultural upbringing, and personal satisfaction. Following a restricted diet requires changing attitudes, behavior, and eating practices, as well as being committed to the lifestyle change (Hunter, 1995). The purpose of this study was to ascertain factors that have an effect on diet adherence in older adults with diabetes mellitus. This can provide a basis for the development of client centered management programs.

**Research Question**

This study was guided by the following question:

What are the factors that affect diabetic diet adherence in older adults?

**Definition of Terms**

For the purpose of this study, terms were defined as follows:

1. Diabetic diet adherence-

   Theoretical- "diabetic diet-a food plan recommended in the treatment of diabetes mellitus, usually containing limited amounts of simple sugars or readily digestible carbohydrates and increased amounts of proteins, complex carbohydrates, and unsaturated fats. Dietary regulation depends on the severity of the disease and on the type and extent of insulin therapy. The diet should be designed to
prevent wide fluctuation in the amount of glucose in the blood, to preserve pancreatic function, and to prevent diabetic complications." (Urdang, 1994)

"adherence- steady or faithful attachment" (Woolf, 1981, p.14)

Operational- faithful attachment to a recommended food plan to control diabetes as determined by the Diabetic Diet Questionnaire.

2. Factor-

Theoretical- "any one of the causes or happenings that together bring about a result" (Guralnik & Hinze, 1966, p.254)

Operational- any selected situation or occurrence that may have an effect on one’s dietary choices as determined by the Diabetic Diet Questionnaire.

3. Older adults-

Theoretical- "a person who has grown up; having reached full size, strength and maturity" (Guralnik & Hinze, p.11)

Operational- a person with diabetes over 45 years of age who controls their diabetes with diet, oral medications, and/or insulin.

Summary

In this chapter, the problem of diabetic diet non-adherence was established despite research indicating the importance of dietary compliance on morbidity and mortality. Roy’s adaptation model for nursing was
identified and discussed as the theoretical framework, definition of terms was provided, and significance of the study to nursing was addressed. The following chapter will review literature applicable to the study.
Chapter II
Review of Literature

A review of the literature provided information pertaining to chronic illness, mainly diabetes mellitus, and issues related to adherence to prescribed regimens, particularly diet. Only one study was discovered pertaining to diabetic diet adherence in a southern setting.

Michael (1996) focused on the experiences and challenges of adults living with chronic illness and the day-to-day adaptation that is required. This qualitative study sought to describe the actual experiences of people who integrated chronic illness into their lives. A phenomenological design was used and the research was guided by the question: What is the lived experience of integrating chronic illness into one’s life?

Seventeen chronically ill adults were recruited from support groups and individuals identified by health professionals. These adults had to meet the selection criteria which included that they had a chronic illness, were 18 years or older, and were willing to verbalize how they lived with their illness (Michael, 1996).

The sample that was chosen included people ranging from 21 to 75 years in age. The participants included fourteen women and three men and all of the participants
were of the Caucasian race. Their illnesses included diabetes mellitus, coronary artery disease, rheumatoid arthritis, chronic obstructive pulmonary disease, and asthma. The duration of these illnesses ranged from 5-48 years (Michael, 1996).

The participants were given a brief explanation of the purpose of the study on initial contact over the phone. After giving their verbal consent to participate, a time and place were agreed upon to conduct the interview. Prior to initiation of each interview, the participants were informed of their right to withdraw at any time (Michael, 1996).

The interviews were audiotaped and were semi-structured. The questions focused on the individual’s views of their life with chronic illness, the changes that they have encountered, and the positives and negatives that they have experienced throughout the course of their illness. All interviews were conducted by the researcher (Michael, 1996).

The data were analyzed with a modification of Colaizzi’s methodology. This analysis consisted of seven steps: (a) Reading through the subject’s entire description for a sense of the whole, (b) extracting from each subject’s description statements that were significant to the experience of integrating chronic illness, (c) determining meanings for each of the significant statements, (d) repeating each of the first three steps for
each interview and organizing the meanings into themes, (e) developing an exhaustive description of the themes, (f) formulating a statement of identification of the fundamental structure of integrating chronic illness, and (g) validating the findings with the subjects (Michael, 1996).

The analysis identified four major themes including confronting loss, fluctuating emotions, implementing changes, and gaining control of an altered life direction. Each theme included sub-themes. Each theme occurred simultaneously with others and often reappeared with change (Michael, 1996).

Each participant's experiences included some type of loss in their ability to participate in life as they desired. A sub-theme identified with confronting loss was loss of capability. This included feelings of loss of control, increase in dependency, and a decrease in choices. Another sub-theme that emerged was the loss of connectedness. This included feeling isolated, unable to relate to others, and a perception of not being seen as a person but as an illness (Michael, 1996).

Fluctuating emotions occurred as the participants attempted to adapt to the losses and changes in their life. Some people experienced one emotion a majority of the time, while others experienced several feelings at a time. The sub-themes identified included feelings of frustration, guilt, anger, fear, and depression (Michael, 1996).
Making changes in lifestyle were a challenge for participants. Sub-themes identified were changing routines, adding new routines, and struggling with change (Michael, 1996).

Participants felt as though they had to regain a sense of control of their altered life direction. They struggled with attempting to gain control of the changes in their life by seeking support, gaining information, selecting a certain approach, and finding meaning in their illness (Michael, 1996).

Michael concluded that chronic illness was a complex, dynamic, and multidimensional experience for the subjects. Michael also recommended that nurses develop skills to create an atmosphere in which patients feel understood. Nurses need to listen and understand that sorrow is a normal response to chronic illness and is exhausting for the patient. The researcher found that social support was crucial to living with chronic illness and recommended an information hot line for those with questions and frustrations (Michael, 1996).

Michael’s study supports further research to identify interventions effective in overcoming the mental and physical exhaustion of chronic illness. Diabetes is a chronic illness that requires many lifestyle changes. The current study can assist in tailoring diabetic diet instruction to an individual’s needs of the client which can make their lifestyle change a smoother one.
A subsequent review of literature focused on the regimen associated with diabetes mellitus. Wang and Fenske (1996) examined relationships among sources of social support, universal self-care behaviors, and health-deviating self-care behaviors in patients with non-insulin-dependent diabetes mellitus (NIDDM) using oral agents. Orem’s self-care theory was utilized to guide this study. Definitions of terms were provided. Universal self-care (USC) is the practice of performing activities that maintain the integrity of human structure and functioning and general well being. When ill, health-deviating self-care behaviors (HDSC) are needed. HDSC are activities that help manage the disease condition (i.e. taking medications, following a diet, exercising) (Wang & Fenske, 1996).

Three related hypotheses were developed for the study: (a) USC in adults with NIDDM is modified by the source of support, (b) HDSC in adults with NIDDM is modified by the source of support, and (c) Health is modified by the source of support (Wang & Fenske, 1996).

This study used a descriptive correlational design. Subjects were recruited from 25 counties around Knoxville, Tennessee. They responded to announcements placed on bulletin boards of selected pharmacies, an advertisement in a local newspaper, or to an invitation printed in newsletters sent to diabetics in the area. Respondents were sent packets containing an explanation of the study, a consent form for participation, questionnaires that were

Five instruments were used for data collection. Demographic data, including 10 characteristics, was obtained using a questionnaire developed by one of the researchers. One item measured physiological parameters by asking, "What is your blood glucose before you eat?". The Denyes Self-Care Practice Instrument (DSCPI) was used to obtain information regarding universal self-care behaviors and specific self-care behaviors. This instrument consisted of 18 questions scored on a scale of 0 to 100 (Wang & Fenske, 1996).

The Diabetic Self-Care Practice Instrument (DiSCPI) which was modified for use in the particular study measured health-deviation self-care behaviors. This 22-item instrument was modified to exclude information regarding insulin use and the scoring was changed to a Likert-type scale. This questionnaire measured two aspects of health-deviation requisites including awareness and prevention of effects and results of the diabetes, and adherence to prescribed therapeutic measures. The instrument measuring health was the Denyes Health Status Instrument (DHSI-90). This 10-item questionnaire measured an individual’s perceived general state of health and specific dimensions of health and scoring were based on a range of 0-100 (Wang & Fenske, 1996).
The data were computed and analyzed with the Statistical Analysis System (SAS) software. Relationships among variables were examined by Pearson product moment correlation. T-tests were used to differentiate between the means of USC, HDSC, or health between subgroups of the subjects. The level of significance was determined at $P=.05$ (Wang & Fenske, 1996).

Seventy-five questionnaires were returned from the 90 potential subjects. Forty of the subjects were women (53%) and 73 were white, two were black. The respondents ranged in age from 31 to 84 years. Nine questionnaires were not used because of incompletion or outlier scores, therefore the sample size was reduced to 66. Most subjects were currently married (74%) and lived with someone that they considered helpful (76%). Only nine subjects lived alone. Forty-four percent reported walking one mile daily. Fifty percent had been diagnosed with diabetes less than four years prior to the study (Wang & Fenske, 1996).

The researchers determined that the data supported the first hypothesis, regarding USC and social support. USC scores were significantly higher ($\alpha = .05$) in those subjects who received support from friends in addition to family ($p= 22.121$, df=59) than in those reporting no support. Analysis of variance (ANOVA) and Bonferroni t-tests showed a significant difference in scores in two groups of subjects living alone versus subjects living with someone. Subjects living alone or with someone helpful had
much higher USC scores than those living with someone who is not helpful (Wang & Fenske, 1996).

The second hypothesis, pertaining to HDSC behaviors and social support, was also supported. Significantly higher scores ($t=2.0047, P=.0165$) of HDSC behaviors were found in persons who received support from friends in addition to family members. A difference in the mean scores in HDSC between subjects who received support from a diabetes support group and those without support was also significant (Wang & Fenske, 1996).

The source of social support was found to modify the health of adults with NIDDM supporting the third hypothesis. Significantly higher health scores were found in subjects who had support from family, friends, diabetes support groups, or a combination of the latter (Wang & Fenske, 1996).

Additionally, HDSC was found to be significantly negatively correlated with blood glucose. The higher the HDSC score, the lower the reported blood glucose level. There were no significant differences in ranges of blood glucose among the groups of subjects with various levels of support (Wang & Fenske, 1996).

Wang and Fenske (1996) concluded that support of family and friends affects self-care behaviors in patients with NIDDM. A significant correlation was found between HDSC and self-reported blood glucose indicating that adults who reported higher levels of HDSC also reported lower
levels of blood glucose. In this study, HDSC accounted for 34% of the variance in glycemic control. Higher levels of HDSC were found in those subjects with diabetes-specific support plus family support (Wang & Fenske, 1996).

This study could potentially guide many aspects of educational programs for patients with diabetes. Support systems, including family and friends, were found to be factors influencing glycemic control in these individuals. This supports the present research which evaluates the effects of family and friends on diabetic diet adherence. These sources of support must be evaluated when instruction on diabetes regimen, including diet, is provided (Wang & Fenske, 1996).

In another study, Anderson, Fitzgerald, and Oh (1993) examined the relationship between patients' attitudes about diabetes, its treatment and their self-reported adherence to various aspects of the diabetes regimen. The health belief model and the theory of reasoned action were used to guide this study (Anderson et al., 1993).

The Diabetes Attitude Scale was used to measure the attitudes of health care professionals reflecting a range of issues regarding diabetes and the management of diabetic patient care. This quantitative study used a revised version of the questionnaire including modification of the technical language to evaluate beliefs of patients. The 50-item instrument used a 5 point Likert-type scale. In
addition, demographic information was obtained (Anderson et al., 1993).

A total of 2057 surveys were sent out to patients who attended the University of Michigan diabetes clinic and to patients in the nine Michigan communities who were receiving a monthly diabetic newsletter. Overall, 1242 surveys were returned but 40 were not used due to age < 16 years. Therefore, data from 1202 surveys was used for the analysis. The Davis formula was used to classify the diabetes type. This formula uses age of onset, insulin use, and percent of ideal body weight and has been found to be 93% accurate (Anderson et al., 1993).

Chi-square analyses for nominal- and ordinal-scaled variables and analysis of variance for interval-scaled variables were used to determine demographic differences by type of diabetes. Patients with Insulin dependent diabetes mellitus (IDDM) tended to be younger, had more formal education, had a longer duration of diabetes, and rated highest on understanding of diabetes and rating of health. Those with NIDDM not using insulin reported fewest complications and were least likely to have received formal diabetes education (Anderson et al., 1993).

The ten advised self-care behaviors included: taking insulin as instructed, taking diabetes pills as instructed, following a diabetic diet, exercising, testing blood for glucose, testing urine for glucose, inspecting feet,
carrying diabetic identification, carrying sweets (insulin users), and recording test results (Anderson et al., 1993). Patients were placed in one of two groups, low-adherence or high-adherence, according to their self-reported adherence for each of the 10 self-care behaviors. A patient who reported performing the recommended behavior "never", "rarely", or "sometimes" were classified as low adherence for that behavior. Those answering "usually" or "always" were placed in the high adherence group. Patients were not assigned to a particular group for a behavior that was not part of their recommended regimen (Anderson et al., 1993).

Seven diabetes attitude sub-scales resulting from factor analysis of the patient attitude responses were compared with adherence patterns. These included: special training for health care professionals, patient compliance, seriousness of NIDDM, control/complications, impact of diabetes, patient autonomy, and team care including nurses and dieticians (Anderson et al., 1993).

As a whole, the patients in the high adherence groups had more positive attitudes than those in the low adherence groups. There were significant differences between adherence groups on following a diet, patient autonomy, and recording results of blood and urine tests. Patients in the high adherence group for diabetes diet scores differed on the attitudes of concerning special training, patient compliance, glucose control and complications, the negative
impact of diabetes, and the team care approach (Anderson et al., 1993).

Some degree of bias was suspected in that 73% of the participants reported adhering to their recommended diet always or usually. The researchers felt that clients might answer dishonestly because they view noncompliance as failure or cheating. The patients in the high adherence group for diet had a more positive attitude in most areas and reported a less negative impact of diabetes on their lives. Anderson, Fitzgerald, and Oh (1993) felt that high self-reported adherence levels should be looked upon positively if they are in regard to a regimen that the patient helped negotiate to reach their own personal goals.

Participants reported low levels of adherence with exercise. Only 57% reported high compliance. These patients reported lower agreement with the negative impact of diabetes sub-scale. About two-thirds of the participants reported adherence with blood glucose testing and recording. These clients reported a stronger belief that blood glucose control and complications are related and in the seriousness of NIDDM (Anderson et al., 1993).

Generally, patients with positive attitudes toward diabetes were those reporting high levels of adherence. Patients in the high adherence groups for diet, exercise, and glucose monitoring reported higher levels of understanding their illness and reported better overall
health than those in the low adherence groups (Anderson et al., 1993).

Anderson, et al., 1993 concluded that providers of diabetes education should assess and discuss the diabetic’s individual attitudes and beliefs, especially in relation to the more difficult aspects of the regimen. A patient’s commitment to their regimen may be affected by beliefs that can act as barriers or supports. The researchers felt that patient education should be viewed as a process to enable patients to make informed choices about their self-care. This research supported the importance of understanding the difficulties and challenges that patients face in adhering to different aspects of their diabetic recommendations (Anderson et al.). This research supported further research, including the current study, to evaluate factors affecting compliance to these difficult regimens.

Another study looked at factors believed to affect adherence to the diabetic diet recommendations. Travis (1997) sought to identify how selected factors influenced patients’ adherence to diet regimens for diabetes and to determine the effect of demographic characteristics on adherence. The selected factors included personal motivation, ethnic cooking habits, emotions, schedule, family, friends, holidays, restaurant dining, finances, understanding of meal plan, and knowledge of what foods to buy. The demographic characteristics identified were age, gender, treatment regimen, length of diagnosis, and who
prepared meals. The dependent variable measured was adherence to diet regimen. The researcher defined adherence as the extent to which a person's behavior coincides with medical advice (Travis, 1997).

The studied population included patients receiving treatment for diabetes mellitus at an outpatient diabetes center affiliated with a teaching-based hospital in southwestern Pennsylvania. The participants had to meet the following criteria: (a) previously diagnosed with NIDDM, (b) actively receiving treatment for diabetes at the center, (c) age 18 years or older, (d) seen by a dietician for nutrition education within the past 18 months, (e) and received a printed copy of information about a diet or meal plan. The patients that were scheduled for an appointment during the study period and that met the criteria were asked to participate. A sample of 75 subjects was considered suitable (Travis, 1997).

The instrument used to collect the data was a 75-item questionnaire containing three parts. The first part contained multiple-choice questions regarding demographic characteristics. The second part concerned the selected independent variables (factors). The patients were asked to choose a response of negatively, neutral, or positively to indicate their perception of the effect the factors had on their adherence. The third part had questions regarding knowledge about diet regimen and issues such as
understanding. There was also an area for comments (Travis, 1997).

The data were analyzed with the Statistical Package for Social Science program by the Office of Measurement and Evaluation (SPSS) at the University of Pittsburgh. Frequency distributions and chi-square analyses were performed on the data. The largest age group (44%) represented was persons 65 and older, and the majority of the participants were female (57.3%). Most had been diagnosed for 1 to 5 years (45%), used insulin (52%), and prepared their own meals (61.3%). The majority of the sample chose a neutral effect for factors of ethnic cooking habits, restaurant dining, family, friends, and financial resources. Emotions and holidays were cited to have a negative effect. A person’s schedule was thought to have an equally neutral and negative effect. The factors that were thought to have a mainly positive effect included personal motivation (62.7%), understanding of the meal plan (61.3), and knowledge of what foods to buy (73.3%) (Travis, 1997).

A majority of the participants claimed they had been instructed as to why to control diet to manage diabetes and that they completely understood their meal plan after their first session with the dietician. All of the participants replied that they thought it was important to follow a meal plan for diabetes control. Twenty of the participants claimed to follow their diet daily, 29 claimed to use it 4 to 6 days a week, 16 said that they used it 1 to 3 days,
and 10 reported using it less than 1 day per week (Travis, 1997).

Using a chi-square analysis, the researcher determined that schedule (57.1%) and emotions (71.4%) have a negative effect on the younger participants. Emotions also were noted to effect the women negatively (53.5%). A greater number of the participants who attended more than one session with the dietician (77.2%) used their diet plan four or more days a week (Travis, 1997). Travis (1997) found through the comment section that some of the participants could not attend follow-up sessions due insurance limitations.

Travis (1997) concluded that age and gender were two findings that did have a significant affect on adherence. Personal motivation was found to exert a greater positive influence on the use of dietary guidelines. This study revealed that patients believe that following a dietary regimen is important in the control of their diabetes (Travis, 1997).

The researcher concluded that dieticians needed to consider the demographic variables of patients when teaching. Patients should know why they are following a special diet and the effects of their diet on diabetes. Although limited by some insurance companies, follow-up sessions may benefit by providing reinforcement of previous teaching (Travis, 1997). This research, conducted in Pennsylvania, supports the current study to conduct this
research in another part of the country, the Southern United States.

Schlundt, Rea, Kline, and Pichert (1994) sought to identify and describe commonly occurring challenges to dietary adherence for adults with diabetes mellitus. The variables of interest included situational obstacles, which impacted adherence to diet regimen. The researchers wanted to develop a taxonomy of situations that stimulate these obstacles in hopes of improving dietary instruction and subsequent dietary adherence (Schlundt et al., 1994).

This research used a quantitative, non-experimental design. The target population was adults with diabetes mellitus. The accessible population included adults from an outpatient diabetic clinic who were asked to participate before or after their appointment. A convenience sample of 26 adults was obtained. This included 10 men and 16 women with the majority of the participants being white (77%). Twelve of the subjects were insulin dependent diabetics (Schlundt et al., 1994).

Survey data was gathered through self-report. After obtaining informed consent, a 45 to 60 minute structured, recorded interview was used to collect information. Two research assistants who had attended a two-hour training session conducted the interviews. Demographic information was obtained along with each patient’s feelings about their dietary plan and their adherence to it. The main area that was explored included situations that patients found to
cause difficulty in diet adherence. Patients were asked to provide specific examples and their feelings in these situations. The interviewers used standardized prompts if more information was needed. Through transcription of the taped interviews and careful reviewing of the data, 69 problem situations were identified by consensus of two researchers (Schlundt et al., 1994).

To identify homogenous groups of obstacles, cluster analysis was used. A coding system developed through previous research was used including 32 features of problem situations. Two investigators used this coding system to classify the 69 situations for inclusion or exclusion of each feature. The scoring data matrix was then converted to standardized z scores. Through computation of a squared Euclidean distance matrix, the similarity between each item and every other situation was quantified. A hierarchical cluster analysis was then used. The goal was to identify a set of item clusters, which would give more concrete, meaningful definitions of the types of problem situations. (Schlundt, et al., 1994)

The hierarchical clustering resulted in 12 homogenous situational description clusters. Each cluster was then named to describe the attributes of that cluster. The 12 types of problem situations identified were: negative emotions, resisting temptation, eating out, feeling deprived, time pressure, tempted to relapse, planning,
competing priorities, social events, family support, food refusal, and friends' support (Schlundt et al., 1994).

Schlundt et al. (1994) concluded that the 12 identified clusters should be used as a systematic assessment tool to denote problem areas. The researchers recommended: dieticians should consider and examine how much an individual's personal, family, career, and recreational goals create situations that do not promote dietary adherence; dieticians should explore the patient's eating habits in response to stress and emotions; educators should assess the patients resistance to temptation, cravings, and pressure from others at home, work and social gatherings; and educators should examine the patient's social support and history of adherence or non-adherence (Schlundt et al., 1994).

Schlundt et al.’s (1994) research supports the current study’s attempt to identify factors that affect diabetic diet adherence. The taxonomy assessment could be helpful in the search for areas of strength and weakness to adherence. Educational interventions could be targeted for creation of realistic goals for clients by priority (Schlundt et al.).

In another study, El-Kebbi et al. (1996) sought to identify barriers to dietary adherence for non-insulin dependent diabetics to revise dietary strategies. The dependent variable measured was diet adherence. The independent variables included habitual, economic, social,
and conceptual factors, which were identified as barriers to dietary adherence (El-Kebbi et al.).

The researcher used a descriptive, non-experimental design. The target population was low-income urban African Americans with NIDDM. A convenience sample of 45 adults was gathered from an outpatient diabetes clinic in Atlanta, Georgia (El-Kebbi et al., 1996).

After obtaining verbal consent, clients participated in a 30-minute informal group discussion regarding barriers to diabetic diet adherence. The groups were comprised of two to five patients and a moderator, who was either a physician or research associate. Data were gathered over a 16-week period from 16 small group interviews (El-Kebbi et al., 1996).

Open-ended questions regarding identified problem areas were formulated from the initial sessions for following interviews. The sessions were not audio-taped but the moderator took notes. At the end of each session, demographic information was collected. One of the authors assessed the information gathered. If two or more patients referred to a certain situation it was classified by topic (El-Kebbi et al., 1996).

El-Kebbi et al. (1996) found that the average age of the participants was 52 years and the majority (62%) was women. Seventy-one percent of the participants were unemployed and nearly half of the participants had an income below the Federal Poverty Guidelines. For a subset
of subjects, body mass index indicated obesity and hemoglobin A1C reflected inadequate glycemic control. Insulin was the treatment for nearly half (46%) of the subjects (El-Kebbi et al.).

Through analysis of the discussion group notes, the researcher found that the patients named diet adherence as the most difficult component of their regimen. Four major barriers were identified. They included habitual, economic, social, and conceptual factors. The habitual factors pertained to preferring sweet and high fat foods. Economic factors included feeling that “diabetic” foods were too expensive. Pressures of family, friends, restaurant dining, and holidays were named as social factors. The conceptual factors included difficulty in understanding diet instruction and food labeling (El-Kebbi et al., 1996).

El-Kebbi et al. (1996) concluded that patient instruction should be individualized to meet the African American patient’s needs. Teaching must take both cultural and educational background into account. Rather than introducing new foods, ethnic foods can be modified to meet dietary guidelines. The patient needs to be instructed on cost efficient ways of following the diet. El-Kebbi et al. found that if the patient and their family perceived the seriousness of diabetes, then the patient may adhere and the family may support the patient (El-Kebbi et al.).

This study found the use of discussion groups an effective method of identifying barriers to dietary
Further research in this area (Nurvymer et al., 1996) indicated that the high rates of noncompliance with dietary guidelines and the severe health consequences that are prevalent among patients with diabetes have been studied. (El-Rebbat et al., 1996) Since then, few studies have been found that examined the issue in the southeastern United States.

This education has prompted the research on factors affecting education. A guest for improving compliance and enhancing adherence in diabetes education (McMohan, 1996; Schindler et al., 1997; El-Rebbat et al., 1993; Travis, 1997; Schindler et al., 1994; El-Rebbat et al., 1992) even among nonadherent patients (Blumenthal, 1996; Wang & Enkse, 1996; Anderson et al., 1995) encountered in trying to improve with chronic illness, particularly the不信 study documented the difficulties.

Summary

The attended studies documented the difficulties in studying the attitudal differences of different ethnic groups' dietary adherence may be improved (El-Rebbat et al., 1996). This study supports the need for the current study in exploring diabetes diet barriers that exist for patients from the southern region of the United States.
Chapter III
The Method

The purpose of this study was to ascertain factors that have an effect on diet adherence in older adults with diabetes mellitus. This chapter will explore the research design, variables, methodology, and procedure for data collection and data analysis.

Design of the Study

A non-experimental, descriptive design was employed in conducting this study. Descriptive research "aims predominately at describing phenomena rather than explaining them" (Polit & Hungler, 1995, p.188). This quantitative study utilized survey research to assess factors affecting diabetic diet adherence. Survey research is described as "obtaining information from a sample of people by means of self-report" (Polit & Hungler, p.188). This study was an adaptation of prior research conducted by Travis (1997) in Pittsburgh, Pennsylvania. The instrumentation and setting were modified.

Variables

For this study, the variable of interest was factors affecting diabetic diet adherence. An intervening variable may have been honesty of responses. The controlling variables were age and diagnosis.
Setting, Population, and Sample

The setting of this study was the State of Louisiana, predominately the Baton Rouge area and surrounding areas. This included both rural and urban areas. The estimated number of patients over age 45 diagnosed with diabetes in Louisiana equaled nearly 130,000 in 1992 and it is estimated that there were just as many undiagnosed cases of diabetes. The number of known diabetes related deaths that year in that age group in Louisiana totaled 2751 (CDC, 1995). The estimated annual economic cost of diabetes in Louisiana is over two billion dollars (National Center for Chronic Disease Prevention and Health Promotion, 1995). Thus, the target population selected was diabetic adults over the age of 45 years of age. This population included patients controlling their illness with diet, oral medications, and/or insulin. The sample included clients from a home health agency and a primary care clinic selected as a nonrandom sample of convenience. The actual sample included 32 participants.

Methods of Data Collection

Instrumentation

"Questionnaires are paper and pencil instruments designed to gather data from individuals about knowledge, attitudes, beliefs, and feelings" (LoBiondo-Wood & Haber, 1994, p.353). The instrument utilized for this research was modified from a questionnaire developed by Terri Travis (1997) (see appendix A). This questionnaire was evaluated
by peer review for use with the sample. A decision was made to simplify the terminology included. The modified tool, titled Diabetic Diet Questionnaire, was evaluated by peer review and wording was again changed for clarification. After a third peer review, the tool was found to be suitable for use in the study (see appendix B). There was no established validity or reliability of the tool but the researcher assumed that it had face validity within the confines of the study.

The Diabetic Diet Questionnaire is a 15 item multiple choice questionnaire consisting of three parts. The first seven items consisted of questions regarding demographic information. In Questions 8-11 participants indicated the effect that selected factors had on their diet adherence. The last four questions are concerned with education and issues such as understanding or use of diet recommendations. Each of the 15 questions was independent and analyzed separately by counting the individual responses. There was no total score. The questionnaire required 10-15 minutes to complete.

Procedure

After obtaining approval from the Committee on Use of Human Subjects in Experimentation of Mississippi University for Women (see appendix C), consent forms explaining the purpose of research and procedures were obtained from a home health agency and a primary care clinic (see appendices D & E).
For home health patients, those fitting the criteria were identified through computer search and were visited in their homes after receiving their permission to do so over the phone. A consent form explaining the purpose of the study and their right to withdraw from the study was presented to the patients. After obtaining written consent from the participants (see appendix F), the questionnaire was administered to the patients by the researcher.

For primary care clinic patients, those fitting the criteria were identified through a chart review of scheduled patients on a given day by the researcher. Patients were approached while waiting to see their provider, written consents obtained, and questionnaires administered by the researcher.

Participants were instructed not to put their name on the questionnaire. Completed questionnaires were separated from the consent forms and placed in different envelopes to maintain the subject's right to privacy.

Data Analysis

Descriptive statistics were used to examine the collected data. Each question on the Diabetic Diet Questionnaire was individually analyzed using frequencies and percentages. Since no inferences were made from this data, they were labeled descriptive statistics (Polit & Hungler, 1995).
Summary

The intention of this study was to ascertain factors that have an effect on diabetic diet adherence in older adults with diabetes mellitus. In this chapter, the design of the study, the variables, limitations, and the setting, population, and sample were discussed. Instrumentation was explained in detail as well as the methods of data collection. Chapter IV includes a presentation of the research findings with a discussion of the findings and conclusions drawn from the research following in Chapter V.
Chapter IV

The Findings

The purpose of this study was to ascertain factors that have an effect on diet adherence in older adults with diabetes mellitus. A descriptive design guided this research. In this chapter, a description of the sample is presented as well as findings from the data analysis. Data were analyzed using frequencies and percentages.

Description of Sample

The convenience sample (N=32) consisted of older adults who were either clients of a home health agency (n=8) or a primary care clinic (n=24) in Southern Louisiana. All subjects were 45 years of age or older and were diagnosed with diabetes mellitus. The sample included 25 (78.1%) females and 7 (21.8%) males. Ages ranged from 45 to 93 years with a mean age of 67.6 years. The participants consisted of African Americans (n= 10, 31.2%) and Caucasians (n= 22, 68.7 %). Only eight (25%) participants reported receiving assistance from state or federal programs.

The participants were asked questions regarding their diabetic history and lifestyle. Five participants (15.6%) reported controlling their diabetes with diet alone, 15 participants (46.8%) were prescribed oral medications, 11
participants (35.5%) reported using insulin, and one participant (3.1%) reported using both oral medications and insulin. Three participants (9.3%) reported being diagnosed with diabetes < 1 year ago, 9 individuals (28.1%) reported having diabetes mellitus 1-5 years, 6 individuals (18.7%) had been diagnosed for 6-10 years, while the largest group (n=14, 43.7%) had been diagnosed as diabetic for > 10 years. Findings regarding meal preparation are presented in Table 1.

Table 1.

<table>
<thead>
<tr>
<th>Primary Person Responsible for Diabetic Meal Preparations</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>23</td>
<td>71.8</td>
</tr>
<tr>
<td>Family</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td>Friend or Neighbor</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td>Nursing Home</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td>Self and Family</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td>Self and Meals on Wheels</td>
<td>1</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Note. N=32

Results of Data Analysis

Descriptive statistics were generated to answer the following research question: What are the factors that affect diabetic diet adherence in older adults? The Diabetic Diet Questionnaire was used to obtain information regarding older diabetic adults' perceptions of the effects
of selected factors on their diet adherence. The participants were asked to choose a response of either helps me follow my diet, doesn’t have an effect, or makes it hard to follow diet for each of the 11 factors.

Motivation was the first factor investigated. Motivation was thought to be helpful by most participants (n=21, 65.6%). Eight (25%) participants reported that motivation had no effect on their dietary adherence, and three (9.3%) participants chose the response makes it harder. The second factor included was Southern cooking. Southern cooking was defined as “cajun” and “homestyle” including highly seasoned foods, many fried and high fat foods, and foods prepared with salt pork and butter to enhance flavor. Southern cooking was found to make diabetic diet adherence harder for many of the participants (n=19, 59.3%). Eleven individuals (35.3%) felt that southern cooking did not have an effect and two individuals (6.2%) felt that it helped them to adhere to their diet. Emotions or feelings were thought to have no effect on dietary adherence by 18 participants (56.2%), seven (21.8%) respondents felt that emotions helped and seven (21.8%) also felt that emotions made it harder to adhere to their diet.

Many respondents (n=17, 53.1%) believed that their daily schedule did not have an effect on dietary adherence. Twelve (37.5%) participants thought that their schedule helped them to adhere to their diet, while only three
(9.3%) of the participants found that their schedule made adherence harder. The majority (n=17, 53.1%) felt that their family helped them adhere to their diet, while 12 (37.5%) individuals responded that their family had no effect and only three (9.3%) participants felt that their family made it harder for them to follow their diabetic diet. Twelve (37.5%) of the participants believed that their friends helped them adhere while 17 (53.1%) participants reported that friends had no effect and three (9.3%) participants reported that friends made dietary adherence harder.

A significant number of participants (n=20, 62.5%) believed that the holidays made dietary adherence harder while eight (25%) of the sample felt that there was no effect, and four (12.5%) participants identified the holidays as helping them to adhere to their diet. Twenty (62.5%) of the participants believed that money or costs of following a special diet had no effect on their dietary adherence while eight (25%) participants found that it makes dietary adherence harder, and four (12.5%) participants felt that it helped them.

Lastly, twenty-two (68.7%) participants felt that understanding their diet helped them while seven (21.8%) participants found that it had no effect and three (9.3%) participants found that it made it harder to adhere to their diabetic diet. Knowing what foods to buy was thought to help the participants follow their diet by 21 (65.6%)
respondents, nine (28.1%) respondents felt that it didn’t have an effect, and two (6.2%) respondents thought it made it harder to adhere to their diabetic diet. These results are summarized in Table 2.

Table 2
Dietary Adherence Factors Ranked by Positive, Negative, and Neutral Impact

<table>
<thead>
<tr>
<th>Factor</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Understanding diet</td>
<td>22</td>
<td>68.7</td>
</tr>
<tr>
<td>2. Motivation</td>
<td>21</td>
<td>65.6</td>
</tr>
<tr>
<td>2. Knowing what foods to buy</td>
<td>21</td>
<td>65.6</td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Holidays</td>
<td>20</td>
<td>62.5</td>
</tr>
<tr>
<td>2. Southern Cooking</td>
<td>19</td>
<td>59.3</td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Meal cost</td>
<td>20</td>
<td>62.5</td>
</tr>
<tr>
<td>2. Emotions or Feelings</td>
<td>18</td>
<td>56.2</td>
</tr>
</tbody>
</table>

Note. N=32

1 & 2 are ranked by predominance of using % of sample choice.

The participants also were asked three questions regarding their diabetic diet. The first question asked if participants had been told why to follow a diabetic diet to control their diabetes. Twenty-nine (90.6%) of the
participants reported that they had been told why to follow a diet. The second question asked participants if they understood how to follow their diet. Twenty-nine (90.6%) of the sample answered yes to this question. When asked if they felt that dietary adherence is important in the control of diabetes, all of the 32 participants responded yes.

The participants were asked how many days a week they followed their diabetic diet. Seventeen (53.1%) reported adhering to their diabetic diet seven days a week. Nine participants (28.1%) reported that they followed their diet 4-6 days a week, five (15.6%) reported 1-3 days and only one (3.1%) participant admitted that they follow their diabetic diet less than one day a week.

Summary

The purpose of this study was to ascertain factors that had an effect on diabetic diet adherence in older adults. Thirty-two participants completed the Diabetic Diet Questionnaire regarding factors felt to affect diabetic dietary adherence. Descriptive statistics using frequency and percentages were used to analyze the data.
Chapter V
The Outcomes

Diabetes mellitus is the sixth-leading cause of death by disease in the United States (ADA, 1998). Diabetes requires many changes of lifestyle including adherence to dietary therapy, exercise recommendations, and medication regimens. Although considered the cornerstone of diabetes control, dietary therapy is the area in which levels of adherence are found to be the lowest (Travis, 1997).

Education alone has not been found to guarantee adherence to recommended regimens (Burke & Dunbar-Jacob, 1995). For this reason, the purpose of this study was to ascertain factors that affect diabetic diet adherence in older adults. Roy’s adaptation model was used as the theoretical framework. The following research question guided this study: What are the factors that affect diabetic diet adherence in older adults?

Diabetic adults 45 years of age and older in Louisiana were the target population. A convenience sample of 32 individuals was accessed from a home health agency (n=8) and a primary care clinic (n=24). The Diabetic Diet Questionnaire was used to obtain information regarding demographic data, effects of selected factors on diabetic diet adherence, and issues regarding education and self-
reported levels of adherence. Data were analyzed using descriptive statistics. This chapter summarizes and discusses the findings, conclusions, implications for nursing, and recommendations for further research.

Summary of the Findings

The sample consisted of 32 older diabetic adults who were predominately female (78.1%). Participants ranged from age 45 to 93 years with a mean age of 67.6 years. The majority of the sample was of the Caucasian race (68.7%). All of the other participants were African-American. Only one-fourth of the participants received financial assistance from state and federal programs.

The largest group (46.8%) controlled their diabetes through diet and oral medications and 43.7% of the participants had been diagnosed with diabetes for over 10 years. Additionally, the responses revealed that the majority (71.8%) of the participants prepared their own meals.

One research question guided the study: What are the factors that affect diabetic diet adherence in older adults? Descriptive analysis revealed that understanding the diabetic diet (68.7%) was the factor that most helped the participants to adhere to their diabetic diet. Knowing what foods to buy (65.6%), motivation (65.6%), and family (53.1%) also were factors that were predominately found to help participants adhere to their diet. The holidays (62.5%) and southern cooking (59.3%) were the factors that
were found to make it hardest for most participants to adhere to their diabetic diet. The factors that were felt to have no effect on dietary adherence for most participants included money or costs of following a diet (62.5%), emotions or feelings (56.2%), daily schedule (53.1%), friends (53.1%), and eating out (53.1%).

The participants were asked three questions concerning education and issues such as importance and understanding of diet recommendations. The majority (90.6%) of the participants reported that they had been told why to follow a diabetic diet to control diabetes and that they understood their diet (90.6%). All of the participants (N=32) believed that it is important to adhere to a diet to control diabetes.

The participants also were asked how many days a week they adhere to their diabetic diet. The majority (53.1%) reported adhering to their diet seven days a week with the next largest group (28.1%) reporting dietary adherence 4-6 days a week.

Discussion

The demographic data among the subjects revealed some notable findings. The sample was predominately female which was consistent with many previous studies regarding adherence to regimens of chronic illness, mainly diabetes (Anderson et al., 1993, El-Kebbi et al., 1996; Michael, 1996; Schlundt et al., 1994; Travis, 1997; Wang & Fenske, 1996). This result may be because women make more health
care visits. The majority of the sample reported that they prepared their own meals, which is consistent with the gender. This may be due to the fact that the sample was comprised mostly of women, as women tend to prepare meals in most households. This finding is supported by Travis (1997).

The sample included a majority of people who had been diagnosed with diabetes > 10 years. Length of chronicity may have required more office health care visits or require home health care by subjects. This may have been influenced by the two described settings in which the data was collected. These settings included patients receiving home health care's homes and patients in the waiting room of a primary care clinic. This finding is in contrast to the research done by Travis (1997) in which the largest group that was accessed at an outpatient diabetes center had been diagnosed 1-5 years. This finding may have been because of a criterion for inclusion in Travis's (1997) study that required the participants to have received dietary education from a dietician within the last 18 months.

In comparing the results of data analysis to that of Travis (1997), one difference identified was that a majority (56.2%) of the participants in the present study reported that emotions, a factor of a person’s internal environment, had no effect on their dietary adherence. In Travis’ study, conducted in Pennsylvania, 41.1% of the sample reported that emotions had a negative effect with
only 24.4% reporting that emotions had no effect on their dietary adherence. More information regarding the participants’ emotions and feelings may have been evident through a personal interview rather than a questionnaire.

Travis (1997) included ethnic cooking as a factor on her questionnaire. This factor was found to have a predominately neutral effect (56.2%) on the dietary adherence of the sample. In the current study in Louisiana, the questionnaire was modified to include southern cooking as a factor. Southern cooking, a factor of a person’s internal and external environment, was found to make it harder for a majority (59.3%) of the participants to adhere to their dietary regimen. This finding may be due to the cultural and dietary traditions of the South.

El-Kebbi et al. (1996) studied 45 African-American diabetics and found that 56% believed that they could not afford to buy low-sugar or low-fat foods due to higher costs for these items. In the current study, only 25% found that money was a factor that made it harder to adhere to their diabetic diet. Only 6.2% of the African-American participants reported that money made it harder to adhere to their diet. This may have been because only 25% of the sample received assistance from state and federal programs. The sample in the current study may have been in a higher income bracket than the sample the previous study.

The current researcher found that family helped participants with dietary adherence. This is consistent
with the findings of Wang & Fenske (1993) where family support was found to positively affect behaviors that promote dietary adherence. Family may be classified as a factor of the external environment which according to Roy (1976) impacts adherence. This result supports the need for family diabetic teaching.

Eating out did not have an effect on dietary adherence for 53.1% of the participants with 40.6% of the participants reporting that it made it harder to adhere to their diet. This finding is similar to the research conducted by Travis (1997). Eating out in restaurants and at social gatherings are impacted by the cultural traditions of the South and may tempt the diabetic patient to eat foods that are restricted or to overeat. Eating out is a factor of a person’s environment which can have an impact on adherence (Roy, 1976). Research by Ary et al. (1986) and by Schlundt et al. (1994) found that eating out was seen as a barrier to dietary adherence.

The holidays are another factor of a person’s environment that are affected by cultural traditions (Roy, 1976). The holidays were found to make it harder for the majority of participants. This may be because many people tend to overeat during the holidays. This finding is consistent with previous research (El-Kebbi et al., 1996; Schlundt et al., 1994; Travis, 1997) who also found that the holidays made diet adherence difficult.
Although dietary adherence has been found to be the most difficult area of the diabetes regimen, the majority of the participants (53.1%) reported that they adhere to their diabetic diet 7 days a week. This is better adherence than the findings of Travis (1997) where only 26.7% of the participants reported adhering to their diet 7 days a week. The finding of the current study probably represents some degree of bias consistent with self-reports which has also been found in previous research (Anderson et al., 1994). Arnold et al. (1996) found that patients are likely to reply with answers that reflect what they thought they should have done rather than what they actually did. A more precise measurement of glycemic control, such as Hgb A1C levels may have produced more reliable findings.

The findings of the current study support the use of the Roy adaptation model for nursing to explore diabetic diet adherence in older adults. The significant findings of factors that effect diabetic diet adherence showed that a person’s environment, both internal and external, can have an effect on adherence. The supports the belief that adaptation to these factors, or stimuli, is necessary to promote health.

Limitations

The current study had two potential limitations. The first was potential sample bias. The sample size utilized in the present study may have not been representative of older diabetic adults in Louisiana since this was a small
convenience sample. A larger sample may have provided different findings. The sample had merit in that it included health care seeking diabetics who lived in the same Southern culture.

The second bias concerned instrumentation. The instrument had no established reliability or validity but was reviewed and edited twice by peer review for face validity. Although the questionnaire was modified for clarification, participants had questions regarding the meanings of some of the questions.

Conclusions

Based on the results of this study, several conclusions were made as follows:

1. For the participants of this study, factors having a positive effect on diabetic dietary adherence were motivation, family, understanding of their diet, and knowing what foods to buy.

2. For the participants in this study, factors having a negative effect on diabetic dietary adherence were southern cooking and the holidays.

3. For the participants in this study, factors not having a significant effect on diabetic dietary adherence were emotions or feelings, daily schedule, friends, eating out, and money or costs of following a special diet.

4. Roy’s adaptation model was an appropriate framework for investigation of diabetic diet adherence since
factors identified as positively, negatively, or neutrally impacting adherence could be attributed to internal and external environment.

Implications for Nursing

With the increasing numbers of adults living longer with chronic illness, adaptation to lifestyle changes is vital to preserve quality of life. Diabetes is a prevalent chronic illness that requires glycemic control to prevent serious life-threatening complications. Adherence to a recommended diet regimen is crucial to achieve glycemic control.

The current study supports the need for diabetic teaching for the diabetic and their family to promote adherence to dietary regimens. The nurse practitioner has a responsibility to explore factors in each client’s internal and external environment which may have an effect on their diabetic diet adherence. Knowing the effects of these factors, negative, positive or neutral can assist the clinician in finding the regimen best suited to the client. With the client’s input, the nurse practitioner and client can agree upon goals that are realistic.

Nursing curricula should include instruction regarding patient teaching that promotes adherence to recommended regimens. Advanced practice nurses should be instructed to utilize their teaching and counseling skills to promote healthy lifestyle changes by providing teaching that is individualized. Nurse practitioners should be made aware of
factors affecting diabetic dietary adherence to enhance their teaching strategies.

Theory and research development regarding adaptation to lifestyle changes required in chronic illness could strengthen diabetic education programs. Exploring the beliefs of nurse practitioners regarding adherence to dietary regimens may assist in improving clinical outcomes.

**Recommendations for Further Study**

Based on the findings of this study, the following recommendations were made:

1. Replication using a larger sample which is more culturally diverse to represent the population.
2. Replication using subjects who are newly diagnosed with diabetes.
3. Replication using Hgb A1C to determine glycemie control in contrast to self-reports.
4. Conduction of further research investigating the beliefs of nurse practitioners of factors felt to affect diabetic dietary adherence.
5. Conduction of qualitative research investigating factors affecting diabetic diet adherence.
6. Conduction of research investigating adherence after individualized diabetic dietary teaching which explores the factors found to effect dietary adherence.
References


Appendix A

LETTER OF PERMISSION TO USE QUESTIONNAIRE
October 30, 1997

Laurie Schluter, RN  
10795 Mead Road #1511  
Baton Rouge, Louisiana 70816

Dear Laurie,

Enclosed is a copy of my research tool that was replicated from the appendices of my thesis paper. I have also sent a sample of the letter that was given to the participants to explain a little bit about the study. I did not approach the participants nor did I hand the questionnaire to the person, myself, as this could have created a bias. So the letter was provided as an introduction of sorts.

As long as you reference this tool back to my original study, I have no problem with you using it. Please, do let me know of the results of your study. Good luck!

Sincerely,

[Signature]

Terri Travis

Enclosures (2)
Appendix B

DIABETIC DIET QUESTIONNAIRE
DIABETIC DIET QUESTIONNAIRE

1. How old are you? ______

Please circle the letter by the one answer that applies to you.

2. What is your gender?
   
   A. Male
   B. Female

3. What is your race?

   A. Caucasian/White
   B. African American/Black
   C. Asian/Pacific Islander
   D. Native American/Alaskan Native
   E. Other, Please list _____________

4. Which treatments do you use for your diabetes?

   A. Diet only
   B. Diabetes pills and diet
   C. Insulin shots, diabetes pills, and diet
   D. Insulin shots and diet

5. How long have you had diabetes?

   A. Less than one year
   B. 1-5 years
   C. 6-10 years
   D. Over 10 years

6. Do you receive assistance through Welfare checks, food stamps, 40 pounds or commodities?

   A. Yes
   B. No

7. Who prepares your meals?

   A. Self
   B. Family member
   C. Friend or neighbor
   D. Meals on Wheels
   E. Home Health
   F. Other, Please list _____________
Circle the letter by the answer that best describes how these factors affect your ability to follow your diabetic diet instructions.

<table>
<thead>
<tr>
<th>Factor</th>
<th>A. Helps me follow my diet</th>
<th>B. Doesn't have an effect</th>
<th>C. Makes it hard to follow diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Motivation</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>2. Southern Cooking:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>(such as cajun or homestyle)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Emotions or feelings</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>4. Daily schedule:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>5. Family:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>6. Friends:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>7. Holidays:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
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</tr>
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<td>8. Eating out:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
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</tr>
<tr>
<td>9. Money:</td>
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<td>B. Doesn't have an effect</td>
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</tr>
<tr>
<td>10. Understanding your diet</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
<tr>
<td>11. Knowing what foods to buy:</td>
<td>A. Helps me follow my diet</td>
<td>B. Doesn't have an effect</td>
<td>C. Makes it hard to follow diet</td>
</tr>
</tbody>
</table>
12. Were you ever told why you should follow your diet to control your sugar level/diabetes?
   A. Yes
   B. No

13. Do you understand how to follow your Diabetic diet?
   A. Yes
   B. No

14. Do you think it is important to follow a diet to control your sugar level/diabetes?
   A. Yes
   B. No

15. How often do you follow your Diabetic diet?
   A. Less than one day a week
   B. 1-3 days a week
   C. 4-6 days a week
   D. 7 days a week
Appendix C

LETTER OF APPROVAL OF THE COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION OF MISSISSIPPI UNIVERSITY FOR WOMEN
February 23, 1998

Ms. Laurie Schluter  
c/o Graduate Program in Nursing  
Campus

Dear Ms. Schluter:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research as submitted.

I wish you much success in your research.

Sincerely,

Susan Kupisch, Ph.D.
Vice President  
for Academic Affairs

SK:wr

cc: Mr. Jim Davidson  
   Dr. Mary Pat Curtis
Appendix D

LETTER OF PERMISSION TO CONDUCT STUDY FROM HOME HEALTH AGENCY
To whom it may concern,

I am a registered nurse and a graduate student at Mississippi University for Women. I will be conducting research regarding diabetic diet adherence between March and May of 1998. I would like to administer the attached questionnaire to your diabetic patients. Their responses will be kept confidential and they will be informed of their role in this study through informed consent. Please sign below if I have your permission to conduct this research. You will be free to withdraw your agency’s participation from the study at any time. Your assistance in this matter would be greatly appreciated. Thank you for your consideration.

Sincerely,

Laurie Schluter, RN

The researcher has been granted permission to administer the diabetic diet questionnaire to this agency’s diabetic patients with their consent.

Signature: [Signature]
Administrator: Kelly Arrington, RN
Date: 3/2/98

UHHC
Appendix E

LETTER OF PERMISSION TO CONDUCT STUDY FROM PRIMARY CARE CLINIC
To whom it may concern,

I am a registered nurse and a graduate student at Mississippi University for Women. I will be conducting research regarding diabetic diet adherence between March and May of 1998. I would like to administer the attached questionnaire to your diabetic patients. Their responses will be kept confidential and they will be informed of their role in this study through informed consent. Please sign below if I have your permission to conduct this research. You will be free to withdraw your agency’s participation from the study at any time. Your assistance in this matter would be greatly appreciated. Thank you for your consideration.

Sincerely,

Laurie Schluter, RN

The researcher has been granted permission to administer the diabetic diet questionnaire to this agency’s diabetic patients with their consent.

Signature: [Signature]
Date: 5/22/98
Appendix F

LETTER OF INFORMED CONSENT
Dear Participant,

I am a registered nurse and a graduate student at Mississippi University for Women. I would like to thank you in advance for participating in the attached survey. Your participation or nonparticipation will in no way impact your care. This survey is being done to evaluate health beliefs and educational needs from a patient’s point of view. Your responses will be kept confidential and will only be seen by the researcher. Please sign below to give your consent for your responses to be used in the research. You are free to withdraw from the study at any time. This consent form will be kept separate from the questionnaire to maintain your confidentiality. Please do not put your name on the questionnaire.

Feel free to ask any questions as needed. Thanks again for assisting me in my research and for your valuable time.

Sincerely,

Laurie Schluter, RN

I give my consent to participate in the research study.

Signature ____________________ Date ____________
Appendix G

RAW DATA INCLUDING DEMOGRAPHIC VARIABLES
### Raw Data including Demographic Variables

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</tr>
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