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Abilities and limitations of adult type II diabetic patients with integrating of self-care practices into their daily lives.

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ABILITIES AND LIMITATIONS OF ADULT TYPE II DIABETIC PATIENTS WITH INTEGRATING OF SELF-CARE PRACTICES INTO THEIR DAILY LIVES

by

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ABSTRACT OF DISSERTATION
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Title Abilities and Limitations of Adult Type II Diabetic Patients With Integrating of Self-Care Practices Into Their Daily Lives

Patient adherence to diabetes self-care practices is essential to maintaining health and preventing disability. Nonadherence to treatment regimen remains a perplexing health care problem.

The purposes were to describe the self-care abilities and limitations of the non-insulin-dependent diabetes mellitus (NIDDM) outpatients, to identify the relationship between abilities and limitations, and to describe the integration of self-care practices into daily life activities. The conceptual framework was derived from Orem's (1991) Self-Care Deficit Theory of Nursing.

The responses of 14 female and 8 male NIDDM, sighted outpatients between the ages of 45 and 65, diagnosed for at least 1 year, were studied. Description and relationships of abilities and limitations were assessed by completing content analysis of transcribed audiotaped interviews and calculating category frequency counts and correlations. Description of the integration of self-care practices into

daily life activities was accomplished by analyzing both category coded responses and the overall score on the patient's self-reported visual analogue scales, Bess' Measurement of Diabetes Self-Care Practices Scale.

Coded frequencies occurred in all categories. The highest abilities categories were attention and motivation, and the highest limitations categories were lack of knowledge and motivation. The overall integration score mean was 7.47 (range 1-10), which measured integration of diabetes self-care practices into daily life.

Subjects identified that attending to diabetes management had effects on health. Lack of motivation was directly related to all other blocks to self-care implementation. No relationship between presence and absence of motivation was identified. General lack of knowledge was evident and affected the ability to apply self-care skills. Self-regulation behaviors were reported very infrequently. Application of knowledge was negatively affected by lack of knowledge internalization. Incomes below poverty level had negative impacts on self-care practice integration. The extremely high or low overall integration scores were related to coded interview responses.

Extending research to represent non-White, older, and lower income populations is recommended. Interventions

studies need to be conducted to study problem-solving abilities, coping styles, learning styles, and motivation. Assessment of the relationship between resources and self-care management practices is recommended.

Abstract Approved by: Committee Chairman Elizabeth Stullenbarger

Program Director Carol Dashiff

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CHAPTER I

Introduction

Non-insulin-dependent diabetes mellitus (NIDDM) or Type II diabetes is among the most prominent chronic diseases recorded in the United States representing about 98% of all diabetics in the over 45 years of age group (Huse, Oster, Killen, Lacey, & Colditz, 1989). NIDDM has the highest incidence in the population of any type of diabetes including 90% to 95% of all diagnosed cases of diabetes (Harris, 1984). After the age of 25, NIDDM occurs 20% more frequently in women than men (Everhart, Knowler, & Bennett, 1984). Of the chronic conditions reported per 1,000 persons by age in 1988, patients with diabetes consisted of 55 cases in the 45- to 64-year-old group, 95 cases in the 65- to 74-year-old group, and 89 cases in the 75 years and over group (National Center for Health Statistics, 1989).

Non-insulin-dependent diabetes mellitus (NIDDM) or Type II diabetes is a chronic disease that results from pancreatic b-cell dysfunction, abnormally high hepatic glucose production, and insulin resistance (Melkus, 1993). With the variability of insulin production by the b-cells, the NIDDM patient may exhibit insulin levels that are

normal, elevated, or depressed (Harris, 1984). The excessive hepatic glucose production in combination with the insulin resistance of the cells results in the characteristic hyperglycemia in the presence of normal or above-normal insulin levels (Melkus, 1993). Other metabolic abnormalities include hyperlipidemia with elevated low-density lipoproteins and low high-density lipoproteins. Both increasing age and body mass have been associated with the incidence of NIDDM. The age of onset of NIDDM is usually after 40, but can occur earlier in life (Harris, 1984). Obesity is a predisposing risk factor with approximately 80% to 90% of NIDDM patients being obese (Melkus, 1993).

NIDDM, at the time of initial diagnosis, is characterized as not being ketosis-prone under normal circumstances. In contrast to insulin-dependent diabetes mellitus (IDDM) or Type I diabetes, which has low or absent levels of circulating endogenous insulin, NIDDM is characterized by normal or above-normal insulin levels. Although NIDDM may use insulin for treatment of uncontrolled hyperglycemia or during stressful events, such as acute illnesses, circulating endogenous insulin is usually present (Harris, 1984).

After initial diagnosis, the NIDDM patients are twice as likely as nondiabetics to develop heart attacks or strokes and approximately five times as likely as nondiabetics to experience blindness (Huse et al., 1989).

Diabetic retinopathy has been reported as the leading cause of blindness among adults working in the United States (Javitt, Conner, Frank, Steinwachs, & Sommer, 1990). Additional complications include ketoacidosis, neuropathy, and lower extremity ulcerations. NIDDM patients, with their likelihood of developing other chronic illnesses and related complications, confront numerous self-care demands. Patients who do not have access to adequate diabetes education or who are not adherent to diabetes management programs are thought to be at higher risk for developing complications or having complications progress to a more advanced state before detection.

Patient education has been shown to affect self-care outcomes in adult diabetics (Brown, 1988). The desired self-care outcomes include development of NIDDM patients' abilities to master self-care practices to maintain life, health, and well-being. The need for patients diagnosed with diabetes mellitus to engage in self-care activities is quite evident in the literature of nursing and other health disciplines (Anderson, Nowacek, & Richards, 1988; Brown, 1988; Hiss, 1986; Teza, Davis, & Hiss, 1988). The difficulty is understanding how to successfully tap diabetics' self-care abilities. By expanding the health care professionals' understanding of NIDDM patients' self-care abilities, interventions to promote and support self-care practices can be identified.

Nonadherence to diabetes treatment regimens remains a perplexing problem facing health care professionals today (Kurtz, 1990). The need to further explore the patients' perceptions of their self-care abilities and subsequent self-care behaviors are important in understanding how patients integrate the demands of a chronic illness into their daily lives (Glasgow, McCaul, & Schafer, 1987; Keller, Ward, & Baumann, 1989).

In American health care, self-care is an accepted and an almost expected response to prevent illness and disability. In addition to the emphasis on wellness, a majority of all self-care health programs in the United States stress chronic disease management (DeFriese, Woomert, Guild, Steckler, & Konrad, 1989). Although health care professionals may support the need for self-care, the individual patient's decision to engage in self-care may not be present as evidenced by ineffective adherence to treatment regimens. It is this lack of congruence between health care professionals' expectations and the patients' view of their health care needs that stimulates health care researchers to seek more information.

The understanding of self-care and its consequences is directly influenced by researchers' conceptual orientations (Woods, 1989). Due to the wide and varied usage of the concept of self-care in the literature, a choice was made to use Orem's (1985, 1991) concept of self-care agency and its relationship to health-deviated self-care requisites

and therapeutic self-care demands. The legitimacy of nursing practice situations is supported by the presence of deficits between patients' self-care agencies and therapeutic self-care demands (Orem, 1991). Therefore, it is important to assess self-care agency expressed in terms of abilities and limitations to accurately diagnose self-care deficits. Self-care abilities and limitations play a key role in determining the need for nursing for diabetic patients and the nursing strategies to be employed to meet those needs (Backscheider, 1974). Within Orem's framework the component, integration of self-care operations into patients' daily lives, has received no empirical investigation (Gast et al., 1989). Before nursing interventions are designed to meet deficits, NIDDM patients' existing self-care agencies need to be described, the relationship between abilities and limitations determined, and the degree of integration of self-care abilities into their daily life activities assessed.

Purposes

The purposes of this study are to: (a) describe the self-care abilities and limitations of the adult NIDDM patient, (b) identify the relationship between self-care abilities and self-care limitations of the adult NIDDM patient, and (c) describe the integration of self-care abilities into daily life activities for adult patients with NIDDM.

Conceptual Framework

Orem's General Theory of Nursing

Self-care agency is one broad concept included in the conceptual framework of Orem's (1991) general theory of nursing. According to Orem, "self-care agency is the complex acquired ability to meet one's continuing requirements for care that regulates life processes, maintains or promotes integrity of human structure and functioning and human development, and promotes well-being" (p. 145). Self-care agency is one of the three major complex concepts used to demonstrate when there is a need for nursing interventions.

The product variable of these three concepts is self-care. Self-care is the practice of activities that individuals begin and sustain with the intent to maintain life, health, and well-being. Self-care requisite demonstrates the purpose of performing self-care practices. These purposes may include three categories of intent, universal (essential to biological survival), developmental (maturational requirements), and health-deviated (alterations in normal structural and functional requirements). All self-care requisites possess the potential to interact with each other producing further self-care requisites. In addition, health-deviated requisites may be stimulated by the disease process effects or the individual's response to medical regimens (Orem, 1991).

The second of the three complex concepts represented in Orem's (1985) general theory of nursing is self-care demand. Self-care demand is the amount and kind of self-care required of the individual to maintain health, life, and well-being at any given moment in time. In Orem's (1991) later writings, self-care demand is more succinctly termed therapeutic self-care demand. Therapeutic self-care demand is the sum total of actions required to meet known self-care requisites, which is to regulate human functioning and development therefore accomplishing the performance of self-care.

The relationship between self-care agency and therapeutic self-care demand serves to identify deficits between those capabilities possessed to perform self-care activities and the amount and kind of self-care actions required at one point in time. The presence or absence of a deficit relationship thus identifies the need for nursing agency. Nursing agency expresses the action capability of nurses to determine the need for and implement nursing interventions to meet self-care requisites. The ability to perform self-care is dependent on a patient's self-care agency being equal to or greater than the therapeutic self-care demand (Orem & Taylor, 1986).

Self-Care Agency

Eight propositions, set forth in the Nursing Development Conference Group (NDCG) in 1979, serve to clarify certain characteristics of self-care agency and the

relationships between self-care agency and other concepts and subconcepts. The characteristics of self-care agency identified in these propositions include self-care agency's complexity, action capability, and change in potential related to time and experiences. The relationships described include the following: (a) self-care agency is composed of the power to practice self-care, (b) environmental influences affect the development of and exercise of self-care agency, (c) self-care agency produces self-care when exercised, (d) exercising self-care agency results in further development of self-care agency, and (e) self-care agency can be described in terms of self-care abilities and limitations.

Orem (1991) identifies a three part structure of self-care agency. The first of these structures represents self-care capabilities for performing self-care operations. In this structure self-care agency's adequacy is assessed and organized in terms of investigative, decision-making, and productive self-care operations (Orem & Taylor, 1986). Secondly, a set of 10 power components are defined as basic human capabilities that allow individuals to perform self-care operations (Orem, 1991). Thirdly, five sets of foundational capabilities and dispositions, that involve sensation, perception, knowing and doing, willingness to set goals, and willingness to engage in self-care, were identified (NDCG, 1979). All foundational capabilities are represented in Orem's (1991) sets of self-care limitations.

Through assessment of patients by use of the identified self-care limitations sets, self-care abilities as well as limitations can be identified.

The relationships between these structural elements are not clearly defined, but are evident. The power components are descriptive of every human's potential ability to perform self-care, therefore, all power components must be assessed to determine self-care agency. To assess the adequacy of self-care agency to perform self-care operations, self-care capabilities are organized in terms of types of self-care activities performed. Foundational capabilities integrate the essential human powers, potentially found in all individuals, into a frame of reference based on capabilities not self-care operations. Although self-care operations can be expressed in observable outcomes, the basis for the outcome, such as the development, exercise, and adequacy of self-care agency escapes direct assessment when using this structural element. The actual description of an individual's self-care agency is assessed through evaluation of self-care agency by use of Orem's self-care limitations sets. These sets address all aspects identified in the foundational capabilities and dispositions and are based on the power components. Assessment of abilities and limitations can be structured by use of the sets of self-care limitations.

The ability to engage in self-care (self-care agency) is developed and made operative to varying degrees by

individuals. The development of an individual's self-care agency depends on the individual's ability to be purposeful in life and the level of physical, cognitive, and psychosocial maturity reached. The ability to conduct self-care activities may be influenced by personal choice, functional or mental capabilities, or environmental factors. Even if self-care agency is developed and made operative, there is no guarantee that the individual will choose to exercise that capability (Orem, 1985). Foundational to the ability to engage in purposeful action of any kind is the ability to be goal directed and to possess basic physical, mental, and psychosocial capabilities (Orem & Taylor, 1986).

When an individual's self-care agency is exercised, those capabilities may or may not be adequate to meet the therapeutic self-care demand. The adequacy of self-care agency is determined by examining the patient's capabilities including the knowledge, skill, motivation, and resources necessary for self-care performance. This self-care capability is then compared to the existing or projected therapeutic self-care demand to assess the adequacy of self-care agency (Orem, 1985). The assessment of adequacy of self-care agency by outcomes is organized in terms of the three types of self-care operations, including investigative, decision making, and production (Orem & Taylor, 1986). These sets of actions are also referred to by Orem (1985) as the phases of self-care.

Power Components

Underlying the human capabilities to perform the phases of self-care are 10 power components specific to self-care action (Orem & Taylor, 1986). The 10 capabilities identified as power components of self-care agency are:

1. Maintaining attention and requisite vigilance.
2. Controlled use of available physical energy.
3. Control of the position of the body and its parts in execution of movements.
4. Reasoning within a self-care frame of reference.
5. Motivations or goal orientation to self-care.
6. Decision making about self-care.
7. Acquiring, retaining and operationalizing technical knowledge about self-care.
8. Having a repertoire of skills for self-care.
9. Ordering discrete self-care actions.
10. Integrating self-care operations with other aspects of living. (NDCG, 1979, p. 197)

Some power components are more significant to some self-care phases than others. The individual range of variance or value of these power components is not clearly defined. Power components are foundational to self-care abilities. The absence of power components does result in definite self-care limitations (NDCG, 1979).

Basic Conditioning Factors

The basic conditioning factors also affect self-care agency and, concomitantly, self-care limitations. The basic conditioning factors, some of which are intrinsic to individuals, are "age, character of being male or female, health state, development state, sociocultural orientation, health system elements, family system elements, and patterns of living" (Orem & Taylor, 1986, pp. 46-47). These

conditions and factors serve to influence patients' capabilities when engaging in the self-care operations of investigative, decision making, and production.

Self-Care Limitations

Self-care limitations are indications of human restrictions in providing both quantity and quality of needed self-care. Orem (1991) identified three kinds of limitations: "limitations of knowing," "limitations for making judgments and decisions," and "limitations for engagement in result-achieving courses of action" (pp. 170-172).

Limitations of knowing are subdivided into three sets. These sets identify the absence of needed knowledge, physical impairment of function, and an inability to develop insights and make decisions based in reality, resulting in avoidance of essential learning experiences. Limitations for making judgments and decisions center around personal meanings attached to the elements of therapeutic self-care demand or the adjustment of the exercise or development of self-care agency. These three sets deal with typical individual behavioral patterns that may mirror the personal meaning that the situation holds for that individual. The first two sets deal with interference in obtaining adequate data on which to make judgments, and the third set speaks to the reluctance or refusal to make a decision. Limitations for engagement in result-achieving courses of action are expressed in interferences in performance of

self-care, based on functional states and environmental conditions. Four sets express these limitations. The first three address the individual's deficits in self-care performance, while the fourth speaks to the person's conditions of living that interfere with the individual's performance of self-care. Self-care deficits may be identified in individuals possessing limitations in self-care performance, as well as ineffectual performance of self-care. Any single factor or combinations of factors producing self-care limitations define the basis for the amount and kind of nursing care required (Orem, 1991).

Self-Care Requisites

The kinds of purposive self-care are subdivided into three types. Those types are universal self-care requisites, developmental self-care requisites, and health-deviated self-care requisites. Universal self-care requisites are deliberate actions common to all persons dependent on age, level of development, and their internal and external environment and aimed at maintenance of human structure and function. Developmental self-care requisites are purposive actions related to human developmental processes or interruptive events of the life cycle. Health-deviated self-care requisites are associated with physiological, functional, or psychological illnesses or abnormalities and the recommended management regimens (Orem, 1985). With NIDDM, patients will have alterations within all three types, but the integration of self-care practices

into daily life activities occurs related to the health-deviation self-care requisites.

Therapeutic Self-Care Demand

The actual combinations of types of self-care requisites related to a specific therapeutic demand delineates the complexity of knowledge and skills that would be anticipated (Orem, 1985). The projected self-care demands for NIDDM patients can be grouped in three categories. The first category refers to the management of anatomical or physiological manifestations. Patients must learn to deal with medical crises, treatment regimens, symptom control, and prevention of complications (Strauss, 1975). In the second category, management of personal responses, the NIDDM patients may have to cope with permanent role changes, altered self-concept, powerlessness (Miller, 1983), and seeking a level of normality (Strauss, 1975). The third category refers to the NIDDM patient managing the responses of others, such as family, friends, health care professionals, and social service providers. These demands will center around alterations in work and social roles, adaptation of ethnic or cultural practice to their regimen, and the economic impact of the illness (Dimond & Jones, 1983).

The ability to perform self-care is dependent on a patient's self-care agency being equal to or greater than the therapeutic self-care demand (Orem & Taylor, 1986). The 10 power components, the basic conditioning factors,

and the types of self-care operations required by therapeutic self-care demands influence the development, operability, and adequacy of self-care agency. Self-care limitations can adversely affect the exercise of self-care agency thus producing a self-care deficit. Pathology, such as NIDDM, produces the therapeutic self-care demands that alter patients' self-care requisites, which directly affects self-care capabilities (Orem, 1985).

Definition of Terms

For the purpose of this study, the following definitions apply.

Self-care abilities--NIDDM outpatients' responses to interview questions generated from the 10 power components, conditioning factors, and health-deviated self-care requisites.

Self-care limitations--NIDDM outpatients' responses to interview questions generated from the conceptualized structure of conditions and factors related to limitations of knowing, making decisions, and acting to accomplish self-care management.

Relationship--identification of a linkage between concepts (Burns & Grove, 1987) of abilities and limitations by the researcher.

Daily life activities--NIDDM outpatients' descriptions of physical and mental processes performed in self-care, mobility, home life, work, and leisure pursuits (Jette & Cleary, 1987; Kahn, 1983; Katz, 1983; Williams, 1987).

Degree of integration--the scores of the NIDDM outpatient on the researcher developed visual analogue scales (VASs).

Adult NIDDM patients or Type II diabetic patients--sighted outpatients over the age of 44 and under the age of 66 who have been diagnosed with NIDDM for at least 1 year. The diagnosis of NIDDM or Type II diabetes was confirmed at the time of initial diagnosis by their physician. Patients referred to the researcher by a health care professional could be receiving physician prescribed insulin, oral hypoglycemic agents, or no hypoglycemic agents in their treatment. Although NIDDM patients may be prescribed insulin for treatment of uncontrolled hyperglycemia or during stressful events, such as acute illnesses, circulating endogenous insulin is usually present (Harris, 1984). Self-referred patients were not accepted if they were using physician prescribed insulin because a diagnosis of NIDDM could not be confirmed through a health care professional.

Assumptions

The study was based on the following assumptions: (a) NIDDM is a chronic illness requiring performance of self-care activities; (b) the development, operability, and adequacy of self-care abilities can be studied (NDCG, 1979); (c) adult NIDDM patients verbally communicate self-care abilities and limitations that can be identified; and (d) the degree to which adult NIDDM patients are integrating

self-care practices into their daily life activities can be measured through self-report.

Significance of the Study

Self-care agency (capabilities) plays a key role in determining the need for nursing and the nursing strategies to be employed to meet those needs. This significant role justifies a close examination of this concept by nursing. Nursing is a helping profession. Before a determination is made that a person needs help, a comprehensive assessment of the person's capabilities for self-care must be instituted. According to Orem (1985), if self-care capabilities are not accurately diagnosed then nurses have no basis for their prescriptions or interventions. Assessment of self-care agency includes the determination of self-care limitations, which is an integral step in determining restricting influences on the performance of self-care. The development, operability, and adequacy of a patient's self-care agency directly affect nursing decisions regarding health promotion, maintenance, and restoration programs. Nursing practice contributes to the facilitation of patients' self-care agencies. Therefore, it is important for nurses to be able to accurately identify self-care abilities and limitations in order to have a basis for nursing interventions (Orem, 1985). A researcher must know the structural substance of broad concepts, such as self-care agency, before conducting research in the practice arena (Orem & Taylor, 1986). Acquiring knowledge

is useful, but seeking knowledge for practice is essential to the nursing discipline (Walker & Avant, 1988).

In a review of current measures of self-care agency, Gast et al. (1989) found that none of the tools satisfactorily measured all 10 power components. Gast et al. reported a complete absence of any adequate measurement of the 10th power component, integration of self-care operations with other aspects of living. Further exploration and definition of the power components within the NIDDM patients are needed.

Summary

This research is aimed at further description of the concepts of self-care abilities and limitations and the relationship between those concepts. The population of interest is NIDDM outpatients. Special attention is given to the NIDDM outpatients' integration of self-care practices into their daily life activities. Some aspects of NIDDM are subject to outpatients' control by deliberate action. A better description of NIDDM outpatients' abilities and limitations will add to the understanding of self-care agency.

CHAPTER II

Review of Research

Numerous studies based on Orem's conceptual framework of the general theory of nursing are reported in the literature. Within that body of work, many studies focus on the application of the complex aspects of self-care agency. For clarity, this writer groups the review of these studies in three areas. The three major areas are studies measuring and evaluating the effects of different nursing interventions on self-care agency, studies dealing with tool development to quantify self-care agency, and studies identifying and describing self-care capabilities as found in nursing practice. Very few studies dealing with patients' perspectives of integrating diabetes regimens into their daily life activities are reported in the literature. The majority of research addresses the issue of compliance to diabetes regimens but fails to consider the quality of life that these lifestyle changes produce.

Self-Care Agency

The first major group of published studies deals with the measurement and evaluation of the effects of different nursing interventions on self-care agency. Dodd (1982,

1983, 1984a, 1984b, 1988) assessed the effects of nursing interventions on self-care behavior in patients receiving chemotherapy and/or radiation therapy. Dodd (1988) maintained that patients' self-care practices are dependent on their possession of knowledge and skill and on independent self-care capabilities that members of the health team can increase or complement. Harper (1984) found that knowledge alone does not alter health behaviors. A program aimed at supporting self-responsibility for health resulted in increased self-care activities. Two other studies, by Stockdale-Woolley (1984) and Hartley (1988), dealt with the effects of patient education on self-care agency. Stockdale-Woolley identified that a group education program for chronic obstructive pulmonary disease patients, which also allowed for sharing personal experiences with self-care, was effective in increasing self-care agency. Hartley did not find a relationship between teaching strategies matched to learning style and practice of breast self-examination. The instructional strategies used by Hartley were based on all three learning domains (cognitive, affective, and psychomotor). This approach increased self-care activities in all participants. Clements (1985) reported that diabetic children's self-care practices increased as their knowledge of diabetes increased. Moore (1987) found that children's self-care agency can be developed by health education. The nursing intervention of patient education is reported to result in

developing or increasing self-care agency. This education is based on teaching strategies that allow for active participation of the individual.

One of the first published instruments based on Orem's self-care deficit theory was Kearney and Fleischer's (1979) tool to measure the exercise of self-care agency. The intent was to provide an objective measure of the effectiveness of nursing care by demonstrating an increase in patients' exercise in self-care agency. In this study the instrument was validated by using other instruments to measure the individual's psychological characteristics. The subjects who scored high on the tool to measure self-care agency described themselves as "self-controlled, dependable, assertive, intelligent, confident, responsible, helpful, and adaptable" (Kearney & Fleischer, 1979, p. 33). The study sample was taken from volunteer college students, and the majority of the subjects were female nursing students. High reliability and evidence of content and construct validity were reported using this sample.

McBride (1987) examined Kearney and Fleischer's Exercise of Self-Care Agency Scale by testing the tool's reliability and construct validity when used with both a student (nursing majors) and patient (adult, insulin dependent diabetics) sample. McBride's study identified that the tool was reliable but construct validity did not exist for the patient population sampled. Explanations for the lack of construct validity found centered on the

differences in characteristics of the sample. Two major factors identified were the level of education (only 30% of the patients had a 10th-grade education, whereas 100% of the students were enrolled in higher education) and the stage of the disease process (patient change in health status was much more likely to occur between the initial testing and retest procedures). Age was also discussed as a confounding factor. McBride's study depicts the effects of age, education level, health status, and perhaps even life experience on an individual's ability to exercise self-care agency.

Denyes (1988) developed and reported internal consistency of an instrument to measure self-care agency in adolescents in 1982. Denyes used this tool in combination with others to examine the relationships between self-care agency, self-care, and health promotion. Hanson and Bickel (1985) developed a questionnaire based on the 10 power components in order to measure the adults' perceptions of their self-care agencies. Weaver's (1987) study results using Hanson and Bickel's questionnaire did not support the original factor structure and brought into question the construct validity of the tool as a measure of self-care agency. Weaver concluded that other measures of self-care agency, such as self-care behaviors or outcomes and professional judgments, are more appropriate approaches. Campbell's (1986) Danger Assessment instrument was used to determine the extent of risk for committing homicide by

battered women. The actual completion of the tool is intended to assess for and increase the woman's self-care agency. These studies have attempted to quantify in some way the complex human capability of self-care agency.

The multidimensional and complex attribute of self-care agency is the major difficulty that exists in attempts at operationalizations of the phenomenon (Gast et al., 1989; Lee, 1990). Gast et al., in a review of studies measuring self-care agency, found that the significant abilities identified included mobility; adequate energy; possession of knowledge and skills of self-care; reasoning, problem solving, and decision making regarding self-care; valuing health; and motivation to participate in self-care. None of the measures were sensitive to all the characteristics of self-care agency Orem (1985) had conceptualized. The different instruments measure various portions of the phenomenon of self-care agency and thus should be employed with caution (Gast et al., 1989; Lee, 1990).

A third area of study deals with exploring self-care capabilities as found in nursing practice. Many of these reports do not discuss self-care agency but instead apply Orem's self-care framework in analysis of a patient situation. Dickson and Lee-Villasenor (1982) conducted a qualitative study to examine their nursing practices in the self-care framework. Four categories of care were identified and described from the data. The categories were patient's statement of need, nurse's assessment of

patient's self-care assets, self-care demands, and self-care behaviors. These authors' description of self-care assets closely resembled Kearney and Fleischer's (1979) properties of exercise of self-care agency.

Stullenbarger (1984) used a Q-sort instrument to describe the self-care abilities of 36 young, school-aged children. The study was structured by using Orem's 10 power components to identify and discuss the characteristics and patterns of development of foundational self-care abilities and limitations of the subjects. The 8- and 9-year-old subjects' self-care behaviors were used to describe their self-care abilities in meeting universal self-care requisites. Three person types were distinguishable by gender and pattern of responses to the Q-sort instrument. Stullenbarger demonstrated that Orem's power components could be used to structure a description of self-care abilities and limitations in young, school-aged children.

One of the earliest reports that did speak to self-care agency was Backscheider's (1974) example of using Orem's framework to assess diabetic patients in a clinic setting. One major conclusion made by Backscheider was that a patient's self-care agency affects the quantity and quality of therapeutic self-care demands. In addition, Backscheider identified the significance of fully describing self-care capabilities and limitations of patients experiencing specific therapeutic demands.

Backscheider (1974) presented a framework for assessing foundational capabilities in an outpatient diabetic clinic. The first step was to identify the diabetic-related component of patients' therapeutic self-care demands. Patients' responsibilities for managing diabetes were identified as (a) monitoring for symptoms, (b) preventive and maintenance health care related to potential complications, (c) comprehension and use of prescribed therapy (medication and diet), (d) monitoring for effects of therapy, and (e) patients' adjustments to temporary and permanent changes required in their life. The next step was to describe capabilities required of the diabetic patients cared for in a clinic setting. Four categories of foundational capabilities were described. The four categories were called physical, mental, motivational, and orientational capabilities. These categories have been redefined and described conceptually in NDCG (1979) and integrated into the self-care limitations identified by Orem (1985).

Backscheider (1974) identified that even missing a portion of foundational capabilities results in limitations of fulfilling health-deviated requisites, thus, resulting in self-care deficits. Backscheider made several additional observations concerning self-care limitations. Self-care limitations can produce self-care demands, vary in the degree of impact on self-care capabilities, define needed nursing action, and originate from a patient's restricted

personal development. Backscheider's approach to identifying categories and the actual categories of capabilities identified support the significance of describing patients' abilities and limitations in the practice setting.

Integration of Self-Care

Ary, Toobert, Wilson, and Glasgow (1986) asked adult diabetics for their reasons for not adhering to the prescribed regimens. Although patients expressed more difficulty with adhering to dietary and activity regimens, no single reason for nonadherence was identified. The results of this study were not surprising because health care professionals continue to be unable to clearly depict causes of patients' nonadherence. The authors did allude to the need to offer additional diabetes education classes after the patients have an opportunity to experience their regimens.

Masaki, Okada, and Ota (1990) evaluated attitudes of 59 diabetics attempting to predict patients' responses to instruction. The researchers identified attitudes as the mediator between patient perception and action. Attitudes give direction to the energy generated by desires, which are determined by human motivation. Sufficient motivation must be present to overcome those deterrents to assuming responsibility for changes in lifestyle required by diabetes regimens. Attitude is operationally defined as the perceived degree of responsibility for diabetes. The

authors concluded that there was a direct relationship between patients' adequate diabetes control and assuming responsibility for their disease.

Wikblad, Wibell, and Montin (1990) evaluated attitudes toward the disease of diabetes, knowledge of diabetes, self-monitoring of blood glucose (SMBG), and self-care in diabetes of 50 diabetic patients and 28 nurses. A researcher-developed instrument demonstrated three dimensions of the attitudes studied. The three areas identified were (a) evaluations, which described the relationships between the person and diabetes (self-esteem and autonomy) and between diabetes and the person (control and degree of difficulty experienced); (b) activity, which interpreted an aspect of quality of life by measuring the adoption of new limits within an individual's lifestyle; and (c) potency, which measures the individual's strength and vulnerability. Additional findings included the important influences patients' educational backgrounds appeared to have on their attitudes toward diabetes and self-care and that a favorable or unfavorable attitude toward diabetes did not always result in nonadherence to regimens or poor metabolic control.

Anderson (1990) chose a phenomenologic approach to identify factors that affect chronically ill patients' management of their illnesses in their daily lives. The report included two studies conducted in Canada. The more recent study included 30 diabetic women. The

researcher noted that diabetic women expected that their illnesses were their major responsibility. This perception of responsibility for control did not mean women were confident in their abilities to manage their diseases. The subjects expressed that they were alone in their attempts to manage their care. Because the economic and environmental influences may vary depending on the location of the study, many conclusions regarding needed resources were situation specific. One major conclusion was applicable and that was that the concerns expressed by patients did fall within the domain of nursing practice.

Price (1989), using a phenomenologic approach, described the experience of living with diabetes of 7 men and 12 women with insulin-dependent diabetes. The researcher identified an illness trajectory consisting of two phases, "Getting Regulated" and "Being Regulated." The "Getting Regulated" phase had characteristics coded as "trying it out," "figuring it out," "trial and error," and "basic routine" (Price, 1989, pp. 145-146). The "Being Regulated" phase was characterized by maintaining what "works," returning to trial and error practices occasionally or with major lifestyle alterations, problem solving in new situations using past experiences, and continuing to feel inadequate with diabetes management. An additional finding was that patients who described the integration of diabetes knowledge and personal experiences with using that knowledge provided a valuable base for

self-care management. The author concluded that the educational interventions must include the appropriate content and organization suited to the patient's experience and disease management skill (Price, 1989).

Summary

From the studies reviewed, this researcher concludes that the complex variable of self-care agency needs exploration to further describe its multidimensional aspects. The studies measuring and evaluating the effects of different nursing interventions on self-care agency are useful in identifying nursing interventions that can effect self-care agency. For example, health education is essential to development of children's self-care agencies. Possession of self-care knowledge and skill alone does not produce self-care practices in adult patients. Additional self-care capabilities, such as self-responsibilities, do result in increased self-care operations in patients. These studies rely on measurement tools that fail to represent all the complex dimensions of the self-care agency concept. Without an adequate description of self-care abilities and limitations in the adult NIDDM patient, the effectiveness of nursing interventions in supporting abilities and minimizing or eliminating limitations cannot be adequately evaluated.

Quantification of self-care agency by tool development and testing continues to experience difficulty with construct validity. Subject characteristics, such as age,

educational level, health states, and life experiences, appeared to confound results of these studies. These tools have been criticized as not measuring all the characteristics of self-care agency conceptualized by Orem. Description of self-care agency in patients is important to assessment of adequacy of self-care agency and to determining nursing approaches to support development and exercise of self-care agency. This description can be strengthened by identifying and exploring the actual relationships between self-care abilities and limitations of the adult NIDDM patient. Clarification of these relationships should serve to more accurately depict self-care agency in the adult NIDDM patient.

Studies indicate that reasons for adherence or nonadherence to treatment regimen were not easily explained by patients. Integration of health-deviated self-care into patients' daily lives can be affected by patients' management skills, past experiences, and timing and quantity of lifestyle changes required. Studies of integration of health-deviated self-care into daily life activities are sparse. More description of this phenomenon in the adult NIDDM patient is needed to clearly understand the potential effects on patients' self-care agencies. The patients' perspectives are important in understanding the process of integration of self-care practices into daily life activities of adults with NIDDM.

CHAPTER III

Methodology

The purposes of this study were to describe the self-care abilities and limitations of the non-insulin-dependent diabetes mellitus (NIDDM) outpatients, to identify the relationship between self-care abilities and limitations in NIDDM outpatients, and to describe the integration of self-care practices into daily life activities for NIDDM outpatients. The purposes pertain to the personal experiences by outpatients with NIDDM as they manage the demands exerted by this chronic illness. The aim of the study was to explore the phenomena under study using selected components of Orem's self-care agency theoretical framework to describe and explain patient interview responses.

Both the significance and the literature review sections of this document suggested that the need to describe the abilities and limitations of NIDDM outpatients and these outpatients' perceptions of integration of the diabetes regimen into their daily lives is foundational to testing the effectiveness of interventions to maintain, restore, or promote self-care management of daily life

activities. The nature of the purposes and aim of the study required a descriptive methodology.

Design of the Study

A descriptive design was planned to characterize NIDDM outpatients' abilities and limitations in performing self-care, including integration of self-care practices into their daily lives (see Figure 1). Figure 1 outlines the relationships among Orem's model constructs, study variables, measurement approaches, and descriptive findings of the study design. The method of data collection was audiotaped interviews and administration of visual analogue scales (VASs) to measure outpatients' self-reported abilities to consistently integrate self-care practices into their daily lives. The transcribed interviews were subjected to content analysis techniques.

Berelson (1971) defined content analysis as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (p. 18). Krippendorff (1980) expanded this definition to speak to making inferences from the data to the content (boundaries of analysis established by the researcher). The boundaries of analysis identified for this study were the 10 power components and conditions and factors related to limitations of knowing, making decisions, and implementing self-care management. As categorization and classification of words, phrases, and sentences occurred,

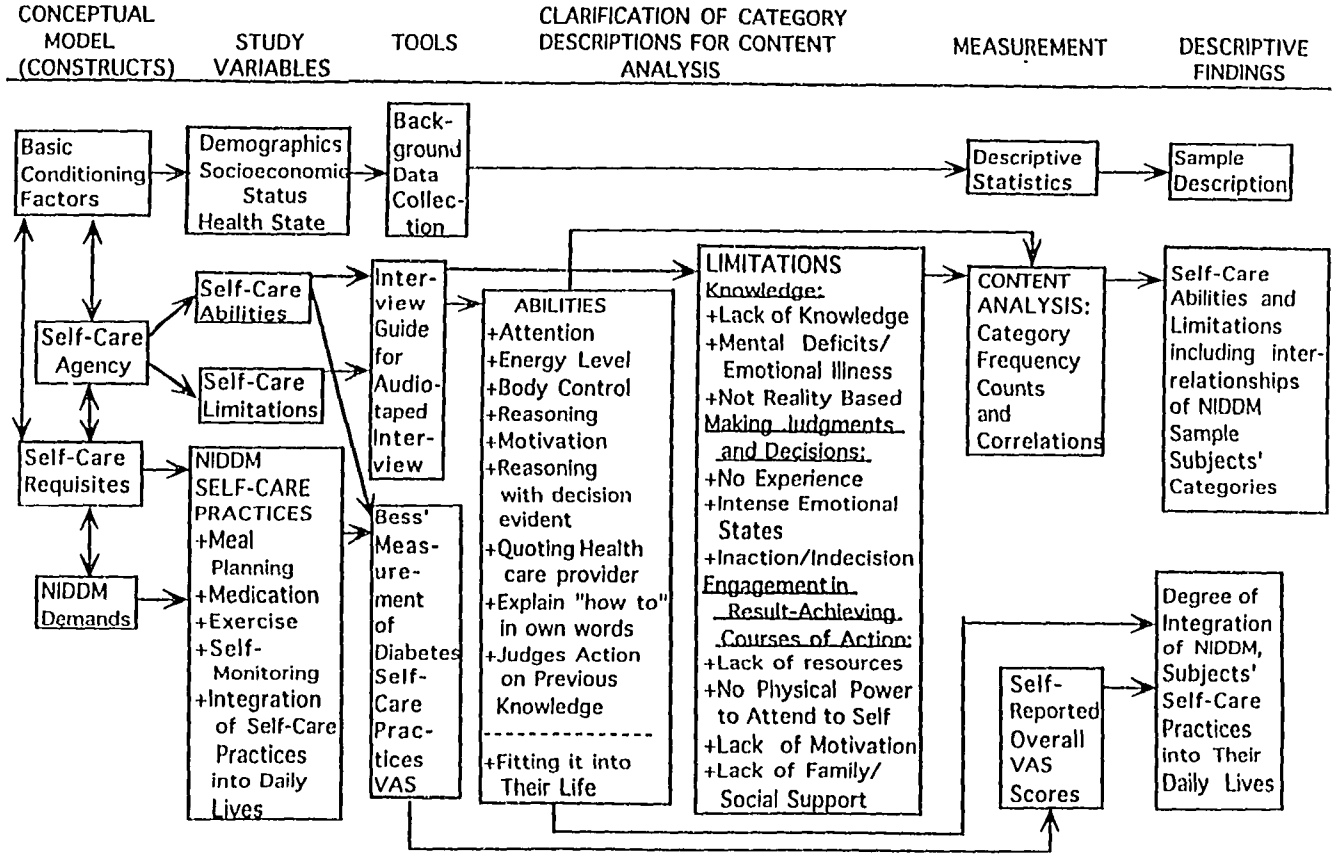

Figure 1. Conceptual map outlining constructs, study variables, measurement approaches, and descriptive findings of self-care abilities and limitations of NIDDM patients.

semantic validity was sought by using category description with examples of typical responses in each category (Krippendorff, 1980). Two nurse experts were asked to validate the description of each category prior to analysis (McCain, 1988; Weber, 1985).

Instrumentation

Background data were collected to describe the characteristics of the sample (see Appendix A). The background information necessary to accurately depict each study subject was the age, race, educational level, marital status, employment status, economic status, and health status including diagnosis, number of years since diagnosis, use of hypoglycemic agents, dietary restrictions, use of self-monitoring of blood glucose (SMBG), and description of any disabilities. Characteristics of the sample were described stressing similarities and differences of these "basic conditioning factors" (Orem, 1991, p. 136).

An in-depth, audiotaped interview was conducted by the researcher utilizing open ended questions from a researcher-developed interview guide (see Appendix B). The interview was designed to explore the NIDDM outpatients' abilities and limitations in performing self-care. Interview data were treated as an expression of the outpatients' realities (Marshall & Rossman, 1989; Silverman, 1985).

The researcher-developed interview guide (see Appendix B) was composed in a systematic manner beginning with the

selected components of Orem's self-care agency theoretical framework (see Figure 1). First the researcher reviewed the definitions and descriptions of each of Orem's (1991) self-care abilities and limitations. This review was used to stimulate the researcher to develop questions that would produce patient responses related to diabetes self-care practices. Areas addressed in questions were focused on the subject's ability or inability to: attend mentally and physically to self-care needs; become motivated to practice self-care; engage in reasoning within a self-care frame of reference; make decisions about self-care; possess, organize, and implement adequate self-care knowledge and skills; and integrate self-care practices into daily life activities. A review of the current diabetes specialty literature provided the further delineation and organization of the major therapeutic requirements of NIDDM patients (i.e., diet/meal planning, medication, exercise, self-monitoring of blood glucose, and experience of hyperglycemia and hypoglycemia) (see Figure 1). Some examples of the open-ended questions used by the interviewer to focus on, but not to become exclusively limited to just one of the abilities or limitation categories, were as follows: (a) To focus on attention to self and/or motivation, the interviewer inquired, "Tell me the reasons why meal planning is important in managing your diabetes." "In your opinion, what are the advantages/disadvantages of staying on your

diabetes diet?"; (b) To focus on engaging in self-care reasoning and decision making, the interviewer asked, "Describe how you decided what you should eat for a typical day." "If you have trouble eating your diet, what do you do?"; (c) To focus on possessing, organizing, and implementing adequate self-care knowledge and skills, the interviewer questioned, "Why were you asked to eat a diabetes diet?" "Have you had any difficulty in staying on your diabetes diet? If so, describe the problem." "Describe the situations when you do not feel like cooking or eating your diet."; and (d) To focus on integrating self-care practices into daily life activities, the interviewer asked, "What plans have you made to include your diet in your daily routine?" "If anything or anyone has ever interfered with you staying on your diet, give examples and describe how that made you feel."

In order to accomplish a logical and easy interview flow and to identify any vague questions, the researcher conducted a practice interview with an NIDDM volunteer in her 70s. After this refinement, the interview guide was sent to two expert judges (advanced nurse practitioners currently specializing in outpatient diabetes care) to evaluate if interview questions were addressing all diabetes self-care practice areas for the NIDDM patient. Suggestions from the experts were incorporated. A final review of interview questions as to presence of open-ended

questions to encourage subject responses was completed by the researcher.

The use of an interview guide helped the researcher maintain the systematic gathering of data. Audiotaping and transcribing the interviews decreased the effects of researcher's bias interpretation. The face-to-face encounter with the subjects facilitated cooperation of subjects and allowed for clarification of subject responses and omissions. The fact that subjects were volunteers and were assured that their responses would remain anonymous facilitated honest responses. These approaches supported the reliability that the subjects' answers to questions were representative of their own reality.

The transcribed interviews were corrected by the researcher by listening to the tape while reading the raw transcript. The corrected transcribed interviews were subjected to content analysis by the researcher. According to Krippendorff (1980), three types of reliability are appropriate to consider when using content analysis. These types are "stability," "reproducibility," and "accuracy" (pp. 130-131). Stability was accomplished by the coder replicating the coding of one set of data at different times until inconsistencies were eliminated. Reproducibility was obtained by having two other coders apply the same coding instructions independently to the same data set. Accuracy, the strongest reliability test, was accomplished by both intracoder and intercoder reliability being at the .80

level or greater. This level was calculated by dividing the number of agreements by the sum of the number of agreements and disagreements (Polit & Hungler, 1987). Noncoding of content by either coder was treated as disagreements. Semantic validity was sought by using category description with examples of typical responses in each category. Two nurse experts were asked to validate the descriptions of each category prior to analysis. Category descriptions and examples of typical responses were further developed and refined as reliability was established.

The definition and redefinition of the category descriptions (see Appendix E) based on Orem's (1991) 10 power components and self-care limitations framework were essential in establishing reliability and semantic validity of the researcher's content analysis category descriptions. The first category descriptions were composed using Orem's (1991) definitions and descriptions in combination with Stullenbarger's (1984) descriptions of self-care abilities. Examples of typical responses related to self-care limitations were given based on five subjects' coded responses obtained from a pilot study addressing self-monitoring of blood glucose practices of NIDDM patients. Only self-care limitations were coded in the pilot study subjects who were identified by their health-care professionals as not performing self-monitoring of blood glucose as prescribed. These definitions, descriptions,

and sample typical responses of categories were submitted for review to two experts on the use of Orem's conceptual framework in research, education, and practice. These experts were asked to review the defined categories, and their suggestions for clarification and completeness were incorporated in the descriptions.

In order to further refine the category descriptions, this researcher offered the opportunity for registered nurses enrolled in a master's program to be trained as coders for content analysis of a portion of this research data using the category descriptions. Six students with varying clinical backgrounds signed up to participate in this course. These students were taught content analysis and application of this analysis technique to research data. In addition, reviews of NIDDM and the expected self-care practices required of those patients were conducted by the researcher. The actual training of the coders involved a detailed explanation of each category using one transcript coded by the researcher to demonstrate use of the defined categories. Questions and discussions concerning the application of the categories by the researcher coder were encouraged. After all questions were addressed, each student coder was assigned a subject's transcript to code independently. All coders were coding the same transcript. The researcher then met with student coders in groups of two to determine agreements or disagreements. In each of these subgroup meetings, the

category descriptions were discussed for the purposes of clarifying differences between categories and identifying coder problems with the process of content analysis. A second transcript was analyzed using the same subgroups, and refinement of category descriptions was further established. One student coder dropped out of the group because of illness. Great strides in category development were attained by refinement of descriptions and expansion of examples of typical responses in all categories. Although improvement in intercoder reliability was noted, intercoder reliability of .80 level or greater was not established. Among groups, intercoder reliability levels ranged from .24 to .51 on the first try and from .35 to .54 on the second effort. Improvements from first attempt to second attempt ranged from 0 to .29.

After the initial practice experience with coding study data, the following coding strategies were utilized for training coders for the purposes of this study: (a) teach coders about content analysis and its application as an analysis technique to this research data (include category shorthand coding method to be used); (b) review NIDDM and the self-care practices required of those patients; (c) provide a written detailed description of each content category, including some examples of statements coded in each category (identify key words that might indicate a specific category); (d) provide one coded sample transcript for an example; (e) instruct coders to

only code comments that directly relate to the subject's NIDDM health-care practices; (f) assign only one half of one transcript for coding the first time (allows for discussion of difficulties before frustrations become overpowering and counterproductive); (g) encourage coders to write down rationale for choosing one category over another if they experience indecision or confusion when coding independently; (h) meet with coders to discuss agreements or disagreements, ensuring review and resolution of disagreements by refining category descriptions and typical examples (calculate reliability levels before and after noncoding errors are resolved); (i) assign second half of same transcript and repeat coding and review process; (j) after completing calculations of second half of transcript, consult with coders as to their readiness to code an entire transcription in one effort; and (k) repeat process until .80 reliability is established between researcher and coders with an entire transcript.

With the coding strategies established, the next stage was to recruit two coders to spend the time and effort required for coding data accurately and consistently. The goal was to establish a .80 level or above between the coders and researcher on one complete subject transcript. One master's level graduate student was recruited from the original six student coders involved in the described course. The second recruited coder was a graduate faculty member with experience in a diabetes specialty area.

Because the student coder had received the initial orientation to content analysis and review of NIDDM required self-care practices, the second coder was stepped through this process. After coding one half of a transcript, the researcher met with each person to discuss agreements or disagreements in coding. During the first coder meeting, both coders' reliability scores were .74 and .32 accounting for disagreements and noncoding errors on the first half of the transctipt. When noncoding errors were removed, the reliability scores improved to .90 and .37, respectively. On the second half of the transcript, the coders' reliability scores were .66 and .35 accounting for all disagreements. When noncoding errors were removed, the transcribed second half reliability scores improved to .78 and .46, respectively. The coder with the lowest reliability scores (faculty member) reported experiecing an extremely difficult time accepting the use of defined category descriptions. This coder identified the significant words and phrases, but could not apply the defined categories consistently, resulting in low noncoding errors but large numbers of disagreements with the researcher. After one more attempt at coding another one half of a different transcript, the faculty coder stated that the problem was that she could not set aside her own preexisting framework that she had used for over 20 years with diabetic patients. This coder's third attempt resulted in reliability scores of .36, and removing

noncoding errors the score improved to .44. Identifying that she was not able to reconcile her differences, the faculty coder withdrew herself as a coder. Another student, who had taken part in the initial course offered to students, was recruited to take the faculty coder's place. The new second coder proceeded to code data with resulting reliability scores for the first half of the transcript was .47. When noncoding errors were removed, the reliability score improved to .54. On the second half of the transcript, the new second coder reliability score was .58. When noncoding errors were removed, the reliability score improved to .73.

During the meeting with each of the two student coders, rationales for coding decisions that were made when two categories appeared to be overlapping were discussed. Examples of these clarifications of category descriptions between abilities were as follows:

1. The "Attention" category states that people accept responsibility for their self-care actions but may not receive immediate rewards from those actions, whereas the "motivation" category states that a direct effect or personal reward is identified. For example, a general statement, such as "So that I can have good control" does not identify the receipt of a personal reward as well as these three statements, "I like it," "I feel good about it," and "You need to do something yourself."

2. The "Reasoning" category would demonstrate the problem-solving strategies only, while the "reasoning with decision evident" category required that the decision or the self-care action be clearly identified. An example of self-care reasoning would be, "When my sugar was high and I lost my energy, I didn't want to do those things (exercise). I'm back in my routine, I'm down with my weight." An example of self-care reasoning with a decision evident would be "I just use half of my lunch hour (to walk) which keeps me from eating (extra) anything,".

3. The three categories--acquiring, retaining, and operationalizing technical knowledge; possessing a repertoire of self-care skills; and ordering self-care actions--were more clearly differentiated by (a) identifying the technical knowledge, only when the subject directly quoted his or her health care provider; (b) depicting the repertoire of self-care skills by the subject by explaining "how to do" the skill in his or her own words; and (c) ordering self-care actions when the subject indicated that he or she made a judgment to take an appropriate self-care action based on previous knowledge. An example of directly quoting the health care provider would be, "She [the nurse] said 'Did you know that if you would do it [stick finger] on the side of your finger, you will get it drawn much easier and it wouldn't be as tender?'" An example of explaining "how to do" in own words would be, "Just before going to bed, a few crackers with peanut

butter, protein, so that it'll change to sugar in the middle of the morning (2 or 3 o'clock) to avoid the liver producing sugar." An example of judging seld-care action based on previous experience would be, "If I reasonably watch my diet, I keep my blood glucose levels under 160, then I feel good and I have no problems."

Examples of clarifications of category descriptions during coding between SC limitations were as follows:

1. The category labelled impairment of knowledge related to cognitive or emotional difficulties was contrasted with the category labelled lack of making judgments and decisions related to intense emotional states. For example, knowledge would be impaired by forgetfulness or presence of depression, whereas lack of judgments and decisions would be altered by extreme emotional states, such as anger and shame.

2. The three categories--lack of knowledge related to thought processes not being reality based, the lack of ability to make judgments and decisions related to inaction or indecision, and lack of engaging in result-achieving courses of action related to lack of motivation--were very difficult to distinguish on many occasions. An example for not being reality based would be, "that diabetic pill is letting me down." An example for inaction/indecision would be, "I didn't pay attention to what I ate." An example for lack of motivation would be, "I don't have enough will power."

After much discussion and sharing of rationales, the next step was to complete an entire subject transcript with the goal of .80 or above reliability level. Researcher to coder one's reliability score was .83, and when noncoding errors were resolved, the score was .88. Researcher to coder two's reliability score was .81, and when noncoding errors were resolved, the score was .87. From the initial recruitment of the original coders until the establishment of .80 or above reliability levels at the third and final coding sessions, a period of 6 months had elapsed. In addition to the described difficulties in coding and having to recruit a new second coder, one coder had to have surgery during this time frame. In summary, problems centered around the tremendous time commitment required of coders and the motivation of coders to learn about the category descriptions even when those categories failed to fit their personal preexisting professional frameworks.

When intercoder reliability was established, intracoder reliability was established by the researcher coding two different subjects' transcripts at different points in time. The researcher efforts resulted in intracoder reliability of .81 and .80 for the two subjects. When intercoder and intracoder reliability was established at .80 level or greater, the tool and the researcher were ready to proceed to code all the transcripts. All transcripts were coded and then reviewed a second time on

a different day to assure the researcher that noncoding errors would be reduced.

Visual analogue scales (VASs) were constructed and used as a self-report device to measure the subjective phenomenon (Gift, 1989) of the outpatients' degrees of integration of diabetes self-care practices into their daily lives (see Appendix C). Within nursing research, VAS has been used to measure various dynamic phenomena, such as pain, quality of life, and functional abilities. Reliability of VAS has been evaluated almost entirely by investigating properties of the methodology (Wewers & Lowe, 1990). Vertical and horizontal VAS demonstrated equal sensitivity in the measurement of pain (Scott & Huskisson, 1979). Lines shorter than 10 cm resulted in the greatest error variance (Revill, Robinson, Rosen, & Hogg, 1976). Right angle ends of the scale with the descriptors occurring before and after the absolute ends were recommended (Wewers & Lowe, 1990). For this study the VAS properties chosen were a 10 cm horizontal line with absolute ends.

The self-report of consistent integration of diabetes self-care practices into their daily life activities was measured with 12 horizontal analogue scale items (see Appendix C). Items 1 and 11 measured overall integration of diabetes management practices into daily life activities. Items 2 through 8 measured self-care practices expected of NIDDM outpatients, which concerned diabetes meal planning,

self-medication when appropriate, recognition and self-management of hypoglycemia and hyperglycemia, regular exercise, and self-monitoring of blood or urine glucose. Items 9, 10, and 12 measured resources, including access to needed supplies and equipment, family/significant others as support systems, and follow-up health care. The first 11 items were answered from the patient's experiences of the past 2 weeks. The nature of item 12, follow-up health care, necessitated framing the response over a greater time period, 1 year.

Content validity of the scales was established by inviting two expert judges to evaluate if items were representative of diabetes self-care practices that affect integration of self-care into patients' daily life activities. Each of the VASs was scored by measuring the distance from 0 to where the subject's mark has been placed on the line. The score was expressed in centimeters for each line. Zero represented a response of none of the time and 10 represented a response of all of the time. An outpatient's overall score of consistent integration of diabetes self-care practices into daily life activities was obtained by adding the scores on all 12 items and dividing by 12. If Item 4, dealing with self-medication, or any other item was not applicable, then the remaining items represented the total score to be divided by items answered to equal the overall score.

Subjects

The population included sighted outpatients over the age of 44 and under the age of 66 diagnosed with NIDDM of at least 1 year duration. NIDDM was confirmed at the time of the initial physician diagnosis. Patients referred to the researcher by a health care professional could be receiving physician prescribed insulin, oral hypoglycemic agents, or no hypoglycemic agents in their treatment. Although NIDDM patients may be prescribed insulin for treatment of uncontrolled hyperglycemia or during stressful events, such as acute illnesses, circulating endogenous insulin is usually present (Harris, 1984). In contrast to insulin-dependent diabetes mellitus, which is characterized by low or absent levels of circulating endogenous insulin, NIDDM is characterized by normal or above-normal insulin levels. Subjects were recruited from physician- and nurse-operated clinics and private practice patients and the general public by newspaper advertisements, in and surrounding a major metropolitan area. Self-referred patients were not accepted if they were using physician prescribed insulin, because a diagnosis of NIDDM could not be confirmed through a health-care professional. The sample consisted of 22 subjects recruited from the identified population. The physician or advanced practice nurse helped the researcher identify potential participants from their practice patients.

This study had 64% females and 36% males. In the general population, the incidence of NIDDM in females is 20% greater than in males (Everhart et al., 1984). The researcher made a great effort to recruit males to ensure a female to male ratio fairly consistent with the population. According to the general population characteristics reported for the state of Tennessee, where the study was conducted, the age category of 45 to 64 years was composed of 48% males (U.S. Department of Commerce, 1992). Although the percentage of males in the study age range reported in urban areas was reduced to 46% in comparison to the urban fringe area reported at 49%, no reason could be identified in the available population pool for the difficulty in recruiting males. The non-White population was not adequately representative in this sample of 21 White volunteers and one African-American volunteer. In the United States, NIDDM occurs at a higher rate in African Americans in all age groups (Everhart et al., 1984). In the state of Tennessee, the percent of distribution of the general population by race is White 83%, African American 16%, and all other 1% (U.S. Department of Commerce, 1992). In this study, 4.5% were African American. This low percentage of participation of African-American NIDDM patients might best be explained by the lower percent of African Americans reported in the urban fringe, which is 4.4% in comparison to 94.2% White and 1.4% of all other races for the state of Tennessee. Although the subjects

were recruited from practices based in an urban setting, one of the two was a referral center reporting 63% of patients living outside the city (Graber, Davidson, Brown, McRae, & Wooldridge, 1992). Advertisements for participants covered the urban area and its surrounding counties. Of all study subjects, 72.7% were self-referred from advertisements. The low African-American general population pool helps to explain the low number of African-American participants in this study. Application of this study's findings to the African-American population would be inappropriate with such a low representation of African-American subjects.

All subjects were paid $50.00 for their participation in the study. Inconveniences were kept at a minimal level by providing free parking for those who needed it, making or holding interviews at the clinics or physician offices when possible, and scheduling interviews at subjects' chosen times. Distances subjects reported traveling were no greater than 20 miles one way. In the case of two handicapped subjects, special arrangements were made for easy access to interview rooms. With special consideration for the subjects' dietary restrictions, only water was offered as a refreshment. All subjects were recruited and interviewed within a 6-month frame of time.

Human Use Considerations

An Expedited Review Application was submitted to the University of Alabama at Birmingham and Vanderbilt

University Institutional Review Boards (IRBs). Cooperation and consent from the referring agencies and the referring physicians and nurses were secured prior to any contact with potential subjects. When participants were self-referred, only subject consent was obtained.

Procedure

The physician or advanced practice nurse screened their patients as to age, diagnosis, and length of time since diagnosis. The health care provider made the initial contact with the patient and obtained verbal consent for the researcher to be given the patient's name, address, and telephone number. Additional subjects were recruited through newspaper advertisement for volunteers meeting the study criteria with an additional restriction that patients not be taking insulin. Self-referred patients were not accepted if they were using physician prescribed insulin because a diagnosis of NIDDM could not be confirmed through a health care professional. The study was explained and permission gained by a consent letter given to the patient (see Appendix D). After the permission letter was signed, the researcher collected the research data.

After background data were obtained, including verbal verification of diagnosis, age, and length since diagnosis (see Appendix A), an in-depth audiotaped interview was conducted using open-ended questions from the interview guide (see Appendix B). At the end of the interview, the

VASs were explained to the subjects and the subjects were asked to rate themselves on each of the 12 scales, which measured the integration of diabetes self-care practices into their daily lives (see Appendix C).

Information obtained about the patient for the purposes of the study did not have a name on it. A number was placed on the data collection sheet, audiotape, and VAS and in no way was the patient identified by that number. A secretary transcribed the audiotapes, omitting any spoken names and inserting initials in their place. Only first names were spoken during the interview to ensure confidentiality. All audiotapes were erased at the end of the study. The data and transcripts were kept in a locked cabinet in the researcher's office. The patient name appeared on the consent form but no number appeared on the consent form. Consent forms are confidential and accessible only to the researcher and her faculty advisor for the project. When the results of the research are published and/or shared with other health professionals, the patient will be identified only by number.

Analysis

Descriptive statistics were used to describe sample characteristics of age, race, educational level, marital status, employment status, economic status, diagnosis, number of years since diagnosis, use of oral hypoglycemic agents, dietary restrictions, use of self-monitoring of blood glucose, and disabilities/additional chronic

illnesses. The strategy was to identify and categorize content by using content analysis. The raw data were analyzed by identifying those words, phrases, and sentences that indicate behaviors and patterns of living that composed a patient's self-care abilities and limitations as defined in the identified categories (see Appendix E). Category frequencies were calculated for each subject. Total frequency counts were calculated for each ability and limitation categories. Total abilities category frequency counts, when compared with total abilities counts, were used to account for percentage of coded abilities responses by this sample. Coded limitation responses also were analyzed in this manner. Description of these percentage of coded abilities and limitations responses allowed for discussion of characteristics of abilities and limitations identified in this NIDDM sample. Categorized terms and phrases supported further description of self-care abilities and limitations as defined by Orem (1991). Analysis of both the interview content and the scores on the patients' self-reported VASs were necessary to define the degree of consistent integration of patients' diabetes self-care practices into daily life activities. Synthesis of several themes was necessary to define the integration of self-care practices into daily life activities. The presence or absence of a relationship between self-care abilities and limitations was considered during the evaluation of category

correlations. The researcher described the between subject similarities and differences by means of both the descriptive statistics of background data and scores on the VAS (see Figure 1).

Limitations

For the purpose of this study, the following limitations are identified: (a) because other populations with different therapeutic self-care demands may impose unique challenges that would alter self-care abilities and limitations, generalizations about results cannot be made to other age groups, insulin-dependent diabetic patients, or other chronically ill populations; (b) participants who are currently experiencing complications of diabetes that require additional treatments may express abilities and limitations associated with acute illness situations, which would alter responses related to self-care; and (c) family members or significant others were not included in the interview process, therefore validation of patients' self-reported self-care abilities and limitations was not possible.

CHAPTER IV

Findings

The responses of 22 non-insulin-dependent diabetes mellitus (NIDDM) sighted, outpatients between the ages of 45 and 65, diagnosed for at least a 1 year duration, were studied. Background data were used to describe the sample characteristics. Descriptions of self-care abilities and limitations were completed by calculating category frequency counts and determining what percentage of abilities and limitations each coded category accounted for in this sample of NIDDM subjects. To further explore the relationship between self-care abilities and limitations in NIDDM sample subjects, content category correlations were evaluated. Description of the integration of self-care practices into daily life activities for NIDDM outpatients was accomplished by analyzing both the interview abilities' content category coded responses labelled "Integrating self-care operations with other aspects of living" and the overall score on the patient's self-reported visual analogue scales (VASs), measuring consistent integration of diabetes self-care practices into daily life activities.

Descriptions of the Subjects

Of the 22 subjects, 14 were female and 8 were male. The age range was from 45 to 64 with a bimodal distribution at 55 and 58. The mean age was 56; the standard deviation (SD) was 6.055; and the median age was 57.5. The age range of females was from 45 to 64 with a mean age of 56.8. The age range of males was from 47 to 64 with a mean age of 54.6. Of all subjects, 62.5% were males below the mean age while only 28.6% of females were below the mean age. There were 21 White subjects and 1 African-American subject who was a 64-year-old female.

Marital status in relationship to gender is represented in Table 1. Females are present in all categories, but males were either married, divorced, or single. Of all the subjects, 63.6% were married while 36.4% were equally divided among the remaining categories.

Table 1

Marital Status

Gender	Married	Separated	Divorced	Widowed	Single
Female	8	2	1	2	1
Male	6	0	1	0	1
Total	14	2	2	2	2

Educational level in relationship to gender is shown in Table 2. Of all subjects, 36.4% have completed high

school, 27.3% have completed some college work, 22.7% have earned a college degree, and 13.6% have completed eighth grade or above.

Table 2

Educational Level

Gender	8th grade or above	Completed high school	Some college	College degree
Female	3	5	4	2
Male	0	3	2	3
Total	3	8	6	5

Employment status in relationship to gender is represented in Table 3. Of all subjects, 45.5% are employed, 27.3% are disabled, 18.2% are unemployed, 9.1% are retired. Of the male subjects, 62.5% were employed while only 35.4% of the female subjects were employed. Of the female subjects, 35.7% were disabled while only 12.5% of the male subjects were disabled.

Table 3

Employment Status

Gender	Employed	Unemployed	Disabled	Retired
Female	5	3	5	1
Male	5	1	1	1
Total	10	4	6	2

Occupations in relationship to gender are represented in Table 4. Of all subjects, 36.4% were unskilled laborers, 31.8% were office workers, 9.1% were skilled laborers, 9.1% were salesman/consultants, 9.1% were professionals, and 4.5% were executives. No males reported occupations classified as office workers, while no females reported occupations classified as salesman/consultants or executives.

Table 4

Occupations

Gender	Unskilled laborer	Skilled laborer	Office worker	Salesman/ consultant	Exe- cutive	Pro- fessional
Female	5	1	7	0	0	1
Male	3	1	0	2	1	1
Total	8	2	7	2	1	2

Table 5 represents the employment status as to occupations. Of the office workers, 71.4% reported being employed while only 13.6% of unskilled laborers reported being employed. Of all disabled subjects, 50% were classified as unskilled laborers. All the professionals in the study were retired (see Table 5).

The range of annual income of family reported by all subjects was 0 to $75,000 with a multimodal distribution. The mean income was $23,800 (SD = $18,283; and the

Table 5

Employment Status Related to Occupation

Occupation	Employed	Unemployed	Disabled	Retired
Unskilled laborer	3	2	3	0
Skilled laborer	0	0	2	0
Office worker	5	1	1	0
Salesman/ consultant	1	1	0	0
Executive	1	0	0	0
Professional	0	0	0	2

median was $20,500. The income range of females was 0 to $45,000 with a mean of $18,071. The income range of males was 0 to $75,000 with a mean of $33,825. Of the female subjects, 71.4% were below the mean income of all subjects while only 25% of males were below the mean income of all subjects. Female incomes showed a negatively skewed distribution while male incomes showed a positively skewed distribution. Five subjects earned incomes below $6,999, 7 subjects earned incomes between $7,000 to $27,999 (lower income group), 9 subjects earned incomes between $28,000 and $46,000 (middle income group), and 1 subject earned an income of $75,000. Removing the extreme outlyer of $75,000 results in a recalculated mean income for 21 subjects of $21,362. Therefore, the median for all subjects or the

mean after removal of the extreme outlyer is more accurate at describing the sample. The mean for all subjects lies within the lower income group.

The number in the family unit ranged from 1 to 5 with the mean, median, and mode being 2. The relationships between number in the family unit and gender are represented in Table 6. Of all the females, 57.1% have two members in their family units while 50% of all males have two members in their family units. Of all females, 28.6% have single family units while 25% of all males have single family units. There is a moderate positive correlation of 0.52 at 0.01 level of significance between number in the family unit and income level. The one female subject having five members in her family reported a family income of $45,000. The 3 subjects reporting three members in the family unit were two males, one with a family income of $46,000 and the other at $35,000, and one female with a family income of $6,000. Of the 12 subjects with two members in the family unit, the family income range was from $12,000 to $75,000 with a mean income of $29,500. Of the 6 subjects with single family units, the family income range was from 0 to $20,000, with a mean of $6,267. Of the single family units, 4 subjects were earning incomes below $6,999. Of the single family units, two subjects were unemployed with no income and two subjects were disabled receiving only disability payments.

Table 6

Number in Family Unit

Gender	1	2	3	4	5
Female	4	8	1	0	1
Male	2	4	2	0	0
Total:	6	12	3	0	1

Health status was assessed by the self-reported presence and number of other chronic illnesses, disabilities, and/or diabetic complications; number of years since diagnosis, and use of hypoglycemic agents; and number and type of dietary restrictions. The occurrence of other chronic illnesses, any disabilities, and diabetic complications are represented for all subjects and for females and males in Table 7. Other diagnoses given by two or fewer subjects were heart dysrhythmia, congestive heart failure, angina, morbid obesity, depression, paralysis postpoliomyelitis, peripheral neuropathy, Paget's disease, gastric ulcer, hiatal hernia, psoriasis, cataracts, and hearing loss. There were a total of 20 diagnoses reported by the subjects themselves. One or more chronic illnesses, in addition to diabetes mellitus (DM), were reported by 86.4% of the subjects. In addition to DM, 50% of the subjects reported three or more chronic illnesses.

Table 7

Occurrence of Other Chronic Illnesses/ Disabilities/Complications

Diagnoses	% in all subjects	% of females	% of males
Hypertension	63.6	64.3	62.5
Arthritis	54.5	64.3	37.5
Degenerative disease of the spine	22.7	28.6	12.5
Asthma	13.6	21.4	0
Peripheral vascular insufficiency	13.6	3.6	12.5
Hypothyroidism	13.6	3.6	12.5
Hypercholesterolemia	13.6	21.4	0

The number of years since diagnosed with non-insulin-dependent-diabetes mellitus (NIDDM) ranged from 1.4 years to 20 years with a negatively skewed distribution. The mean was 7.4 years (SD = 6.7), median was 5.5 years, and the mode was 1.5 years. Percentages of all subjects and females and males grouped as to years since diagnosis are shown in Table 8. When examining the relationship between age and years since diagnosis, the group of 1 to < 3 years had an age range from 45 to 64 with a mean of 56.4 years; the group of > 3 to < 12 years had an age range of 45 to 64 years, with a mean of 55.8 years; and the group of > 12 to 20 years had an age range of 48 to 62 years, with a mean

of 55.6 years. All ranges and means were consistent with characteristics of the entire sample.

Table 8

Percent of Subjects Related to Years Since Diagnosis

Years since diagnosis	% of all subjects	% of females	% of males
1 to < 3	41	50	25
> 3 to < 12	36.3	28.6	50
> 12 to 20	22.7	21.4	25

Hypoglycemic agents currently in use in relationship to gender are represented in Table 9. Of all subjects, 54.5% used oral agents, 27.3% used no hypoglycemic agents, and 18.2% used insulin.

Table 9

Hypoglycemic Agents Currently in Use

Gender	None	Oral agents	Insulin
Female	5	7	2
Male	1	5	2
Total:	6	12	4

Hypoglycemic agents currently in use in relationship to number of years since diagnosis are shown in Table 10. In the group diagnosed from 1 year to < 3 years, 55.6% used

none and 44.4% used oral agents. In the group diagnosed from > 3 years to < 12 years, 75% used oral agents; one used no medication and one used self-prescribed insulin (physician had prescribed an oral agent but the subject started taking insulin independently 3 months earlier). In the group diagnosed from > 12 years to 20 years, 40% used oral agents and 60% used physician prescribed insulin.

Table 10

Hypoglycemic Agents Currently in Use Related to Years Since Diagnosis

Years since diagnosis	None	Oral agents	Insulin
1 to < 3	5	4	0
> 3 to < 12	1	6	1
> 12 to 20	0	2	3

Hypoglycemic agents currently in use in relationship to age was evaluated for ranges and means. In the group using no hypoglycemic agents, the age range is from 45 to 64, with the mean being 58; in the group using oral hypoglycemic agents, the age range is from 45 to 64, with the mean being 55.4; and in the group using insulin, the age range is from 47 to 62, with the mean being 54.8. All ranges, distributions, and means were consistent with characteristics of the entire sample.

Responses to questions regarding dietary restrictions were not limited to a single answer; therefore, one subject could respond in multiple categories. Of the total sample, subjects responded as follows: 63.6% restricted their sugar, 31.8% had specific calorie restrictions, 36.4% restricted or measured portions, 18.2% reduced salt in their diet, 18.2% reduced fat, 13.6% reduced carbohydrates; 13.6% increased dietary fiber, 4.5% used a weight reduction diet, and 4.5% avoided alcohol. All subjects, except one 55-year-old male who would not respond to the question, stated that they restricted their sugar and/or their calorie amounts.

Use of self-monitoring of blood or urine glucose was assessed as to which type they practiced and how often they assessed them. Table 11 shows the use of self-monitoring of blood or urine glucose in relationship to gender. Of the total sample, 45.5% self-monitor their blood glucose (SMBG), 45.5% use no self-monitoring of blood or urine glucose, and 9% self-monitor their urine glucose.

Table 12 represents the relationship between hypoglycemic agents currently used and type of self-monitoring used. Of all subjects who use oral hypoglycemic agents, 50% monitor their blood or urine glucose while 75% of all subjects who use insulin monitor their blood glucose. One 55-year-old male on insulin had stopped testing his blood glucose 6 months ago because of a "bad attitude."

Table 11

Use of Self-Monitoring of Glucose

Gender	None	Blood	Urine
Female	7	6	1
Male	3	4	1
Total:	10	10	2

Table 12

Use of Self-Monitoring of Glucose Related to Hypoglycemic Agent Used

Hypoglycemic agent used	None	Blood	Urine
None	3	3	0
Oral agent	6	4	2
Insulin	1	3	0

Frequency of self-monitoring of blood or urine glucose in relationship to type used is depicted in Table 13. Of the subjects taking insulin who tested their blood glucose, 100% checked it two or three times a day. Of the subjects checking their blood glucose, 80% tested it on a weekly to daily basis.

Subjects were referred to this study either by themselves or through nurse/physician referrals. Table 14

Table 13

Frequency and Type of Self-Monitoring of Glucose

Frequency of use	Blood	Urine
2-3 times a day	3	1
1-3 times a week	5	0
2-3 times a month	1	1
No schedule	1	0

Table 14

Subject Referral Source

Gender	Self	Nurse/physician
Female	9	5
Male	7	1
Total:	16	6

represents referral source by gender. All subjects currently taking insulin were referred by nurse/physician sources except for the subject who self-prescribed his own insulin. Of all the subjects, 72.7% were self-referred from advertisements. The remaining 27.3%, referred by nurses or physicians, had an age range from 45 to 62 years, with a mean of 56.5. The range, distribution, and mean are representative of the entire sample. Of note, those

subjects referred by nurse/physician source had an annual income range from $5,000 to $29,000, with a mean income of $10,767. This mean was much lower than the mean income of all subjects and all females, which was $23,800 and $18,071, respectively.

Presentation of Findings

Analysis of Self-Care Activities and Limitations

The frequency of occurrence of self-care abilities and limitations was determined by content analysis of transcribed interview responses of 22 subjects. Tables 15 and 16 demonstrate the frequency of occurrence of self-care abilities and limitations for all subjects. Actual frequency of occurrences of self-care abilities and limitations was most meaningfully analyzed by considering the total number of responses by the entire sample coded in an individual category. Total frequency counts of self-care abilities categories for all subjects are reported in Table 17. Total frequency counts of self-care limitations categories for all subjects are reported in Table 18.

The two abilities categories that addressed "energy level" and "body control" were the least coded. The remaining abilities categories are cognitively related skills that are more likely to be reflected in subject responses. Subjects tended not to talk about how energetic or agile they were. Instead, they did mention their limitations, which were coded in the limitation category labelled "No physical power to attend to self." Because

Table 15

Frequency of Occurrence of Self-Care Abilities

Self-care abilities / Subject #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	$\bar{x}$
Attention	10	19	17	23	13	14	13	12	17	19	13	19	8	9	13	9	5	9	7	14	16	11	13
Energy level	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Body control	0	0	0	3	0	0	1	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
Reasoning	1	4	10	3	2	7	12	10	5	7	4	11	12	9	13	10	8	1	2	9	15	15	8
Motivation	18	32	12	37	16	16	22	26	9	21	21	16	13	9	16	11	17	16	14	16	15	25	18
Reasoning with decision evident	2	7	4	29	3	3	7	4	1	4	11	8	6	3	7	5	4	5	1	5	4	4	6
Quoting health care provider	3	8	1	8	3	0	7	1	0	1	5	4	3	1	4	3	1	5	0	7	6	12	4
Explains "how to" in own words	6	3	1	1	1	0	0	3	0	3	6	1	7	2	2	5	1	10	0	0	3	2	3
Judges action on previous knowledge	5	2	2	1	0	0	0	0	0	0	2	1	4	4	2	1	0	2	0	1	6	3	2
Fitting it into their life	11	9	4	9	0	0	6	9	0	4	3	5	8	7	18	2	3	3	1	5	4	6	5
Total:	57	84	51	114	39	40	68	65	32	61	65	69	61	44	76	46	39	51	25	57	69	78	59

Table 16

Fregeuncy of Occurrence of Self-Care Limitations

Self-care limitations / Subject #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	$\bar{x}$
Knowledge																							
Set 1, lack of knowledge	0	8	7	36	3	7	6	9	25	6	2	4	11	6	15	10	15	17	4	3	4	10	10
Set 2, mental deficits/ emotional illness	1	0	0	0	1	1	0	0	9	0	2	0	1	0	12	2	0	0	1	1	1	0	2
Set 3, not reality based	0	4	1	1	3	0	1	0	2	4	0	6	2	3	6	0	2	8	3	2	3	2	2
Making judgements and decisions																							
Set 1, no experience	0	1	3	5	1	2	2	0	1	1	1	1	1	2	0	1	1	1	2	2	0	0	1
Set 2, intense emotional states	0	0	0	2	0	0	0	1	1	2	3	2	4	1	8	0	2	6	8	2	0	1	2
Set 3, inaction/indecision	0	1	10	2	7	0	3	1	1	0	0	2	6	2	0	1	0	5	3	1	3	2	2
Engagement in result-achieving course of action																							
Set 1, lack of resources	0	4	5	10	1	3	2	4	16	2	3	0	1	14	1	1	3	2	2	0	2	5	4
Set 2, no physical power to attend to self	0	7	0	6	4	0	0	5	6	0	1	0	3	4	6	2	3	3	1	1	0	1	2
Set 3, lack of motivation	3	13	14	4	14	7	10	6	5	14	5	10	10	4	12	3	2	13	25	6	22	9	10
Set 4, lack of family/ social support	0	8	4	10	5	5	0	6	9	4	6	3	1	1	5	3	1	3	3	0	0	12	4
Total:	4	46	44	76	39	25	24	32	75	33	23	28	40	37	65	23	29	58	52	18	35	42	39

Table 17

Total Frequency Counts of Self-Care Abilities Categories for All Subjects

Abilities	Total counts
Attention	290
Energy level	2
Body control	7
Reasoning	170
Motivation	398
Reasoning with decision evident	127
Quoting health care provider	83
Explains "how to" in own words	57
Judges action on previous knowledge	36
Fitting it into their life	117
Total	1287

all the subjects were outpatients, the count in this category was low accounting for only 6.3% of the total limitations responses. Subject 2, a 45-year-old female who had recent foot surgery, scored highest of the individual subjects in this category. Other subjects who scored higher were those who reported having arthritis, morbid obesity, and paralysis postpoliomyelitis. An example of Subject 2 responses coded in this limitation category was "Being detained and held down by not being able to walk

Table 18

Total Frequency Counts of Self-Care Limitations Categories for All Subjects

Limitations	Total counts
Knowledge	
Set 1, lack of knowledge	208
Set 2, mental deficits/emotional illness	32
Set 3, not reality based	53
Making judgments and decisions	
Set 1, no experience	28
Set 2, intense emotional states	43
Set 3, inaction/indecision	50
Engagement in result-achieving course of action	
Set 1, lack of resources	81
Set 2, no physical power to attend to self	53
Set 3, lack of motivation	211
Set 4, lack of family/social support	89
Total:	848

(surgery) or whatever, everything added on. There was no exercise, I was not getting rid of any of the weight that I should."

The maintaining "attention" and requisite vigilance ability category had a total count of 290, which accounted for 22.5% of all abilities coded responses. Subjects

recognized that taking action or not taking action, related to their diabetes self-care, had effects on their future health. An example of a typical response in this abilities category was coded from Subject 11's transcript, "It [self-monitoring of blood glucose] makes me more conscious of watching it and being careful."

The "reasoning" within a self-care frame of reference ability category and the "reasoning with decision evident" about self-care are closely related. Category counts accounted for 13.2% and 9.9% of all abilities coded responses, respectively. Addressing these category scores jointly demonstrates one trend, that is, coded responses are lower when a decision must be evident. The limitation category that best describes the opposite of these abilities categories was "inaction or indecision." This category count accounted for only 5.9% of all limitation category responses.

The following are three abilities categories that address the progression from basic foundation of technical knowledge acquisition and comprehension to application of mastered skills of self-care to organizing planned self-care actions toward regulation goals: (a) acquires, retains, and operationalizes technical knowledge as evidenced by "quoting health care provider"; (b) has a repertoire of skills as evidenced by "explaining 'how to' in own words"; and (c) orders discrete self-care actions as

evidenced by "judging appropriate action to take by use of previous knowledge."

Each of these three abilities build on the previous one and represent an increasing level of complexity and degree of difficulty. The increasing complexity level and degree of difficulty are evident among intellectual, perceptual, psychomotor, and interpersonal skills required for knowledge comprehension, application, and planned organized self-care in these three categories. The category counts of coded responses support this hierarchical description by decreasing slightly as the level of complexity and degree of difficulty increase. The most complex skill of judging appropriate action to take by use of previous knowledge accounted for only 2.8% of all abilities category responses. This category was the lowest ability other than "energy level" and "body control." Three subjects scored 0 in all three of these abilities categories.

The ability labelled "motivation" demonstrated the highest count of all abilities categories accounting for 30.9% of those coded responses. The limitation category labelled "lacks motivation" was the highest limitation category count accounting for 24.9% of those coded responses. The very fact that no subject scored a 0 in either showing or lacking motivation was notable. Perhaps, the interview guide was more effective in obtaining either presence or absence of motivation than other coded

responses. The researcher supports the idea that motivation to perform one aspect of self-care practices, such as meal planning, does not always transfer to motivation to perform another aspect, such as exercise practices. Therefore, a subject could score high in both categories but not address strengths or weaknesses adequately in these areas.

The abilities category of integrating self-care operations with other aspects of living as evidenced by "fitting it into their life" accounted for 9.1% of the total abilities responses. More in-depth analysis of this ability will be addressed with the visual analogue scales.

The limitation of lack of knowledge with this sample was very important. This limitation category accounted for 24.5% of the coded responses. Subject 4, who scored the highest frequency in this category, provided two typical examples: "He [physician] didn't tell me about the diet," and "I had orange juice for a snack."

The limitation of mental deficits/emotional illness category responses in this sample centered around memory issues and depression. This category accounted for only 3.8% of the total limitations category responses. Subject 15's statement was very descriptive of this category: "If I get like now, I'm bothered with depression so all this goes behind me and a lot of times I forget what I'm doing."

The limitations of thought processes category--"not reality based"--accounted for 6.3% of the total limitations

responses. Subject 18 had the highest score in this category and provided a typical example of this category: "I know that medication is supposed to help me lower that blood sugar so I don't have to worry about it so much."

The limitations category that addresses the lack of knowledge base and experience that interferes with making judgments and decisions accounted for the lowest number of total limitations responses at 3.3%. Subject 3 had a very typical comment for this sample concerning recognition of low blood sugar: "I don't really know how that feels. It's never been low."

The limitations category of intense emotional states did not occur frequently accounting for only 5.1% of the total limitation responses. Emotions, such as fear, shame, and anger, might be described. An extreme dislike for a part of the therapeutic regime would be expressed in this category. Subject 19 gave one example: "I was ashamed of being a diabetic. And I didn't want most people to know it."

The limitations category of lack of knowledge, skills, and resources to implement self-care and lack of family and social support services accounted for 9.6% and 10.5%, respectively, of the total limitations responses. These two categories were only surpassed in frequency counts by lack of motivation and lack of knowledge categories. Subject 4 provided an excellent example of lack of resources: "I've had nobody to sit down and talk to me, nobody to give the, really, do this, don't do this."

Subject 22 gave a very typical response, coded in the lack of family support category: "My wife, she hasn't been any help, you know. She just keeps shoveling that sweet stuff out, you know."

To further explore the relationships between self-care abilities and limitations, correlation coefficients were computed among all content categories. There was a positive moderate correlation between attention ability and reasoning with decision evident ability, $r = .5189$, $p < 01$. A moderately strong positive relationship was found between the motivation abilities category and the ability of reasoning with decision evident category, $r = .6747$, $p < .001$. A positive moderate relationship was evident between the motivation abilities category and quoting health care providers technical knowledge category, $r = .5917$, $p < .01$. There was a positive moderate correlation between the limitations categories of lack of knowledge and lack of resources, $r = .5585$, $p < .01$. A positive moderately strong correlation was evident between lack of knowledge and no physical power to attend to self, $r = .6228$, $p < .001$. Also present was a moderate positive correlation between lack of knowledge and lack of family and social support services, $r = .5165$, $p < .01$. Finally, there was a positive moderate correlation between thought processes not reality based and intense emotional states limitations categories, $r = .5426$, $p <.01$. No additional significant correlations were identified between related

abilities and limitations categories (e.g., presence of motivation versus lack of motivation).

Integration of Self-Care Practices Into Daily Life Activities

To understand the process of integration of health-deviated self-care into daily life activities of NIDDM outpatients, 12 self-report Visual Analogue Scales (VASs) were administered to all subjects (see Appendix C). The subject's overall score on the VASs was expected to measure consistent integration of diabetes self-care practices into daily life activities. The relationship of the overall score to all single VAS scores was analyzed. In addition, an analysis of overall VAS score and content of the abilities category labelled, "Integrating self-care operations with other aspects of living" was completed.

Using their diabetes self-care activities in the past 2 weeks as a reference point, all subjects responded to VAS-1, care management; VAS-2, meal planning; VAS-3, timing meals; VAS-6, exercise; VAS-9, supply resources (food, medicines, self-monitoring equipment supplies) access; VAS-10, significant others support; VAS-11, integration of self-care practices into daily activities; VAS-12, health care access over the last year. Not all subjects responded to four of the VASs. The VASs missing responses and the number of subjects responding were as follows: VAS-4, medication (n = 15); VAS-5, recognizes hypoglycemia (n = 13); VAS-7, self-monitoring of blood or urine glucose

(n = 15); VAS-8, recognizes hyperglycemia (n = 14). For the VAS-4, medication, 16 subjects actually reported use of hypoglycemia agents. Subject 9 chose not to respond to this VAS, but she had stated on her background data assessment that she was not presently taking her oral hypoglycemic agent because she had "no money" to buy it. For the VAS-7, self-monitoring of blood or urine glucose, 12 subjects actually reported practicing either blood or urine glucose monitoring activities. After further analysis, it was evident that Subjects 6 and 10 interpreted the statement to include going to their health care provider for checks of blood glucose as self-monitoring behavior. In addition, Subject 3 chose not to respond even though he reported performing self-monitoring of blood glucose, but only when he thinks it is high. Subject 14 chose to respond even though she reported no self-monitoring of blood or urine glucose activities because she had "no money" for it.

Correlations among VASs to which all subjects responded and the overall score are reported in Table 19. The average overall score represented as VAS-AVG demonstrated a positive strong correlation with meal planning; moderately strong correlation with care management, supply resources access, and integration into their life activities; and moderate correlation with timing meals and health care access. All p values were significant, $p < .01$. VAS-6, exercise, and VAS-10,

Table 19

Correlations Among VASs to Which All Subjects Responded

	VAS-1	VAS-2	VAS-3	VAS-6	VAS-9	VAS-10	VAS-11	VAS-12	VAS-AVG
VAS-1 (Care Management)	1.000	---	---	---	---	---	---	---	---
VAS-2 (Meal Planning)	.6503**	1.000	---	---	---	---	---	---	---
VAS-3 (Timing Meals)	.4111	.5266*	1.000	---	---	---	---	---	---
VAS-6 (Exercise)	.1361	.3827	.0121	1.000	---	---	---	---	---
VAS-9 (Supply Resources Access)	.4113	.4118	.1166	-.0884	1.000	---	---	---	---
VAS-10 (Significant others Support)	.3182	.1863	.0034	.0111	.3386	1.000	---	---	---
VAS-11 (Integration into Life)	.5958*	.3883	.2682	.0730	.3644	.8007**	1.000	---	---
VAS-12 (Health Care Access)	.4905	.4116	.2104	-.0573	.7017**	.3438	.2331	1.000	---
VAS-AVG (Overall Score)	.6368**	.7617**	.5722*	.3611	.6731**	.4579	.6124*	.5948*	1.000

Note. Number of Cases = 22. VAS = Visual Analogue Scale.

VAS-AVG = Average Overall Score.

*$p < .01$. **$p < .001$.

significant other support, exhibited a weak relationship with an average overall score (VAS-AVG). In addition, there was a strong relationship between VAS-10, significant others support, and VAS-11, integration into life activities, $p < .001$. Also, a strong correlation was evident between VAS-9, supply resources access, and VAS-12, health care access, $p < .001$.

Correlations among VASs to which limited subjects responded and average overall score are represented in Table 20. The overall score exhibited a positive moderately strong correlation with VAS-7, self-monitoring of blood or urine glucose, $p = .005$); and moderate correlation with VAS-4, medication, $p = .011$. Of special note, there is a positive strong correlation between VAS-4, medication, and VAS-7, self-monitoring of blood or urine glucose, $p = .007$).

Tables 21 and 22 represent the female and male self-care integration measurements of females and males, respectively. The range of overall VAS scores was 4.76 to 9.23, and the overall VAS mean score was 7.47. The range of female VAS scores was 4.93 to 9.23, and the female VAS mean score was 7.52. The range of male VAS scores was 4.76 to 8.59, and the male VAS mean score was 7.38. The overall range of frequency of self-care ability of fitting it into their life was 0 to 18, with a mean of 5.3 accounting for 9.1% of the total limitation responses coded. The female range of frequency of self-care ability

Table 20

Pairwise Correlations Among VASs to Which Limited Subjects Responded

	VAS-4	VAS-5	VAS-7	VAS-8	VAS-AVG
VAS-4 (medication)	1.000	---	---	---	---
VAS-5 (recognizes hypoglycemia)	.2979 (n = 8)	1.000	---	---	---
VAS-7 (SMB[U]G)	.7155* (n = 11)	.7248 (n = 8)	1.000	---	---
VAS-8 (recognizes hyperglycemia)	.4540 (n = 12)	.7435 (n = 9)	.5066 (n = 11)	1.000	---
VAS-AVG (overall score)	.5823 (n = 15)	.5197 (n = 13)	.6359* (n = 15)	.5826 (n 14)	1.000

Note. VAS = Visual Analogue Scale. SMB(U)G = Self-monitoring of blood or urine glucose. VAS-AVG = Average overall score.

*p < .01.

Table 21

Self-Care Integration Measurements of Female Subjects

Self-care measurements	Subject # 1	2	4	7	8	9	10	11	12	14	15	16	17	18
Overall VAS score	9.13	6.75	9.23	8.45	8.15	4.93	8.57	6.10	7.74	4.99	7.9	7.9	7.17	8.31
Frequency of integration behaviors	11	9	9	6	9	0	4	3	5	7	18	2	3	3

Note. VAS = Visual Analogue Scale.

Table 22

Self-Care Integration Measurements of Male Subjects

Self-care measurements	Subject # 3	5	6	13	19	20	21	22
Overall VAS score	8.59	6.82	7.98	8.42	4.76	8.29	5.88	8.32
Frequency of integration behaviors	4	0	0	8	1	5	4	6

Note. VAS = Visual Analogue Scale.

of fitting it into their life was 0 to 18 with a mean of 6.4 accounting for 76.1% of all this category responses. The male range of frequency of self-care ability of fitting it into their life was 0 to 8 with a mean of 3.5.

The examples of content of the defined category (see Appendix E) dealt with the same content addressed in the 12 VASs. Two examples of subjects working their health-deviated self-care practices into their personal life were related to their diet and exercise. Subject 2 stated, "My spice rack has increased a lot because there are so many different things that take the place of that fried taste that you can use." Subject 21 stated, "My exercise is just . . . I walk my little dog every night, I walk a mile or two." Two examples of including family and friends as positive support systems were: "Without [my wife's] help and encouragement, it would be very difficult for me to

follow this diet like I have" [Subject 13]. "It's become a family affair. More than just my problem. And not as much being a problem but a situation and what to do about it. That's been, if not pleasant, I guess, . . . very livable" [Subject 2]. Finally, Subject 14 shared an example of how she integrated her diet into a community living situation. She stated, "We have refreshments at our . . . association meetings, and we try to have diabetics, something the diabetics can have as much as the others. . . .They were buying Miss Debbie cakes every time . . . so I had it changed into sandwiches."

Summary

The sample of 22 NIDDM outpatients was described in terms of gender, marital status, educational level, employment status, occupation, family income, number in the family unit, presence and number of other chronic illnesses/disabilities/diabetic complications, number of years since diagnosis, use of hypoglycemic agents, number and type of dietary restrictions, frequency and type of self-monitoring of blood or urine glucose, and subject referral source. Analysis of the sample's self-care abilities and limitations was done by evaluating category counts of coded responses and coded interview content occurring in each self-care abilities and limitations categories. An assessment of content category correlations was reported. The results of the patient's self-reported VAS, which measured consistent integration of diabetes

self-care practices into daily life activities, were analyzed. The relationship of the overall score on the VASs to all single VAS scores was explored. Further comparison of the content of the abilities category labelled "integrating self-care operations with other aspects of living" and the overall score on the VASs were addressed.

CHAPTER V

Discussion, Conclusions, Limitations, Recommendations, and Implications

A descriptive study using Orem's (1991) basic conditioning factors, self-care abilities, and self-care limitations as a theoretical framework was done to analyze the study results. Background data revealed that the major characteristics of the sample of 22 NIDDM subjects tended to be White and married, and about half were from the lower socioeconomic group. Subjects most likely had additional chronic illnesses of arthritis and hypertension, had been diagnosed with NIDDM for less than 3 years, and stated that they needed to restrict sugar and/or calories from their diet. Finally, subjects were most likely taking oral hypoglycemic agents, but only about half were practicing self-monitoring of blood glucose and then less than three times a week. Frequencies of coding self-care abilities and limitations occurred in all categories. The highest two categories of abilities were attention and motivation, and the highest two categories of limitations were lack of knowledge and lack of motivation. The overall Visual Analogue Scale (VAS) score mean was 7.47 which measured integration of diabetes self-care practices into daily life.

Discussion

Theoretical Framework

The theoretical framework used in this study included Orem's (1991) basic conditioning factors, self-care abilities as defined in the 10 power components, and self-care limitations. The basic conditioning factors served as a basis for the decision to limit the age category to 45 through 65 and to develop the required background data elements. In retrospect, this researcher would have added an additional background data assessment tool to include details in the amount and kind of diabetes education received at the time of diagnosis and over the last year. The amount and kind of diabetes education received by the subjects would help the coder evaluate lack of knowledge base more accurately. For example, does the lack of knowledge evident in a subject's statement really stem from no diabetes education, age and time of onset of diabetes, avoidance of acquiring knowledge about diabetes, denial of diabetes, required life style changes, and/or a poor educational program? All data collected provided essential information for describing the sample in meaningful ways.

The 10 power components and the 10 identified self-care limitations provided a comprehensive framework for describing the NIDDM patient's health care requirements. The difficulty encountered during content analysis was one of clear, exclusive definition of categories. Orem's initial category descriptions were refined and redefined to

help provide more consistent, practical application to the NIDDM patient in particular and to help develop clearer, exclusive category descriptions. During this process, it was most useful to take two overlapping categories and identify the essential differences between them. Examples of these category descriptions, clarifications, and contrasts were the abilities of attention versus motivation, reasoning versus decision making, and the three categories of acquiring, retaining and operationalizing technical knowledge about self-care; having a repertoire of skills for self-care; and ordering discrete self-care actions. Three examples of limitations categories that offered a similar contrast challenge were lack of reality basis, intense emotional states, and inaction and/or indecision. Appendix E represents the completed work of redefinition and examples of typical responses of NIDDM subjects.

As intended, the use of Visual Analogue Scales (VASs) were to help further define what is meant by the 10th power component, integrating self-care operations with other aspects of living. Integration was represented by the overall score. It still remains unclear as to all components contributing to integration and what set of factors needs to occur in order to produce integration of self-care practices.

Finally, the components of Orem's (1991) theoretical framework used in this study allowed for the evaluation of all parts of the NIDDM patient's regimen. Abilities and

limitations framework allows for evaluation of not only knowledge level and skill performance but also use of that knowledge in problem-solving behaviors. In addition, the maintaining attention and requisite vigilance would allow description of health beliefs, such as accepting responsibility for impacting their own health outcomes. Presence or absence of motivation and its complexity allows for varied approaches to this description. The integration of self-care practices into daily living also needs continued exploration to determine its role in regimen adherence issues and metabolic control of NIDDM. In summary, both the scope and complexity of self-care abilities and self-care limitations provide comprehensive theoretical framework for describing NIDDM patients.

Review of Research

The multidimensional and complex attributes of self-care agency are the major difficulties that exist in attempts at operationalizations of the phenomenon (Gast et al., 1989; Lee, 1990). The use of Orem's (1991) theoretical components of basic conditioning factors, self-care abilities, and self-care limitations allowed for exploration and evaluation of this sample. Because the different instruments reported in the review of research measure only different characteristics of the phenomenon of self-care agency, they were inadequate to address all components. Bess' Measurement of Diabetes Self-Care Practices Scale was a researcher developed tool used to

provide a self-report of integration of self-care practices into daily life activities. This study supports the complexity and variability of self-care agency and its different components' effects on the self-care outcome. Adults possess different and varied coping styles, problem-solving abilities, decision-making abilities, learning styles, health beliefs, prior experiences and habits, and motivation factors.

Graber et al. (1994), in a retrospective evaluation of 422 adult diabetic outpatients with 66% NIDDM patients with a mean age of 46, found that 52% were between the ages of 40 to 64 years and had a mean duration of diabetes of 11 years. Graber et al. found the dropout from treatment frequency to be much higher among patients who did not take insulin after 12 months. Those patients who had metabolic relapses (failure to maintain reduction in Hemoglobin A_{1c}) during the first 6 months, were more likely to drop out after 12 months. NIDDM patients who are not receiving insulin treatment appeared to have a lower motivation to follow-up care than those receiving insulin, but they are at greater risk for developing cardiovascular disease. These researchers suggest that a patient must learn and practice relapse prevention skills and strategies to prevent relapse and subsequent dropout from treatment.

Graber and co-workers' (1994) findings, concerning the NIDDM patients, support the necessity to better understand the coping skills and motivation factors, so that proactive

interventions can be instituted. With improved metabolic control, drop out from treatment could be reduced. In this sample, Subject 22's desire for metabolic control (success) was evident. The subject reported that he had failed to gain control with his diet and oral agent after 5 years of treatment. He stated that he asked to be switched to insulin, but the physician continued to pressure more dietary adherence. The subject's reported frustration with his lack of control over his body and his physician's perceived lack of response to his needs resulted in his own initiation of insulin therapy. This behavior is potentially dangerous to his survival and needs to be assessed and addressed comprehensively and not simply as a lack of knowledge and/or motivation.

Stullenbarger (1984) found in her study that three person types were distinguished in her 8- and 9-year-old-subjects; presently, this researcher found certain dominant characteristics evident in these adult subjects. One example was Subject 3's reluctance or refusal to make self-care decisions and act promptly supported by a reported lack of motivation. The differences found between these adult diabetic subjects and normal children were the more complex natures of relationships between coding categories and the added challenge of chronic illness regimens.

Backscheider (1974) found that a patient's self-care agency affects the quantity and quality of therapeutic self-care demands. This study supports that statement in

that subjects would require variation in amount and type of interventions to respond to the differences in deficits found. For example, a universal, educational intervention would be of little assistance to these subjects with multifaceted deficits.

The major deficits identified when describing this sample were difficulty in making decisions using a self-care frame of reference (inadequate problem-solving abilities); significant areas of knowledge deficits, decreased internalization of knowledge, and very little application of knowledge and experience in making judgments; decreased amount of integration of diabetes self-care practice into their daily life; lack of sufficient motivation to sustain all self-care practices; deficiencies of resources; and decrease in social support systems. The abilities identified when describing this sample were maintaining attention and requisite vigilance, also found by Anderson (1990); and presence of enough motivation to sustain some self-care practices (i.e., taking medication, self-monitoring of blood or urine glucose, and maintaining some dietary modifications).

When specifically addressing the issue of integration of diabetes self-care practice into their daily lives, the study supports that there are multiple factors affecting the adequacy of this ability and the patient's desire to exercise this ability. Ary et al. (1986) found no single reason for nonadherence of adult diabetics to their

regimens. Price (1989) found that patients who describe the integration of diabetes knowledge and personal experiences with using that knowledge provided a valuable base for self-care management.

Assumptions

This study had four assumptions. The first assumption was that NIDDM is a chronic illness requiring performance of self-care activities. This statement is supported by (a) the American Diabetes Association in the 1994 position statement (ADA, 1994b); (b) the literature that continues to support the need for patients diagnosed with diabetes mellitus to engage in self-care activities (Anderson et al., 1988; Brown, 1988; Hiss, 1986; Teza et al., 1988); (c) the participating health care professionals who thought the study addressed significant aspects of self-care needed by the NIDDM population, therefore, recommending patients for subjects; and (d) those subjects who verbalized the importance of their self-care activities to maintaining life, health, and well-being under the second highest coded ability of maintaining attention and requisite vigilance to self as self-care agent.

The second assumption was that the development, operability, and adequacy of self-care abilities can be studied. For this study, the content analysis results represented the evaluation of the subjects' development, operability, and adequacy of all self-care abilities. As results were analyzed, the researcher found that frequency

counts of all coded responses and content of interview responses were effective in describing the development, operability, and adequacy of all but the ability of integrating self-care operations with other aspects of living. This difficulty was anticipated; therefore, the researcher developed the Bess' Measurement of Diabetes Self-Care Practices Scale (see Appendix C). This tool was used to assess the subjects' self-reported abilities to adequately exercise self-abilities addressing integration of self-care operations. Analysis of both content analyses category of "fitting it into their life" and the overall scores on the VASs was successful in expanding the understanding of this component of self-care abilities.

The third assumption was that adult NIDDM patients verbally communicate self-care abilities and limitations that can be identified. The results supported this assumption strikingly. Even the one subject who had difficulty verbally communicating his thoughts completed his interview with sufficient data to contribute to the analysis. The subjects were the experts as to what was happening in their lives. These subjects provided a rich data source that appeared typical for the NIDDM, White population.

The fourth assumption was that the degree to which adult NIDDM patients are integrating self-care practices into their daily life activities can be measured through self-report. The results suggest that it may be possible

to assess integration of diabetes self-care practices through self-report. Because integration appears to be affected by and perhaps even composed of numerous combinations of other abilities, perhaps at this time the only person who really knows what it means to the subjects are the subjects themselves.

The use of outpatients, after at least a year's experience of managing their diabetes after diagnosis was extremely successful in obtaining the data was required in this study. The descriptive nature of the study was essential to expanding knowledge concerning assessing Orem's (1991) self-care abilities and limitations of NIDDM patients.

Conclusions

Sample Characteristics

Conclusions derived from the findings created a more meaningful description of the sample characteristics. In the United States, NIDDM occurs at a higher rate in African Americans in all age groups (Everhart et al., 1984). Only one African American volunteered for the study. The incidence of NIDDM in females is 20% greater than in males (Everhart et al., 1984). This study had 64% females and 36% males. In regard to gender, the males were younger than the females. The lower mean age of males or the tendency for males to marry younger women could explain the lack of any widowed males.

Females were less likely to have completed a college degree than males. All male subjects had completed a high school or a higher education level while females had not. The three females who had not completed high school were 55 years of age or older.

Of all subjects, 45.5% were either disabled or unemployed. This trend could be explained by the method of subject recruitment. The advertisements recruiting self-referrals were usually located close to the want-ads. Also, one clinic referral center serviced a lower socioeconomic community. Clinic referrals accounted for 66.7% of all nurse/physician referrals. In addition, perhaps the disabled or unemployed had more time to participate in the study.

There was a higher rate of unemployment and disability of females. Of the unemployed females, two referred to themselves as housewives and one widowed female described herself as unemployed and applying for disability. The ages of these unemployed subjects clustered around the mean age of females.

The ages of the disabled subjects were consistent with the sample with females being older. Two females described themselves as disabled homemakers. Even if housewives are removed from the sample, there is a greater percentage of unemployed and disabled females than males.

As anticipated from presence of lower level of education, a higher percentage of females were unskilled

laborers and office workers than males. Although this trend is explained in part by differences in educational preparation, all female subjects reporting college credits were either disabled, retired, unemployed, or working as an office worker. Office workers retained their jobs while unskilled and skilled laborers were more likely to either lose their jobs or become too disabled to work.

Removing the one male reporting an income of $75,000 allows for a more accurate description of the sample. Even with the recalculated mean income for 21 subjects of $21,362, the female mean income is lower. With the greater number of females being unmarried, unemployed, disabled, and employed in lower paying jobs, the lower total family income would be expected. Over 50% of all subjects' family incomes were below $27,999 or within the lower income group.

The higher number of persons in the family group resulted in a higher family income reported. Two members in the family unit usually indicated a higher family income for both males and females. The two unmarried males reported single family units, while unmarried females reported one to three members in their family units. Females had dependent children or dependent adults living in their household. Single family units were more likely to be female and reported incomes below the poverty level of $6,970 as defined by the U.S. Department of Health and Human Services' poverty guidelines of 1993 (U.S. Department of Health and Human Services [DHHS], 1993).

In the assessment of presence of chronic conditions in the United States, no data are reported as to whether the person may have more than one chronic condition. The data from the National Health Survey, 1988, reported that the chronic conditions with the highest incidence in the general population included sinusitis, arthritis, and hypertension (National Center for Health Statistics, 1989). In this study, hypertension, arthritis, and degenerative disease of the spine had the highest incidence, which is consistent with the general population. The high incidence of hypertension and the presence of other cardiovascular diseases are consistent with the NIDDM population in general (Harris & Modan, 1994). The lower incidence of reported neuropathy in this study than in the NIDDM population may be due to the shorter duration since initial diagnosis for most participants and/or subjects' inability to recognize neuropathy symptoms. The high incidence of more than one chronic illness diagnoses indicates the potential impact on self-care agency by increasing the therapeutic self-care demands and/or self-care limitations. The increasing regimen adherence demands and/or functional limitations are well-documented as contributing to the complexity and difficulty of the diabetes care regimen (Toobert & Glasgow, 1991).

In all subjects, years since diagnosis were more likely to be less than 3 years. Females were more likely to have been diagnosed a shorter period of time than males.

Even though males were younger than females, the number of years since diagnosis was greater, being 3 to 12 years. For all subjects, age had no significant relationship with years since diagnosis. This lack of relationship was unusual because of the increasing incidence of occurrence of NIDDM in the population as a person ages (National Center for Health Statistics, 1989). Perhaps the limited age span of the subjects could explain this lack of relationship.

In analysis of hypoglycemia agents currently in use, the higher percentage of females not taking any hypoglycemic agent could be explained by their being diagnosed more recently or because women are usually primary meal planners resulting in higher dietary adherence and thus metabolic control. Percentages of use of oral agents were consistent for both sexes. As anticipated, the longer since initial diagnosis, the more likely insulin was prescribed. The one exception to this trend was the subject who self-prescribed insulin after 5 years of oral agent use. This finding is not unusual even with self-prescription, because, in most situations, patients lose their response to the sulfonylurea agents after approximately 5 years of use (Melkus, 1993). In addition, the two subjects using oral agents, who had been diagnosed greater than 12 years previously, reported current difficulty in regulating blood glucose levels. Subjects who spoke of target glucose levels of 180 or 200 should be

reevaluated for new treatment regimens. Currently, there is not enough randomized clinical trial results of NIDDM patients to support the benefits of maintaining near normal blood glucose as for the IDDM patient (American Diabetes Association [ADA], 1994b), but decreasing some of the reported levels is needed. Although none of the subjects reported being on a combination therapy for insulin and oral sulfonylureas, this is a new therapy that has been tried and recommended in certain NIDDM patients prior to insulin use alone (Melkus, 1993).

Dietary modification is the primary element in the therapeutic plan for NIDDM patients (Melkus, 1993; Schmidt, Rost, McGill, & Santiago, 1994). Adherence to this component of the diabetic regimen has been most difficult to achieve from both the patient's and health care professionals' viewpoints. Although all but one subject identified the need to restrict sugar and/or calorie intake, it was disappointing what the majority of subjects did not report (i.e., balancing carbohydrates, protein, and fat intake; increasing fiber intake; limiting or reducing sodium intake; restricting alcohol intake; and maintaining a consistent eating pattern each day). As indicated by this initial background data, overall, the sample subjects had extensive knowledge deficits and self-care regulation difficulties related to their dietary regimens.

In a 1989 national sample of diabetic patients who were over 18 years old (ADA, 1994a), the NIDDM population

using insulin performed self-monitoring of blood glucose less often than the study subjects. The NIDDM population not using insulin and monitoring one or more times a day was 5% compared to zero percent for this study. The NIDDM population monitoring less than once a day was 19% compared to 43.8% for this study. The NIDDM population not performing self-monitoring of blood glucose was 76% compared to 56.2% for this study. Although this sample reported practicing higher glucose monitoring behaviors than the general NIDDM population, the sample subjects who used insulin did practice a higher proportion of testing than those not taking insulin, which is consistent with the national sample of the NIDDM population.

In summary, the following characteristics are most descriptive of the sample in this study: (a) a variation of basic conditioning factors exists; (b) there are more unemployed and disabled females than males in the study; (c) office workers retained their jobs while unskilled and skilled laborers were more likely to either lose their jobs or become too disabled to work; (d) females reported lower total family incomes than males, regardless of the number in their family unit; (e) the presence of more than one chronic illness/complication increased the NIDDM regimen adherence demands and increased reported functional limitations; (f) in all subjects, years since diagnosis was more likely to be less than 3 years; (g) the longer time since initial diagnosis, the more likely insulin was

prescribed; (h) more females than males were not taking any hypoglycemic agents; (i) subjects were aware of the need to restrict sugar in their diets, but lacked any comprehensive knowledge of other NIDDM dietary factors (i.e., balancing carbohydrates, protein, and fat intake; increasing fiber intake; restricting alcohol intake; and maintaining a consistent eating pattern each day); and (j) the majority of subjects reported no self-monitoring of blood glucose practices.

Sample Analysis

Overall scores of self-care abilities and limitations categories were analyzed by calculating sample frequency of occurrences for each category. Self-care ability and limitation category counts were effective in establishing trends in the sample subjects' responses. Frequency counts, especially when counts were the highest or lowest, provided a description of the sample's self-care abilities and limitations. The relationship between abilities categories and the relationship between limitation categories were evaluated by calculating and interpreting correlation coefficients.

The conclusions identified when addressing the first purpose of the study, to describe the self-care abilities and limitations of the adult NIDDM patient, were as follows:

1. All study subjects identified that attending to or not attending to their diabetes management had effects on their short-term or long-term health.

2. The presence or absence of motivation to engage in self-care practices was identified by all study subjects. The most frequently identified ability and limitation of all subjects was the presence and absence of sufficient motivation to engage in self-care practices. The presence or absence of motivation to engage in self-care practices by the study subjects does not transfer from one aspect of NIDDM self-care practices to another, such as motivation to engage in meal planning does not always mean there is motivation to engage in exercise.

3. All study subjects reported the abilities to reason within a self-care frame of reference and to make decisions based on that reasoning. When study subjects' responses demonstrated the ability to reason and/or reason with a self-care decision evident, these abilities were only exceeded by the presence of motivation. Self-care decisions made based on reasoning in a self-care frame of reference are reported less often by study subjects than engaging in reasoning alone.

4. The three abilities categories, which address the progression from basic foundation of technical knowledge acquisition and comprehension to application of mastered skills of self-care to organizing planned self-care actions toward regulation goals, represent an increasing level of

complexity and degree of difficulty. This more complex and increased difficulty results in a decreasing likelihood of subjects reporting these hierarchical abilities. Overall, few difficulties were reported in lack of knowldege base and experience that interferes with making judgments about decisions about self-care practices, because few if any self-care actions based on previous knowledge were reported. A majority of study subjects expressed intense emotional states and a reluctance or refusal to make decisions in a self-care frame of reference contributing to overall limitations of making judgments and decisions regarding self-care practices.

5. All but one study subject reported some lack of knowledge required to understand changes in functional state and self-care practices. When a lack of knowledge required to understand changes in functional state and self-care practices was identified in the study subject, numerous subject responses were present represented by this overall limitation category frequency being second only to a lack of motivation. Overall, few difficulties were reported in cognitive impairments or emotional illnesses that interfered with knowledge acquisition or recall of self-care practices. A majority of study subjects avoided acquiring new and essential knowledge by failing to develop insights about self-care situations on at least one or more occasions.

6. A majority of study subjects possessed some lack of knowledge, skills, and resources to implement self-care and some lack of family and social support services that interfere with self-care performance. A lack of resources and support services collectively represented limitations, exceeded only by a lack of knowledge and lack of motivation in these study subjects.

7. Functional limitations identified from the presence of debilitating illnesses/complications resulted in more identified limitations in implementing self-care practices.

Relationships were identified by the researcher as further definition of categories and examples of responses were developed and during the interpretation of findings. These relationships were as follows:

1. The first major linkage was an inverse relationship between energy level and body control ability and no physical power to attend to self. No physical power was, to a large extent, explained by arthritis symptomology, two cases of emotional illness (depression), and chronically high blood sugars (lack of metabolic control). It was concluded that energy level and body control ability affect physical power to attend self.

2. The second linkage noted was between the two abilities of reasoning and reasoning with decision evident and all of the making judgments and decisions limitations categories. An inverse relationship was detected in most

cases. It was concluded that reasoning and reasoning with decision evident affect making judgments and decisions limitations.

3. In addition, there was an inverse linkage between reasoning and reasoning with decision evident and mental deficits/emotional illness and not reality based (lack of insight) categories. It was concluded that reasoning and reasoning with a decision evident is affected by mental deficits and lack of insight.

4. The expected inverse relationship between presence and lack of motivation was not clearly identified. Explanation of this factor might be the complexity of the diabetic regimen, the variable nature of regimens employed by subjects (i.e., no medications versus insulin therapy), or another intervening variable (i.e., emotional illness, intense emotional states, limited resources, and lack of social support). It was concluded that there are direct relationships between lack of motivation and all other blocks to engaging in result-achieving courses of action categories, but no inverse relationship between presence and absence of motivation.

5. The abilities categories of quoting health care provider and explaining "how to" in own words were inversely related to all the lack of knowledge categories with emphasis on a general lack of knowledge. It was concluded that a lack of knowledge affected the ability to acquire, explain, and implement technical self-care skills.

6. In addition, an inverse linkage between these two categories and a lack of resources was identified. Lack of internalization of knowledge was evident by a low percentage of coded responses being evident in the explaining "how to" in own words ability category. Because one major characteristic of the adult learner is the need to make application of knowledge to be able to internalize it (Knowles, 1973), the close relationship between having knowledge, internalization of that knowledge, and the application of the knowledge (represented by the ability to judge action on previous experience) is essential. It was concluded that limitations in ability to judge action on previous experience (application of knowledge) is negatively affected by the lack of internalization of knowledge.

7. It was concluded that a weak inverse linkage between the ability to judge action on previous experience and all the limitation categories listed under making judgments and decisions existed. An explanation for why this inverse relationship was not more pronounced could be the extremely low frequency counts in the three limitations categories concerning making judgments and decisions. Reporting of self-regulation behaviors were very infrequent as seen in the lowest percentage of coded abilities responses (eliminating energy level and body control) being identified in "judges action on previous knowledge."

8. From this researcher's analysis, it was concluded that there was no consistent relationship between integration of diabetes self-care practices into their daily life and any other ability or limitation category. None of the inverse relationships described in the findings were strong enough, independent of other factors, to demonstrate significant correlations' coefficients.

The seven significant correlation coefficients reported were evident between self-care abilities and limitations categories separately. Being attentive to the fact that action or inaction related to diabetes self-care has consequences for future health or development of long-term complications was moderately associated with the subjects making self-care decisions. Motivation or goal orientation to self-care was moderately to strongly associated with the subjects making self-care decisions. Motivation or goal orientation to self-care was moderately associated with acquiring, retaining, and operationalizing technical knowledge about diabetes self-care. Lack of diabetes self-care knowledge was moderately associated with a lack of knowledge, skills, and resources to implement self-care. Lack of diabetes self-care knowledge was moderately to strongly associated with a lack of physical power to attend to self-care practices. Lack of diabetes self-care knowledge was moderately associated with interferences with self-care performance by a lack of family and social support. This relationship is not as

clear as others and might be explained by either the interference blocking the obtaining or utilization of the knowledge. Finally, thought processes that are not based in reality or a failure to develop insight is moderately associated with intense emotional states that interfere with investigation of self-care situations.

Integration of Self-Care Practices Into Daily Life Activities Analysis

Of the overall VAS scores, 63.6% scored above the all subjects mean of 7.47. The female to male ratio was similar for both above and below the mean scores. Of all subjects below the mean overall score, 50% had incomes below the poverty level (DHHS, 1993), 25% had low incomes, 12.5% had a middle income, and 12.5% had a high income. Of all the subjects above the mean overall score, 57.1% had middle incomes, 35.7% had low incomes, and 7.1% had incomes below the poverty level (DHHS, 1993). It was concluded that incomes below the poverty level had a negative impact on integration of self-care practices in daily life activities.

The highest two overall VAS scores were for Subject 4 at 9.23 and Subject 1 at 9.13. The lowest two overall VAS scores were for Subject 9 at 4.93 and Subject 19 at 4.76. The actual abilities coded responses in the "fitting it into their daily lives" category were one or less for these two lowest overall VAS scores (i.e., Subjects 9 and 19). Although the subjects with highest overall VAS scores

tended to have a higher individual abilities coded responses in the "fitting it into their daily lives" category, it was concluded that no trend was evident.

It was further concluded that integration of self-care practices into daily lives were evident in all aspects of daily life activities as defined for this study (i.e., self-care, mobility, home life, work, and leisure pursuits). Examples of actual subject coded responses of "fitting it into their daily lives" supported integration of self-care practices into personal, family, work, and community portions of NIDDM patients' lives.

It was also concluded that what could, or who might support integration of self-care practices into daily lives for this NIDDM sample was not clear.

In addition, it was concluded that why some subjects self-reported higher integration of self-care practices by overall high VAS scores than others was not clear.

Limitations

In this study both theoretical and methodological limitations were identified. Among the theoretical limitations was the lack of clear, exclusive definitions of some self-care abilities and self-care limitation categories as defined by Orem (1991). The anticipated relationships between specified self-care abilities and self-care limitations as described by Orem (1991) were unclear or absent. The lack of clear definition of developmental state as included in the basic conditioning

factors described by Orem (1991) was not translated to measurable sample characteristics.

Methodological limitations were identified in sampling, design, and measurement. This sample was a convenience sample resulting in a nonprobability (nonrandom) method. However, the sample was stratified as to age (45 to 65 years), and an attempt was made to include a gender ratio representative of this NIDDM population. Other characteristics of the study's convenience sample did not always represent the NIDDM population (e.g., ethnicity, socioeconomic status, geographic region, type of care, and site of care).

Design limitations were related to limitations of interview techniques (Marshall & Rossman, 1989). Misinterpretation of the subject responses could occur because of cultural differences. Miscommunication could occur between researcher (interviewer) and subject. However, in an attempt to control this miscommunication threat, systematic techniques (interview guide) were used. Subjects' responses to interview questions could be reactive to the interviewer, or could be an attempt to "please" the interviewer. Interview techniques as a part of overall design limitations are highly dependent on honesty of subject responses. Validation of subjects' interview responses or self-reported VAS responses was not a part of this study's design. Therefore, total reliance on self-report methods was a design limitation.

Measurement limitations were related to limitations of content analysis techniques (Marshall & Rossman, 1989), interpretation of correlation coefficients, and use of a new VAS instrument. Strategies were developed to train coders, clarify category definitions, and institute procedures to attain .80 or greater intercoder and intracoder reliability levels. However, the replication of coding could be influenced by coder bias. Among the 22 NIDDM subjects, the statistically significant strongly moderate and moderate correlations between abilities and limitations categories were reported. It is possible that relationships between categories were identified when none or a Type I error existed. By reporting only correlation coefficients at levels of significance of .01 or .001, the chance of committing a Type I error was reduced. Bess' Measurement of Diabetes Self-Care Practices VAS appeared valid in describing extreme overall scores, but possessed definite limitations in discriminating among middle, higher middle, and lower middle overall scores. The limitations identified in this study are restrictions placed on the generalizability of study findings.

Recommendations

The recommendation for further research is based on refinement, extensions, and subsequent intervention-related studies. In refining this study, an in depth assessment of diabetes education received and from what sources was needed. In addition, data on current metabolic control, by

use of hemoglobin A_{1C}, current treatment expectations (self-regulation) by health care provider, and a revised version of Bess' Measurement of Diabetes Self-Care Practice Scale, should be assessed. Clarification of all components contributing to integration of self-care practices into daily living activities is needed.

There are groups of NIDDM patients on which the refined study could center. The non-White, especially African-American population was not represented adequately in this study. All social/economic groups should be adequately represented to be able to determine differences in self-care abilities and limitations and their integration of self-care practices into their daily life activities. For example, a group of only lower income subjects, including those below the poverty level, could be assessed for consistent trends in abilities and limitations and self-care integration practices. The 65 or older NIDDM population has a higher incidence of diabetes mellitus patients in the population than this study group and thus, this older group should be addressed in a future study. An identified "drop out group" of individuals who are not currently receiving any formal health care or follow-up care for their NIDDM would be an excellent group to determine if there are differences between those NIDDM patients who continue seeking health care and those patients who do not.

In addition to extension to other subpopulations, a slightly different focus could be instituted. Tools that are reliable and valid measurements could be used to center on specific self-care behaviors, such as problem-solving abilities, and self-care characteristics, such as motivation. At first, correlating the content analysis of interview data with tools would be necessary. The ultimate goal would be to streamline the assessment process and reduce measurement error.

After streamlining the measurement process, intervention studies need to be conducted. The major deficit areas identified in this study are problem-solving abilities, coping styles, learning styles, health beliefs, experiential learning abilities, and motivation. Intervention studies might center on teaching problem-solving techniques, using experienced based learning techniques, teaching relapse prevention skills, and counseling to assist in integrating diabetes self-care practice into the NIDDM patients' daily lives.

Implications

Theory

Implications for theories used in this research are as follows:

1. Orem's (1991) power components and self-care limitations categories require more refining and redefining to provide a more clear, exclusive definition of categories for all patients.

2. The 10th-power component, integrating self-care operations with aspects of living, needs continued exploration to determine its role in regimen adherence issues and ultimately metabolic control of NIDDM. Combining a revised version of Bess' Measurement of Diabetes Self-Care Practices Scale, assessment of knowledge and skills performance, psychosocial assessment tool, and a physiologic measurement of long-term metabolic control would begin to provide more information concerning interrelated concepts essential to more accurately defining the 10th-power component.

Practice Research

Implications for nursing practice are as follows:

1. Even though diet is one of the major interventions identified as essential to NIDDM patient's metabolic control, patients continue to report receiving very little diet education and exhibit a major lack of knowledge in diet regimens. An implication for the researcher is to find the key components of patient education, such as learner assessment, motivation, and teaching strategies, that are most effective in improving the desired outcome, diet adherence.

2. Chronic illnesses/complications present in combination with NIDDM served to complicate the regimen demands. The implication for the researcher is to expand research of effective economical screening methods for

identifing the NIDDM as early as possible to decrease the development of complications.

3. Decision-making skills are essential to the NIDDM care management. One implication related to this factor is the necessity of thoroughly assessing for cognitive and sensory deficits, emotional illnesses, and ability to develop insight that affects the NIDDM patient's problem-solving ability. The implication exists that if one can better identify these difficulties, then appropriate interventions would improve decision-making ability.

4. Motivation must be a key variable in any study addressing NIDDM management issues.

5. Experiential learning techniques need to be addressed as possible teaching strategies that researchers should evaluate in more depth for NIDDM patients.

6. Research should address which personal, societal, and environmental resources are essential to the management of NIDDM patients' self-care practices.

Summary

Conclusions derived from the findings indicated that the sample possessed a variation of basic conditioning factors. During discussion of findings and conclusions, Orem's (1991) theoretical framework used for this study was found useful in analyzing and describing the sample. As anticipated, more information regarding the ability to integrate diabetes self-care practices into daily life was required for further explanation of this complex component.

Literature was used to support findings and conclusions and to add insight into their interpretation. Assumptions were reviewed to assess whether they retained their validity after completion of the study.

Theoretical and methodological limitations were identified in this study. Recommendations were centered around refining and extending the major focus of this study. Much knowledge was acquired but there is much more to be learned from the NIDDM patient.

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APPENDIX A

Background Data Collection Sheet

Code #: _____

BACKGROUND DATA COLLECTION SHEET

Age ____ Gender _____ Marital Status _____

Educational Level _____ Race or Ethnic Group _____

Occupation (Employment Status) _____

_____

Annual Income of family _____

Number in family unit _____

If does not wish to answer annual income question, ask for range:

_____ $55,000 and above

_____ $28,000 - $54,999

_____ $ 7,000 - $27,999

_____ Below $6,999

If does not wish to give range of annual family income, ask to rate in which income group they see themselves.

___ High ___ Middle ____ Low ___ Does not wish to respond

Diagnosis (include any additional chronic illnesses or disabilities)

_____

_____

Number of years since diagnosis of diabetes _____

Hypoglycemic Agents Used _____

Dietary Restrictions _____

Use of Self-Monitoring of Blood or Urine Glucose _____

APPENDIX B

Interview Guide

INTERVIEW GUIDE

Diet/Meal Planning

1. Tell me the reasons why meal planning is important in managing your diabetes.

   Why were you asked to eat a diabetes diet?

   Have you ever been asked to follow a diet before your diabetes diet?

   In your opinion, what are the advantages/disadvantages in staying on your diabetes diet?

   Have you had any difficulty in staying on your diabetes diet? If so, describe the problem.

2. What plans have you made to include your diet in your daily routine (i.e., when you eat, eating out, planning meals ahead of time, grocery shopping list, working your diet into the family meals)?

3. Describe how you decide what you should eat for a typical day.

   Describe the situations when you do not feel like cooking or eating your diet.

   If you have trouble eating your diet, what do you do?

   Who do you call if you have questions about your diet?

   How do you feel when people ask you questions about your diet?

4. What or who has helped you the most in understanding your diabetes diet?

   If anything/anyone has ever interfered with you staying on your diet, give examples and describe how that made you feel.

Medication (Delete if not appropriate.)

1. What diabetes medications do you take and at what time during the day do you take your medications?

   Describe a situation in which you have not taken your diabetes medication.

   What happened, if anything, when you did not take your medication?

2. Tell me the reasons why you should take your diabetes medication.

   Did you take other medication for other conditions before you were diagnosed with diabetes?

   In your opinion, what are the advantages/disadvantages in taking your diabetes medication?

3. If you ever do not feel like taking your medication, describe what those times are like and what you do.

   Describe any side effects you have experienced from your medication.

   If anything/anyone has ever interfered with you taking your medication, give examples and describe how that made you feel.

Exercise

1. If you perform a regular exercise activity, such as walking, how many times a week do you do this activity?

   What plans do you make to include regular exercise activity in your daily routine?

2. Tell me why regular exercise is important for you.

   Were you told to exercise or is this regular activity a personal choice?

   What type of regular exercise activity did you do before you were diagnosed with diabetes?

   In your opinion, what are the advantages/disadvantages in doing regular exercise?

   How does regular exercise help you regulate your blood glucose?

3. Whenever you do not feel like exercising, describe what those times are like and what you do.

   Describe any problems you have experienced from your exercise routine.

   If anything/anyone has ever interfered with you doing your exercise, describe the situation and how it made you feel.

Self-Monitoring of Blood Glucose (SMBG)

1. How many times a day/week do you perform SMBG? What type of record do you keep of the results?

2. Tell me the reasons why monitoring your blood glucose is important.

   Why were you asked to perform SMBG?

   Have you ever been asked to do anything like SMBG before?

   In your opinion, what are the advantages/disadvantages in performing SMBG?

   Describe any difficulties you may have experienced in regulating your blood glucose.

3. What plans did you make to include SMBG in your daily routine?

   Where do you keep your equipment and where and when do you perform SMBG?

4. Describe what you do if there is any time you cannot see well enough to read the chart.

   When you do not feel like performing SMBG, describe how you feel and what you do.

   If you have difficulty in performing SMBG, what do you do? For example, getting a large rounded drop of blood, wiping all blood off strip, timing, calibration of your machine.

5. Describe any situations in which anything/anyone has interfered with your performing SMBG.

General Questions

1. How do you tell if your blood sugar is either too high or too low? How does it feel? What do you do when you have high or low blood sugar?

2. What or who helped you the most in understanding diabetes? What or who helped you the most in learning to work your diabetes care activities into your daily life?

3. If you could change anything about your daily diabetes care, what would it be and why?

4. Describe how being a diabetic has affected your life and describe how that makes you feel.

APPENDIX C

Bess' Measurement of Diabetes Self-Care Practices Scale

Code #: _____

BESS' MEASUREMENT OF DIABETES SELF-CARE PRACTICES SCALE

Directions: Below are 12 statements about your diabetes self-care.

Following each statement is a line with the words none of the time on the left side and all the time on the right side.

Think about your diabetes self-care activities in the PAST 2 WEEKS.

For each statement, place an X on the line at the point that best indicates how often you were able to do what each statement says.

1. I was able to manage my diabetes without interrupting my daily activities.

NONE OF THE TIME |——————————————————| ALL THE TIME

2. I was able to eat the amounts and kinds of foods on the meal plan prescribed by my health care team.

NONE OF THE TIME |——————————————————| ALL THE TIME

3. I was able to eat an appropriate meal or snack from my meal plan at the times of day that I should to control my diabetes.

NONE OF THE TIME |——————————————————| ALL THE TIME

4. I was able to take the medicine for my diabetes as prescribed by my doctor. (Leave blank if you do not take diabetes medication.)

NONE OF THE TIME |——————————————————| ALL THE TIME

5. I was able to recognize the symptoms of hypoglycemia (low blood sugar) and take action to reduce its severity. (Leave blank if you did not have symptoms.)

NONE OF THE TIME |——————————————————| ALL THE TIME

6. I was able to exercise as often as recommended by my health care team.

NONE OF THE TIME |——————————————————| ALL THE TIME

7. I was able to test my blood or urine glucose (sugar) as often as the health care team told me to test.

NONE OF THE TIME |——————————————————| ALL THE TIME

8. I was able to recognize the symptoms of hyperglycemia and take action to decrease my blood sugar levels. (Leave blank if you have not experienced hyperglycemia.)

NONE OF THE TIME |——————————————————| ALL THE TIME

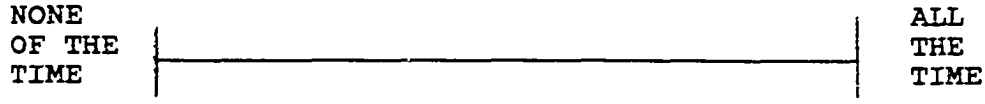
9. I was able to buy what I needed to manage my diabetes. (For example, foods, medicine, and blood glucose testing equipment supplies.)

NONE OF THE TIME |——————————————————| ALL THE TIME

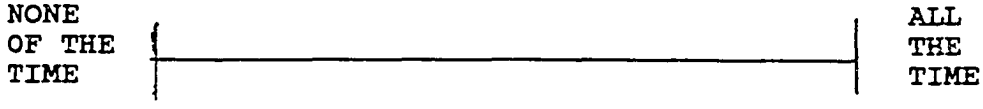
10. The important people in my life were helpful to me in managing my diabetes.

NONE OF THE TIME |——————————————————| ALL THE TIME

11. Overall, I was able to include my diabetes self-care practices into my daily life activities.



12. Over the last year, I was able to receive care or advice from my health care team as often as I needed to about my diabetes.



APPENDIX D

Consent Letter

Date

Dear Miss/Mrs or Mr.

My name is Carolyn Bess, RN, MSN, a faculty member in the School of Nursing at Vanderbilt University and a doctoral student at the School of Nursing, University of Alabama at Birmingham. I am doing research to describe abilities and limitations that adult patients, between the ages of 45 and and 65 years, experience while working in diabetes self-care practices in their daily lives.

You are being contacted because you gave me or agreed to permit your physician to give me your name, address, and telephone number so you could receive this letter describing the study. Your decision about whether or not to participate is voluntary and will not affect your medical care in any way.

ITEM #1: Description of the study:
(a) The reason for doing this study is to describe abilities and limitations that adult diabetic patients experience while integrating self-care practices into their daily life activities.
(b) After this signed consent letter is received, I will contact you by phone to set up an interview. At the time of the interview, I will ask background information and then do an interview. I will audiotape this interview because I will be talking with 20 people and I will need to review the information. After the interview, I will ask you to read statements about your diabetes self-care and rate yourself as to how often you were able to do what each statement says.
(c) If you agree to participate, the study will take about 1 1/2 hours of your time.

ITEM #2: Risks or inconvenience:
No risks are anticipated from your participation except the inconvenience of organizing your time to participate. I will pay you $50.00 for your participation and will schedule your appointment to your convenience as much as possible.

ITEMS #3 and #4: Benefits to you and others:
We hope this study will tell us more about the adult diabetic patients' experiences while working in their diabetes self-care practices in their daily lives. Better understanding of diabetic patients' abilities and limitations will hopefully help health care providers be more helpful to diabetic patients like you.

ITEM #5: Your rights, welfare, and privacy:
(1) All data obtained about you during the course of this study will be kept confidential and accessible only to the

researcher and my assistants on this project. Each person will be identified only by a special code number. A secretary will transcribe the audiotapes, omitting any spoken name and inserting initials in their place. Only first names will be spoken during the interview to insure your confidentiality. All audiotapes will be erased at the end of the study. The data and transcripts will be kept in a locked file in my office.
(2) Should the results of this project be published, you will be referred to only by number.

Your participation in this study is totally voluntary. You may decide to withdraw at any time.

If you are willing to participate, please sign this letter and return it to me in the self-addressed, stamped envelope provided.

If you have questions, please feel free to contact me at work (322-2815) or at home (776-5101). If you are unable to contact me directly, please leave your name and phone number and I will return your call as soon as possible.

Sincerely,

Carolyn J. Bess, RN, MSN

I have read the above letter and understand that my signature below indicates that I am giving consent to participate. I further understand the procedures to be used in this study and the possible risks, inconveniences, and/or discomforts that may be involved. All of my questions have been answered. I freely and voluntarily choose to participate. I understand that I may withdraw at any time.

_____ _____

Signature of Volunteer Current Age

_____ _____

Date Telephone # Where I Can Reach You

APPENDIX E

Category Descriptions

CATEGORY DESCRIPTIONS

Power Components

1. Maintaining attention and requisite vigilance.

"Ability to maintain attention and exercise requisite vigilance with respect to self as self-care agent and internal and external conditions and factors significant for self-care" (Orem, 1991, p. 155).

Experiences self as an individual with different feelings. "Feels good about self. Accepts responsibility for actions. Recognizes continuity of self into the future" (Stullenbarger, 1984, p. 130).

Recognizes that action or inaction related to diabetes self-care has consequences for future health or development of long-term complications.

Accepts responsibility for actions, may not receive immediate rewards.

Examples

"I know I'm the one that's got to take care of me." (Subject 1)

"Get it (weight) under control, let's be healthy, everybody wants to be healthy." (Subject 8)

"I believe that if it's (diet) followed pretty closely that you feel, I feel better." (Subject 11)

"It (SMBG) makes me more conscious of watching it and being careful." (Subject 11)

2. Controlled use of available physical energy.

"Controlled use of available physical energy that is sufficient for the initiation and continuation of self-care operations" (Orem, 1991, p. 155).

"Maintains attention on tasks. Works for mastery of activities" (Stullenbarger, 1984, p. 130). Participation in self-care activities.

Has energy sufficient to participate in diabetes self-care practices (diet, medication administration, exercise, and SMBG) and uses that energy for diabetic self-care practices before use for other activities, such as shopping, recreation, etc.

Examples

"It's (taking medication) important, because if you do miss, like I say, you are dragging." (Subject 5)

"I have it (SMBG equipment) in a little plastic bag that I keep right there at the house. All together and I just take it, just put it out on the table right in front of me." (Subject 1)

3. Control of the position of the body and its parts in execution of movements.

"Ability to control the position of the body and its parts in the execution of movements required for the initiation and completion of self-care operations" (Orem, 1991, p. 155).

Able to coordinate body movements sufficiently to complete diabetes self-care practices.

Examples

"I walk with a stick, carry it with me, in case my knee acts up. I have something to walk with." (Subject 4)

"Since my back surgery, all I do (for exercise), I walk." (Subject 10)

"After several months there I got mobility in my legs, I was able to get up and down better, and the exercise helped, and learning how to do things." (Subject 15)

"When I first started (exercising), I had trouble with, you know, I had surgery and the swelling. But after I kept exercising, now it don't bother me." (Subject 7)

4. Reasoning within a self-care frame of reference.

"Ability to reason within a self-care frame of reference" (Orem, 1991, p. 155).

Able to conceptualize from concrete to abstract level. Classifies and relates concepts appropriately. Demonstrates problem-solving strategies in familiar situations (Stullenbarger, 1984).

Identifies the relationship between health and diabetes self-care practices. When faced with familiar problems (i.e., high blood glucose or malfunctioning of SMBG equipment), able to form a plan of action.

Examples

"I think it's (SMBG) essential to see if, you know, you may change something in your diet that you didn't have any idea it was really running up your blood sugar levels." (Subject 21)

"When my sugar was high and I lost my energy, I didn't want to do those things (exercise). I'm back in my routine, I'm down with my weight." (Subject 22)

"I keep a plan in my mind, it's not a plan that can't be changed. But, I insert in the plan what I need, when I need to eat some fruit and things. Or when I need to watch it because I've gone overboard, and things like that." (Subject 3)

5. Motivations or goal orientation to self-care.

"Motivation (i.e., goal orientations for self-care that are in accord with its characteristics and its meaning for life, health, and well-being)" (Orem, 1991, p. 155).

Values health and well being. "Concerned about adequacy of performance in relation to standards held by" (Stullenbarger, 1984, p. 132) health care providers, family members, and friends. Holds expectations for self related to self-care.

Identifies the reason for completing diabetes self-care activities as improving their health and well-being. Identifies a desired direct effect or reward from their actions.

Examples

"Virtue is its own reward because I feel good about it (following diet), and good myself." (Subject 11)

"I hate the inconvenience, but when you think about in the long run it's just not so bad, at all." (Subject 11)

"Just a general increase in my acceptance of it, and my desire to do something about it (diabetes)." (Subject 11)

"You need to do something yourself. A lot of people that go to the doctor don't do it and they end up dying or something, but you got to work with somebody (doctor)." (Subject 17)

"I did it (take medicine) more out of fear." (Subject 17)

"I'm sure I'll live longer if I get back on the diabetic diet." (Subject 17)

6. Decision making about self-care.

"Ability to make decisions about care of self and to operationalize these decisions" (Orem, 1991, p. 155).

Accepts responsibility for self-care skills. Able "to evaluate own thinking. Beginning understanding of causal relationships" (Stullenbarger, 1984, p. 133).

Identifies self as responsible for diabetes self-care. Demonstrates the ability to make decisions about diabetes self-care. Decision is evident and made in a timely manner.

Examples

"The only think I could do when we do that (dinner at relative's house), is watch the portion instead of, because I don't want to make someone feel uncomfortable that they fixed something I can't eat. So I just have to cut down on the amount." (Subject 2)

"I just use half of my lunch hour (to walk) which keeps me from eating (extra) anything." (Subject 12)

"It's 'Ask the Nurse.' A little paper came out in the mail and I have it sticking on my refrigerator. And I called and asked about that burning in my leg." (Subject 4)

"There is a big walk behind the house and I walk, and I make sure I have good shoes." (Subject 4)

"And that going to the doctor is so expensive. I bought the test (SMBG) and do the test cheaper." (Subject 4)

7. Acquiring, retaining, and operationalizing technical knowledge about self-care.

"Ability to acquire technical knowledge about self-care from authoritative sources, to retain it, and to operationalize it" (Orem, 1991, p. 155).

"Curiosity and interest in how body functions" (Stullenbarger, 1984, p. 134). Able to concentrate on details of instructions and apply to specific events.

Quotes health-care providers' instructions accurately and applies instructions appropriately. Clearly describes how to take medications and perform SMBG.

Examples

"She (the nurse) said, 'Did you know that if you would do it (stick finger) on the side of your finger, you will get it drawn much easier and it wouldn't be as tender?'" (Subject 2)

"He (doctor) said if you don't eat on a regular basis, then you will either going to have, you are going to have low blood sugar because you don't have enough in your

system. The same with eating too much and having high blood sugar. So he is really emphasizing, and he always says . . . just don't skip meals. Whether you are insulin-dependent or not. Just don't skip meals." (Subject 2)

"My doctor told me that if I was that concerned about my sugar level that I should try monitoring." (Subject 22)

"It (Micronase) makes the pancreas create insulin. Apparently, I have something in my pancreas that still creates insulin. It's not all gone. I am not totally devoid of any insulin. So it stimulates the pancreas." (Subject 3)

8. Having a repertoire of skills for self-care.

"A repertoire of cognitive, perceptual, manipulative, communication, and interpersonal skills adapted to the performance of self-care operations" (Orem, 1991, p. 155).

Has knowledge of diabetic diet components, medication administration requirements, the effects of exercise on blood glucose, and the signs and symptoms of high and low blood glucose. Able to perform skills needed to meet diabetes self-care requirements. Communicates to others results of self-care activities (e.g., verbally and SMBG logs). Explains in own words, how to perform skills appropriately.

Examples

"So I plan each day, what kind of, I'm getting completely away from frying foods now . . . more baked foods . . . away from red meat . . . we have chicken. . . .

I plan to always have salads every night. . . . I'm beginning to cook more vegetables. Fresh vegetables, more than I used to. . . . I have to sit down and I have to think what I'm going to cook." (Subject 18)

"I usually eat an apple snack after I have walked. Because I believe the doctor told me some time ago, to do that. I'm supposed to put my energy level back up, you know. I don't always do that, but a lot of time I do." (Subject 11)

"Just before going to bed, a few crackers with peanut butter, protein, so that it'll change to sugar in the middle of the morning (2 or 3 o'clock) to avoid the liver producing sugar." (Subject 13)

I not only write it down, I give my doctor a copy of my weight, my blood sugar levels, blood pressure, every time I see him." (Subject 13)

9. Ordering discrete self-care actions.

"Ability to order discrete self-care actions or action systems into relationships with prior and subsequent actions toward the final achievement of regulatory goals of self-care" (Orem, 1991, p. 155).

Remembers self-care practices which resulted in "good" or "bad" control or management of blood glucose. Provides details of accepted diabetes self-care practices. States reasons why performing diabetes self-care is important to maintenance of life, health, and well-being.

Based on previous knowledge and experience, makes judgments and links it with appropriate actions. Incorporates "good" self-care practices in present and future plans.

Examples

"If I reasonably watch my diet, I keep my blood glucose levels under 160, then I feel good and I have no problems." (Subject 21)

"If I had two or three drinks (alcohol), it'll raise my sugar level tremendously, and I know that. . . . But it raises it like a day. And it's back down. But I think you need to monitor to make sure that . . . it doesn't get away from you. And maybe slip up on you and really be a very serious health problem before you know it." (Subject 21)

"I hadn't any exercise at all . . . because I had a cast on with no weight bearing. And there was no exercise there. So, I had more trouble and my sugar was higher. Because I wasn't getting rid of any, of it, and I was just eating. Now, it's gone down I've been out of my cast for 2 weeks and I'm already beginning to feel better because I can get up." (Subject 17)

10. Integrating self-care operations with other aspects of living.

"Ability to consistently perform self-care operations, integrating them with relevant aspects of personal, family, and community living" (Orem, 1991, p. 155).

Identifies how diabetes self-care practices fit in their daily life activities. Indicates an inclusion of all care aspects with emphasis on working them into the new lives. Includes family and friends as instrumental positive support systems when speaking of problems and compromises. Family and/or friends support abilities to change personal habits to fit with diabetes therapy.

Examples

"We have refreshments at our . . . association meetings, and we try to have diabetics, something the diabetics can have as much as the others. . . . They were buying Miss Debbie cakes every time . . . so I had it changed into sandwiches." (Subject 14)

"My spice rack has increased a lot because there are so many different things that take the place of that fried taste that you can use." (Subject 2)

"Without (my wife's) help and encouragement, it would be very difficult for me to follow this diet like I have." (Subject 13)

"It's become a family affair. More than just my problem. And not as much being a problem but a situation and what to do about it. And they have been really, really supportive. That's been, if not pleasant, I guess, . . . very livable." (Subject 2)

"My exercise is just . . . I walk my little dog every night, I walk a mile or two." (Subject 21)

"My Weight Watchers helps me a whole lot. Because it could go right along with diabetes, too." (Subject 18)

Self-Care Limitations

Limitations of Knowing

> Limitations of knowing about one's functioning, about needed self-care, and about the operations through which self-care is accomplished are associated with individual's past experiences and with what is being experienced in the present. Some conditions and factors associated with limitations of knowing are identified in three sets. (Orem, 1991, p. 170)

Set one

Lack of knowledge required to understand changes in functional state and new or old self-care practices (Orem, 1991).

Examples

"I just assumed anywhere around the end of your finger is just fine" (Subject 2)

"My doctor has never told me." (Subject 5)

"He (doctor) didn't tell me about the diet." (Subject 4)

"I had orange juice for snack." (Subject 4)

"See, I don't know what I need and what I don't need." (Subject 4)

"You hear people talking about the diets. It didn't really sink in." (Subject 3)

Set Two

Sensory or cognitive impairments and emotional illness that interfere with acquiring or recalling knowledge essential to self-care practices (Orem, 1991).

Examples

"I forget what they tell me." (Subject 1)

"You just can't remember, now did I take it at 4 o'clock, or not? I normally take my medicine in the morning, and 4 in the evening, and then I know I've supposed to have took it, and I went in the kitchen to do it, but I might have done something else while I was in there and forgot to take it." (Subject 5)

"If I get like now, I'm bothered with depression so all this goes back behind me and a lot of times I forget what I'm doing." (Subject 15)

Set Three

Thought processes are not reality based resulting in an avoidance of acquiring new and essential knowledge. Fails to develop insights about self-care situations that results in a failure to initiate, organize, and/or regulate self-care practices.

Examples

"That diabetic pill is letting me down." (Subject 18)

"I know that medication is suppose to help me lower that blood sugar so I don't have to worry about it so much." (Subject 18)

"You don't want to listen, to hear it, and you think you can eat what you want and control it." (Subject 3)

"I've even tried to doctor myself. I get to thinking, well maybe I can do without them pills." (Subject 5)

"Because the pill is taking care of what you eat and you will force yourself to eat more. I mean you will eat anything you want." (Subject 4)

Limitations for Making Judgments and Decisions

> Limitations for making judgments and decisions about components of a therapeutic self-care demand or about the regulation of the exercise or development of self-care agency are associated with individuals' views of themselves, their habits of investigation and reflections before making decisions about what action to take, their desires to take action that is appropriate and beneficial, and their having requisite knowledge and skills. Eight factors or conditions that set limitations on individuals' judgment and decision making with respect to self-care matters are expressed. (Orem, 1991, p. 171)

Set One

Lack of knowledge base and experience that blocks or interferes with making judgments and decisions about self-care practices.

Examples

"I don't know what it would feel like for my blood sugar to be low, cause I don't know if it's ever been low or not." (Subject 18)

"I don't really know how that feels. It's never been low." (Subject 3)

"You do recognize when you've done wrong, but you don't know how much your system will tolerate. And that's why I go from 2 pills a day to 4 pills a day sometime." (Subject 3)

Set Two

"Intense emotional states" and "sudden or strong likes and dislikes" (Orem, 1991, p. 171) that interfere with attending to investigating self-care situations. Cannot imagine acting in any other way or that the outcome of such actions would be different.

Examples

"I was ashamed of being a diabetic. And I didn't want most people to know it." (Subject 19)

" I'm angry at myself and I don't do myself no good." (Subject 19)

"Doing blood glucose monitoring reminds me that I have diabetes. I don't like that at all." (Pilot study)

"I don't like sticking myself. I don't like needles. I don't like to do either one." (Pilot study)

Set Three

Reluctance or refusal to investigate, to make decisions or to develop a self-care frame of reference in situations requiring self-care. Inaction or indecision is evident (Orem, 1991).

Reluctance or refusal to make a decision based on fear of making the wrong decision. This fear may stem from a perceived danger to one's own health or authoritative disapproval of one's decisions.

Examples

"My feelings were negative with the strips because I didn't pay any attention to them. Because if it was

extremely high, all I was doing was taking the pills." (Subject 5)

"The safest thing a person should do is get one of the little pill totters that has each day planned out for you, that you know that you've taken that pill. And I should do it myself, but I just. It's just something that you put off, just something that you put off." (Subject 5)

"I didn't pay attention, didn't pay attention to what I ate." (Subject 3)

"I returned to my old habits again, I didn't pay attention." (Subject 3)

"I remember one time my BS elevated quite high, over 300, and I was concerned but you know, I brought it back down in a fairly short period of time. I didn't pay much attention to what was going on." (Subject 3)

Limitations for Engagement in Result-Achieving Courses of Action

> Limitations for engagement in result-achieving courses of action within the investigative and production phases of self-care, including limitations for self-management, are associated with human functional states and with environmental conditions and circumstances. The following examples of limiting factors and conditions are expressed in four sets. (Orem, 1991, p. 172)

Set one

Lack of knowledge, skills, and resources to implement self-care.

Examples

"I've had nobody to sit down and talk to me, nobody to give the, really, do this, don't do this." (Subject 4)

"Since I'm one step away from being homeless, there is a $25 a month in food stamps, there is a great difficulty in finding the appropriate food." (Subject 9)

"I had no insurance, and I don't have the money to see a doctor. So it's strictly day by day trying to manage and to survive and to exist." (Subject 9)

"I haven't had any medications probably in the past 2 months. Because of lack of finances and not a way to see a doctor." (Subject 9)

"I haven't had the money to buy the things (food) that I should have." (Subject 14)

Set Two

Lack of sufficient energy or body movement to implement self-care practices. Lack of attention to self including both internal and external conditions (Orem, 1991).

Examples

"Some days I can't even wash my dishes. Because I am so fatigued and worn out." (Subject 9)

"Being detained and held down by not being able to walk (surgery) or whatever, everything added on. There was no exercise, I was not getting rid of any of the weight that I should." (Subject 2)

"When I don't feel like exercising, I feel when I don't exercise, I feel tired. I'm too tired to exercise, I'm too tired to walk. Sometimes I'm even too tired to ride the bicycle." (Subject 4)

"You know, after you've been on medication for so many years, believe it or not, you've got the bottle of pills sitting there in the kitchen. And one day seems to run into the next day, and it's hard to believe this, at my young age, whether you took that pill or not." (Subject 5)

Set Three

Lack of interest or desire in meeting self-care needs. Absence of goal orientation and valuing of self-care practices (Orem, 1991).

Lack of motivation to perform self-care. Do not make a plan for including self-care practices into daily activities when they know they should.

Examples

"I'm a sugar addict, first of all. I crave it like an alcoholic probably craves booze. I have to really fight to leave sugar alone. And I've loved sweets all my life." (Subject 21).

"I don't watch my diet as close as I should. I know that." (Subject 21)

"You still get bored with the regular diet, and then, you sort of sneak over to something you shouldn't be sneaking over." (Subject 12)

"I don't have enough will power." (Subject 12)

"I said the diabetic wolf in you. Once you start eating sugar you will not be satisfied, you cannot be satisfied. You can't stop. I'll start eating candy. You can't be satisfied. I'll eat the whole thing and still be

looking for something else sweet. You don't satisfy yourself. You can't do as well as others, you can't always stop." (Subject 3)

Set Four

Interferences with performance of self-care by family members, incompatible patterns of living, lack of support services, and/or occurrence of crisis situation (Orem, 1991).

Examples

"My wife, she hasn't been any help, you know. She just keeps shoveling that sweet stuff out, you know." (Subject 22).

"Disadvantages of being on the diet for me, is sometimes, I can't, in working, I can't get away and get something right, when my sugar level tells me." (Subject 22).

"I haven't been visiting like I used to. My relatives. My daughter's relatives. Because I'm afraid they won't have the food that I will want to have." (Subject 4)

"He'll (husband) make a cobbler and he'll leave it on the table, . . . and then he'll buy cakes, and he'll bring things in. Occasionally he'll ask me, 'Have a piece of cake.' And he knows I can't have it." (Subject 4)

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Carolyn Bess

Major Subject Adult Health Nursing

Title of Dissertation Abilities and Limitations of Adult Type II Diabetic Patients with Integrating of Self-Care Practices into their Daily Lives

Dissertation Committee:

Elizabeth Stullenbarger, Chairman

Director of Graduate Program

Dean, UAB Graduate School

Date 7/11/95

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