

SOCIAL SUPPORT, PSYCHOSOCIAL ADAPTATION, AND GLYCEMIC  
CONTROL IN NON-INSULIN DEPENDENT DIABETIC AFRICAN  
AMERICAN AND CAUCASIAN WOMEN

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COLLEGE OF NURSING

BY  
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DENTON, TEXAS  
DECEMBER 1995

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July 27, 1995  
Date

To the Associate Vice President for Research  
and Dean of the Graduate School:

I am submitting herewith a dissertation written by Verla Vaughan entitled "Social Support, Psychosocial Adaptation, and Glycemic Control in Non-Insulin Dependent Diabetic African American and Caucasian Women." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Nursing.

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We have read this dissertation and  
recommend its acceptance:

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and Dean of the Graduate School

## DEDICATION

To my husband, Harry, whose unfailing love, encouragement, and understanding made completion of this educational endeavor possible. He continues to be the "wind beneath my wings."

To my daughters, Tracey, Kimberly, and Harriet, whose love and belief in me gave me strength. May all your dreams come true.

In memory of my parents, J. C. and Selonia Williams, who died during completion of this degree. They instilled in me the values of education, hard work, dreaming, and daring to make the dreams come true.

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ABSTRACT

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A descriptive, two-group, nonexperimental design was used to investigate differences in perceived social support and perceived psychosocial adaptation in African American and Caucasian American women who were middle-aged, middle income, and had noninsulin dependent diabetes mellitus (NIDDM). Relationships between perceived social support and glycemic control and perceived psychosocial adaptation and glycemic control were also examined. The Roy Adaptation Model provided the framework for this study.

A convenience sample of 33 African American and 33 Caucasian American women participated in this study. Data were collected in private physicians' offices. Participants completed questionnaires while waiting for scheduled visits with their physicians. The Norbeck Social Support Questionnaire (NSSQ) was used to measure social support, the Psychosocial Adjustment to Illness-Self Report (PAIS-SR) was

used to measure psychosocial adaptation, and hemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>) was used to measure glycemic control.

Results indicated that the African American women perceived more aid (material assistance) social support ( $U = 372.5$ ,  $p = .02$ ) than did Caucasian American women. Caucasian American women reported more perceived psychological distress ( $t = -2.17$ ,  $df = 64$ ,  $p = .03$ ) than African American women. There was no significant relationship between perceived social support and glycemic control in either group of women. In the Caucasian American group there were significant relationships between the PAIS-SR subscales of Domestic Environment ( $r = .57$ ,  $p \leq .05$ ), Sexual Relationships ( $r = .46$ ,  $p \leq .05$ ), Social Environment ( $r = .36$ ,  $p \leq .01$ ), Psychological Distress ( $r = .53$ ,  $p \leq .05$ ), Total score ( $r = .56$ ,  $p \leq .05$ ), and glycemic control. However, no significant relationships were found between PAIS-SR total score or subscales and glycemic control in the African American group. A significant difference was found in glycemic control between the two groups. African American women had higher HbA<sub>1c</sub> levels ( $M = 8.21$ ,  $SD = 1.33$ ,  $p = .02$ ) than the Caucasian American group ( $M = 7.56$ ,  $SD = .89$ ,  $p = .02$ ).

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## CHAPTER 1

### INTRODUCTION

African American women with noninsulin dependent diabetes mellitus (NIDDM) are of special concern. African American women have a higher incidence of NIDDM when compared to African American men and 50% higher when compared to Caucasian Americans (Anderson et al., 1991; United States Department of Health and Human Services, DHHS, 1993). Complications from diabetes mellitus such as blindness, heart disease, and mortality are more prevalent in African American women when compared to African American men and Caucasian Americans (Rosenman, 1985; Sunter, 1990). According to Rosenman, diabetes approaches epidemic status among African American women.

The prevalence and severity of the complications of diabetes mellitus are related to glycemic control. According to the Diabetes Control and Complications Trial (DCCT) Research Group (1993), glycemic control can prevent and delay progression of complications and improve disease prognosis. Glycemic control, although demanding and complex, is achievable.

Variables such as social support and psychosocial adaptation were found to influence glycemic control in subjects of varied age groups, who were predominately Caucasian, and from varied socioeconomic backgrounds (Kaplan & Hartwell, 1987; Linton-Weiss, 1990; Pollock, 1986; Rapley, 1991; Schafer, McCaul, & Glasgow, 1986). No studies were found that confirmed this relationship in middle-aged, middle income, African American women. Skelly (1992) and Hopper and Schechtman (1985) examined social support and glycemic control in African American women; however, the subjects were predominantly older and in the lower socioeconomic class. A significant group of African American women have been excluded from participation in research because not all African American women with NIDDM are impoverished and NIDDM is prevalent in middle-aged African American women.

The purpose of this study was to describe how middle-aged, middle income, African American women adapt to noninsulin dependent diabetes mellitus by assessing three variables: perceived social support, perceived psychosocial adaptation, and glycemic control. The relationships that perceived social support and psychosocial adaptation have with glycemic control were examined. The results were compared to those from a group of Caucasian American women to further enhance the meaning of the findings.

### Problem of Study

The problems investigated were: How do African American and Caucasian American women who are middle-aged, middle income, and have NIDDM differ in perceived social support and perceived psychosocial adaptation? How are these two variables related to glycemic control in each of the target populations?

### Rationale for Study

The treatment goal for people with diabetes mellitus is glycemic control in order to improve long range outcomes. Self-care activities such as the balancing of diet, exercise, and taking hypoglycemic agents are examples of means for achieving glycemic control (American Diabetes Association, ADA, 1988). Nursing textbooks present strategies to help individuals achieve glycemic control. However, the individualized techniques for providing this type of assistance to middle-aged, middle income, African American women with NIDDM are missing from both textbooks and published research literature. As the largest group of providers of self-care education, nurses need to have culturally relevant information to help empower women to improve their health status.

Diabetes and related complications place a significant economic burden on the individual and society. Health care

expenditures by people with diabetes mellitus in 1992 were \$9,500 as compared to \$2,600 for the general public (National Diabetes Advisory Board, NDAB, 1994). A large portion of health care expenditures by diabetics was due to diabetes-related complications (NDAB, 1994). Health care costs for treatment of diabetes, including the cost of lost productivity, totaled \$91.8 billion annually (DHHS, 1994). Findings from a study designed to investigate social support, psychosocial adaptation, and glycemic control in middle-aged, middle income, African American women with NIDDM may help identify ways to decrease the economic burden on these women as well as on society.

Living with and controlling diabetes mellitus are demanding tasks. The person with diabetes mellitus must manage the illness daily, face changes in lifestyle, and deal with the social impact on family, friends, work, and recreation (Armstrong, 1987). The occurrence of developmental tasks, such as menopause, may present additional demands for psychosocial adaptation. There is no empirical evidence about how middle-aged, middle income, African American women with NIDDM integrate diabetes mellitus into their lives. Nurses who embrace the American Nurses' Association (ANA) Social Policy Statement definition of nursing as the "diagnosis and treatment of the human response to actual . . . health problems . . . in a person's



life" (ANA, 1980, p. 9) are lacking some information needed to assist this population of women suffering from NIDDM.

Pollock (1986) and Rapley (1991) found that people who adapted psychosocially to diabetes mellitus achieved better glycemic control. However, whether findings of the cited studies extend to the specific population of this study is unknown.

Researchers (Kvam & Lyons, 1991; Norbeck, 1981) have demonstrated a positive relationship between social support and desired outcomes in studies of people with health problems. The opposite state, limited or no social support, is represented by two nursing diagnoses approved by the North American Diagnosis Association: Impaired Social Interaction and Social Isolation ("North American Diagnosis," 1990). Enhancing supportive relationships to influence health related outcomes is a legitimate nursing intervention. Middle-aged, middle income, African American women live with and manage diabetes mellitus in their personal homes and social environments. However, descriptions of these women's support systems and the relationship between social support and their degree of success in achieving glycemic control are missing in the research literature.

Finally, the goal of the Women's Health Equity Act of 1990 is to broaden research on women's health because most

research efforts have been focused on males (Sharp, 1990). Findings from this study contribute to this goal by adding to the body of knowledge about women's health care issues.

### Theoretical Framework

The theoretical framework for this study was based on the Roy Adaptation Model (Andrews & Roy, 1991; Roy, 1984). The scientific assumptions of the model reflect von Bertalanffy's (1968) general system theory and Helson's (1964) adaptation level theory. The philosophical assumptions underpinning the model are based on humanism and veritativity (Andrews & Roy, 1991). Humanism and veritativity reflect beliefs that the person behaves purposefully, possesses intrinsic holism, strives to maintain integrity, and understands the need for relationships and for interdependence with other individuals. Life has value and meaning, and there is a common purposefulness of human existence (Roy, 1988).

Roy (1984) conceptualized the person as an adaptive system and, as such, the person functions as a whole by virtue of the interdependence of its parts. The person as an adaptive system receives inputs (environmental stimuli), emits outputs (behaviors), and utilizes feedback processes (Figure 1).

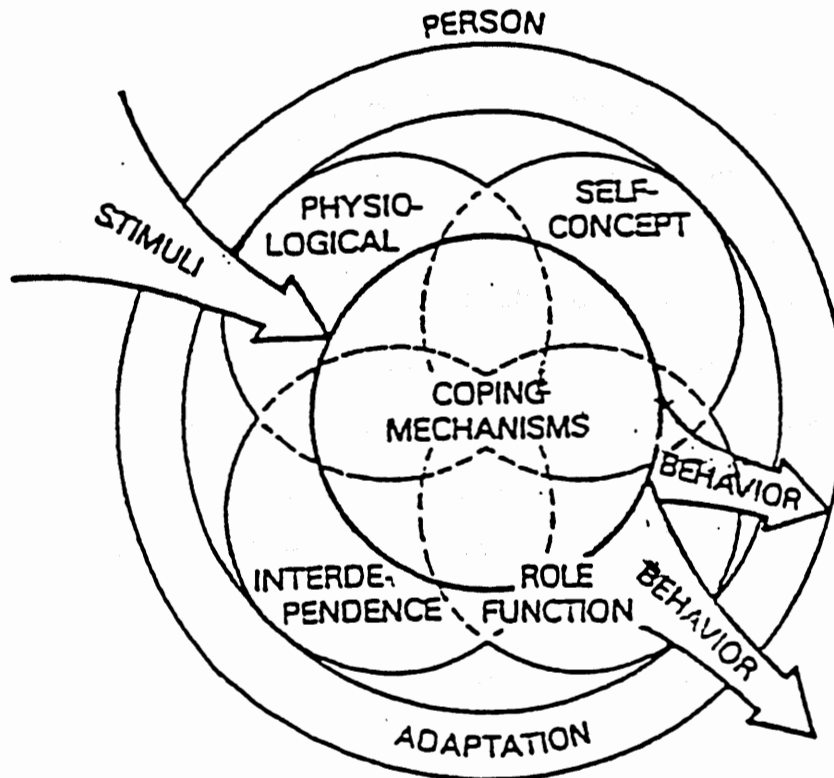


Figure 1. Person as an adaptive system. From The Roy Adaptation Model: The Definitive Statement (p. 17), by H. A. Andrews and C. Roy, 1991, Norwalk, CT: Appleton & Lange. Copyright 1991 by Appleton & Lange. Reprinted with permission.

Purposeful existence involves the person interacting with the environment for the good of the total system. According to Andrews and Roy (1991), the person is in constant interaction with an environment that also constantly changes and presents the person with new challenges. This dynamic environment affords the person the opportunity to grow, develop, and enhance the meaning of life for everyone.

The environment consists of stimuli to which the person must respond. Environmental stimuli are categorized as focal, contextual, and residual. Focal stimuli are those stimuli that immediately confront the person. Contextual stimuli are factors such as cultural orientation, religion, and gender that contribute to the effect of the focal stimuli. Residual stimuli are factors such as beliefs, attitudes, and experience that have an important effect on the situation, although their effects cannot be validated. Responses to the impact of all environmental stimuli form the person's adaptation level.

Responses can be adaptive or ineffective. "Adaptive responses are those that promote the integrity of the person in terms of the goals of adaptation: survival, growth, reproduction, and mastery" (Andrews & Roy, 1991, p. 12). Ineffective responses do not promote the goals of adaptation.

Responses to stimuli are the outputs of the system which can be observed and evaluated in four interrelated adaptive modes: physiologic, self-concept, role function, and interdependence (Andrews & Roy, 1991). The physiological mode is the process by which the person responds to the need for physiological integrity. Five basic needs and four regulator processes are included in the mode. The basic needs are: (a) oxygenation, (b) nutrition,

(c) elimination, (d) activity and rest, and (e) protection. The regulator processes are: (a) fluids and electrolytes, (b) the senses, (c) neurological functions, and (d) endocrine function (Andrews & Roy, 1991).

The self-concept mode, one of three social modes, focuses on psychological integrity. Self-concept is defined as "the composite of beliefs and feelings that a person holds about himself or herself at a given time" (Andrews & Roy, 1991, p. 16). This mode includes perceptions of the physical self and the personal self.

The role function mode is the second social mode. Social integrity is the basic need underlying the mode. Role function refers to the performance of duties based on the societal position that the person occupies. The interdependence mode, the third social mode, focuses on the need for affectional adequacy. Affectional adequacy is achieved through specific relationships with significant others and support systems (Andrews & Roy, 1991). A significant other is the individual to whom the most meaning is given. Support systems are people or groups who provide love, respect, and value (Andrews & Roy, 1991).

The goal of nursing is to promote adaptation in the four modes in order to contribute to health, quality of life, and death with dignity (Roy, 1984). Health is defined as a state or process of becoming an integrated and whole

person (Roy, 1984). Nursing is unique in the promotion of adaptation because nursing focuses on the person as a total being adapting to environmental stimuli (Andrews & Roy, 1991).

The nurse uses a six-step nursing process as a problem-solving approach to assist the person in adapting to environmental stimuli. The desired outcome of nursing is an adaptational level in which the person responds to stimuli in the current environment by using adaptive behaviors. Roy (1984) asserted that assisting the person to move from ineffective behaviors to adaptive responses releases energy that can promote health and healing.

The Roy Adaptation Model guided the construction of a conceptual-theoretical-empirical structure that served as the theoretical framework (Figure 2). The focal stimulus was represented by the demands of living with diabetes, which was operationalized by using a sample of women who had been diagnosed and coping with NIDDM for at least one year. In this study, the contextual stimuli were represented by demographic variables of age, income, and race, and these data were obtained from the Personal Profile Sheet and medical records. Residual stimuli by definition are unknown and cannot be measured, thus they have no theoretical proxies or empirical indicators.

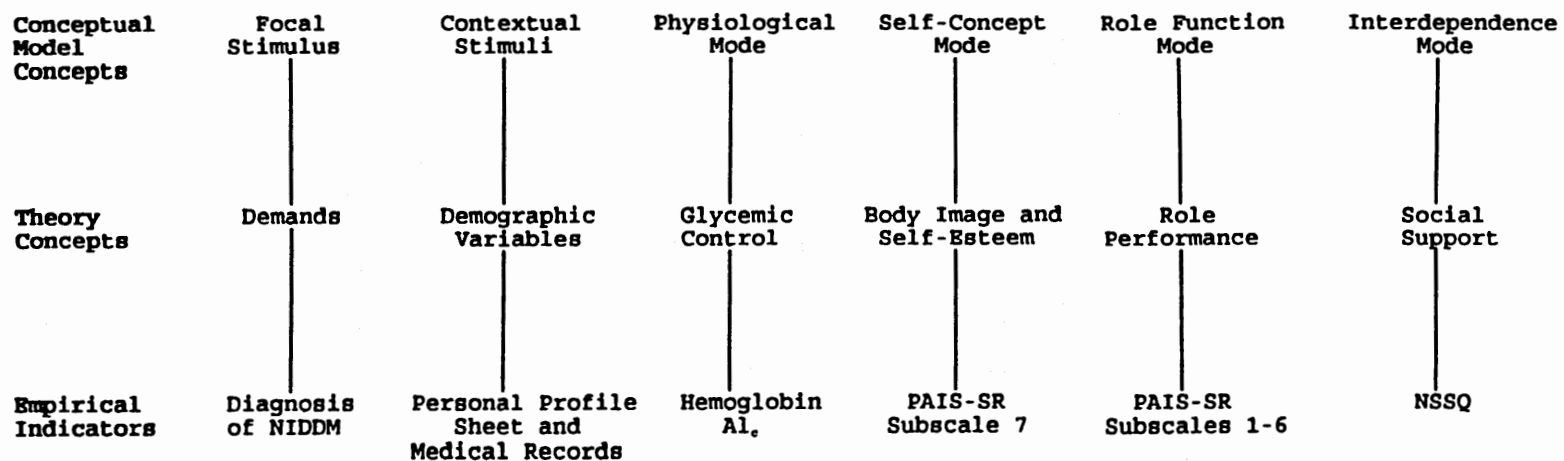


Figure 2. Conceptual-theoretical-empirical structure of the study.

In this study, the endocrine processes involved in glycemic control served as theoretical proxies for the physiological mode and were measured by the empirical indicator, the hemoglobin A<sub>1c</sub> laboratory value. Body image was the theoretical representative of the physical self, and self-esteem was the representative of the private self. These two components of self-concept were then measured using designated empirical indicators from the Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR) (Derogatis, 1986). The third mode, the role function mode, was represented by the theoretical proxy of role performance and measured by the empirical indicators found in scales 1-6 of the PAIS-SR. Social support represented the fourth mode, interdependence, at the theoretical level, and it was measured by the Norbeck Social Support Questionnaire (NSSQ) (Norbeck, Lindsey, & Carrieri, 1981).

The Roy Adaptation Model implies that, through the interactive nature of the four adaptive modes, energy freed from dealing with stimuli in ineffective ways can be used in other modes. Thus, adaptive integrity in the self-concept mode or interdependence mode or role function mode should be associated with movement toward integrity in the physiological mode. For women with NIDDM, this theoretical proposition suggests that psychosocial adaptation and social support may contribute to glycemic control.



### Assumptions

Assumptions derived from the theoretical framework are as follows:

1. The individual is a biopsychosocial being in constant interaction with the environment (Andrews & Roy, 1991).
2. Human behavior represents adaptation to environmental and organismic forces (Andrews & Roy, 1991).
3. To respond positively to environmental changes, the person must adapt (Andrews & Roy, 1991).
4. The individual has the capacity to adapt to and create change in the environment (Andrews & Roy, 1991).
5. The individual functions with interdependent parts acting in unity for some purpose (Andrews & Roy, 1991).
6. The nursing goal of supporting and promoting patient adaptation is important for patient welfare (Andrews & Roy, 1991).

### Research Questions

Four research questions were formulated for this study:

1. What is the difference in perceived social support between African American and Caucasian American women who are middle-aged, middle income, and have NIDDM?
2. What is the difference in perceived psychosocial adaptation between African American and Caucasian

American women who are middle-aged, middle income, and have NIDDM?

3. What is the relationship between perceived social support and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM?
4. What is the relationship between perceived psychosocial adaptation and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM?

#### Definition of Terms

The following terms were defined for use in this study:

1. Social support is the outcome of interpersonal transactions that include one or more of the following elements: affect, affirmation, and aid (Kahn, 1979). Operationally, social support was defined as a score on the Norbeck Social Support Questionnaire (Norbeck et al., 1981). The instrument reflects adaptation in the interdependence mode and measures perceived social support.
2. Psychosocial adaptation is the acceptance of self and restructuring of one's environment so that one is motivated to choose a lifestyle transcending limits that are "imposed by the illness" (Feldman, 1974, p. 290).

Operationally, psychosocial adaptation was defined as a score of 60 or below on the Psychosocial Adjustment to Illness Scale-Self Report (Derogatis, 1986), which measures perceived psychosocial adaptation. The scale reflects adaptation in the role function and self-concept modes. Subscales 1-6 were used to measure role performance and subscale 7 was used to measure body image and self-esteem.

3. Glycemic control is the maintenance of normal blood glucose levels (Abraham, 1985). Operationally, glycemic control was defined as an acceptable range of hemoglobin A<sub>1c</sub> values. Values between 2.9 to 7.1 indicate good glycemic control throughout the previous 60-90 days (Specialized Assay Laboratory, 1994). The values reflect adaptation in the physiologic mode.

#### Limitations

The limitations of this study are:

1. Generalization beyond the sample cannot be made because a nonrandom sampling procedure was used.
2. Collection of data by using only self-report measures may have resulted in the subjects over- or under-estimating amounts of social support and psychosocial adaptation.

### Summary

The Roy Adaptation Model (Andrews & Roy, 1991; Roy, 1984) provided the conceptual basis and theoretical rationale for choosing to study the variables of perceived social support, perceived psychosocial adaptation, and glycemic control. Too little is known about middle-aged, middle income, African American women's adaptation to NIDDM to predict the relationships between these variables. Likewise, the need exists for more research about Caucasian American women who are middle-aged, middle income, and have NIDDM. Consequently, this study was conducted to expand nursing's knowledge base about the ways that both African American and Caucasian American women adapt to NIDDM.

## CHAPTER 2

### REVIEW OF LITERATURE

This study was designed to describe three empirical indicators of adaptation in two groups of noninsulin dependent diabetics (NIDDM): African American women and Caucasian American women. The purpose of this chapter is to present what is known about the three variables of interest: (a) social support, (b) psychosocial adaptation, and (c) physiological adaptation and glycemic control. The emphasis is on empirical literature specific to these three variables as they have been studied in adult populations with diabetes mellitus. The Roy Adaptation Model (Andrews & Roy, 1991; Roy, 1984) provides the organization for this review.

#### Diabetes and Social Support

There is a consensus among researchers that social support plays an important role in improving well-being and buffering stress (Cohen & Syme, 1985; Kahn, 1979; Norbeck, Lindsey, & Carrieri, 1983; Primomo, Yates, & Woods, 1990). However, the concept of social support assumes different meanings for different authors. As a result, investigators operationalize social support in various ways. In this

study, social support is defined as multidimensional and as the outcome of interpersonal transactions that include one or more of the following elements: affect, affirmation, and aid (Kahn, 1979).

A chronic illness such as diabetes mellitus may change the composition of the social network with a change in the amount and type of support (Murawski, Penman, & Schmitt, 1978). Strauss (1975) stated that a chronic illness such as diabetes mellitus can cause social isolation because the symptoms and the effort required in daily management of the illness may lessen social contact. Lack of social support has been correlated with illness, psychological distress, and mortality (Beckman & Syme, 1979; Kaplan, Cassell, & Gore, 1977; Lin, Ensel, Simeone, & Kuo, 1979; Schaefer, Coyne, & Lazarus, 1981). Therefore, assessment of social support in persons with NIDDM can result in identification of persons lacking in adequate social support so that appropriate interventions can be planned.

Social support has been widely studied by social scientists as well as nurses since the 1960s. However, studies designed to assess social support in adults with diabetes mellitus are limited, especially for people with NIDDM. The studies of social support and diabetes mellitus in this section were descriptive studies. Empirical studies

that examined the relationship between social support and physiological outcome variables in adults with diabetes mellitus are presented in a later section.

Various conceptualizations and operationalizations of social support were found among investigators. One group of investigators conceptualized social support as a dimension (subconcept) of psychosocial adaptation (Connell, 1991; Jenny, 1984, 1986). Another group of researchers conceptualized social support as an independent variable that is associated with, but not an attribute (dimension) of psychosocial adaptation (Heitzmann & Kaplan, 1984; Kaplan & Hartwell, 1987; Kvam & Lyons, 1991; Primomo et al., 1990). The following review presents these studies.

#### Social Support as a Dimension of Psychosocial Adaptation

Jenny (1984) described self-reports of social support in a sample of 245 adults. Although the sampling method was not reported, all participants were patients who attended a diabetic clinic in a large, university affiliated teaching hospital. For the purposes of data analysis, subjects were grouped by age into young--16-24 years, middle--25-45 years, older--46-56 years, and aged--66-88 years. Unequal size comparison groups were used because the mean age was 54 years. The average duration of diabetes mellitus was 9

years, 56% of the participants had IDDM, and 10% of the participants took no medication. Of the participants, 60% had annual incomes more than \$25,000 and 48% were men. Racial distribution of the sample was not reported.

The instrument used to evaluate social support was developed by Jenny (1984). The instrument contained items related to social support and psychosocial adaptation. Cronbach alphas for the subscales varied from  $\alpha = .47$  to  $\alpha = .85$  with a mean coefficient value of  $\alpha = .63$ . No other data about validity or reliability were reported. Participants completed the self-report instrument during their clinic visit. Jenny found that the young group reported more support than the other groups. Parents and relatives were identified as the most supportive for the young group. Spouse was reported as the most supportive by the middle, older, and aged groups. However, 16 participants reported that nobody was helpful. Data were analyzed using descriptive statistics.

Jenny (1986) later used type of diabetes as the grouping factor for investigating social support. Two groups, 138 IDDM clinic patients and 108 NIDDM clinic patients, responded to the same version of the self-report questionnaire used in the 1984 study. In this study, instrument reliability was  $\alpha = .63$  with internal



consistencies varying from  $\alpha = .30$  to  $\alpha = .82$  between subscales. For this second study, the average duration of diabetes was 9 years and the average age of the participants was 54 years. Women comprised 54% of the sample, and 30% of the participants had incomes greater than \$25,000. No data about racial group distribution were reported. The findings indicated that the spouse was the primary source of support in both the IDDM group ( $n = 65$ ; 47%) and the NIDDM group ( $n = 59$ ; 55%).

Connell (1991) assessed social support and psychosocial adaptation in a sample of 191 community-dwelling adults with NIDDM whose mean age was 70.3 years. Although the sampling method was not reported, the demographic profile indicated that the total sample was composed of 60% females ( $n = 114$ ), 14% African Americans ( $n = 26$ ), and 53% married participants ( $n = 101$ ); 56% of the participants were educated at least at the level of high school completion ( $n = 109$ ). No income levels nor descriptions of the number of females in the sample who were African American and Caucasian American were reported.

Social support was measured by the Social Provision Scale which is designed for use with older adults. Connell (1991) reported an alpha coefficient of  $\alpha = .91$  based on the investigator's data. Home interviews were used to collect

data. The sample's social support scores were compared with data obtained from an earlier validation study of the Social Provision Scale that involved 494 community-dwelling older adults without diabetes. The mean age for the comparison group was 73 years, 66% were women, 53% were married, and 84% were Caucasian. Connell reported that social support scores of the sample were similar to the scores of the comparison group of older adults without diabetes. Both samples indicated that an adequate amount of support is available to them if needed.

#### Social Support as an Independent Variable

Heitzmann and Kaplan (1984) found a significant gender interaction with social support. The sample consisted of 19 men and 18 women with NIDDM ( $N = 37$ ). Mean ages were 61.39 years for men and 50.55 years for women. Race, income, and other demographic data were not reported. Subjects were participants in a behavioral program in diabetes care. Neither inclusion criteria for the subjects nor information regarding the behavioral program were reported. The Social Support Questionnaire (SSQ) was used to measure social support. The investigators asserted that, based on the developer's psychometric data, the instrument was valid and reliable. Findings demonstrated that men reported more satisfaction with a small network ( $r = -.35$ ,  $p \leq .07$ ) and

women reported more satisfaction from larger networks ( $r = .39, p \leq .05$ ).

Kaplan and Hartwell (1987) assessed social support in 32 men and 44 women with NIDDM prior to instituting interventions designed to improve diabetic control. The participants were recruited by public service announcements, newspaper articles, and private physician referrals. The mean ages of the participants were 55.5 years for the men and 54.6 years for the women. Race and income were not reported. Social support was measured once at the initial evaluation before subjects received their interventions.

The Social Support Questionnaire (SSQ) was used by Kaplan and Hartwell (1987) to measure social support. The SSQ is a two-part questionnaire that measures the number in the personal network (SSQ-N) and satisfaction with support given by the personal network (SSQ-S). The correlation between the SSQ-N and the SSQ-S was  $r = .33$  in the study. The investigators found that women listed spouses 11.6 of 27 times as the person on whom they can depend as compared to men who listed spouses 22.6 of the 27 times. Women listed children an average of 16 times as compared to men who listed children an average of 23.7 times. Friends were reported equally by men and women.

Perceptions of social support of individuals with NIDDM also were evaluated by Kvam and Lyons (1991). The subjects were participants in a 2-day outpatient diabetes education program. The sample of 51 participants consisted of 30 men and 21 women. The racial composition of the sample was 63% Caucasian, 21% African American, 4% Hispanic, and 2% Oriental. Over one-half of the subjects had incomes over \$25,000 annually, 55% were married, and 39% were high school graduates. Over one-half (57%) of the subjects had IDDM, 29% had NIDDM, and 14% were controlling their diabetes by diet only. Mean duration of diabetes was 8 years. The Perceived Social Support (PSS) questionnaire, with no reliability and validity reported, was used to measure social support upon the subjects' completion of the diabetes education program. The PSS questionnaire assesses perceptions of support, information, and feedback from family (PSS-FA) and friends (PSS-Fr).

Results, according to Kvam and Lyons (1991), indicated that perceived family support was greater for NIDDM subjects ( $M = 17$ ,  $SD = 3.5$ ) than for IDDM subjects ( $M = 12.4$ ,  $SD = 4.5$ ). Women perceived receiving greater support from friends ( $M = 16.8$ ,  $SD = 3.2$ ) when compared with any other source, and men perceived receiving greater support from

family ( $M = 14.9$ ,  $SD = 4.8$ ) when compared with any other source.

Women were the focus of Primomo et al.'s (1990) assessment of social support. Subjects were 125 women with a chronic illness who were part of the Family Impact Study. A panel design was used to study families in which women had diabetes, fibrocystic disease, and nonmetastatic breast cancer.

Primomo et al.'s (1990) sample consisted of 31 women with diabetes (type not specified), 36 women with fibrocystic disease, and 58 women with breast cancer ( $N = 125$ ). Although the investigators reported that the sample was predominately Caucasian, no numerical distribution of race was given. Mean age of the sample was 41 years, and 70% of the women were married with an average of 2.4 children. Although this was a longitudinal study, data about social support were collected only during the first home interview. Social support was measured by the Norbeck Social Support Questionnaire (NSSQ). Primomo et al. reported that, based on the developer's psychometric data, the instrument was valid and reliable. Results indicated that the partner was identified as providing the greatest amount of support. The partner provided more affective support, affirmation, and aid. Following the partner, the

extended family provided a greater amount of affectional support than friends,  $F(1,102) = 9.62$ ,  $p \leq .01$ , or others,  $F(1,44) = 25.98$ ,  $p \leq .001$ . However, friends did give more affective support than others,  $F(1,46) = 11.02$ ,  $p \leq .01$ , and more affirmation support than family,  $F(1,100) = 11.2$ ,  $p \leq .01$ . The women also reported that health care providers, counselors, and religious officials served as other sources of support.

#### Methodological Issues

Review of the literature regarding social support in persons with diabetes mellitus shows variations in results which can be traced to diverse conceptualizations and methodological problems. The seven investigators did not use standardized data-gathering techniques. Jenny (1984, 1986) used self-report instruments which the participants completed during their clinic visits. Heitzmann and Kaplan (1984), Kaplan and Hartwell (1987), and Kvam and Lyons (1991) used self-report instruments which the participants completed at the agencies where the studies were conducted. Primomo et al. (1990) and Connell (1991) used home interviews for data collection.

All of the investigators used cross-sectional designs. One-time measures cannot rule out alternative explanations of the social network or the amount of support (Polit &

Hungler, 1995). For example, the generation of a list of people in the support network and the reports of the amount of support may have been affected by other problems besides diabetes in the individual's life that were more or less influential at a different time.

Kaplan and Hartwell (1987) were the only researchers who did additional reliability testing on the social support instrument used in their study. Reliability of an instrument is not fixed but is dependent on the sample (Polit & Hungler, 1995). Therefore, reliability should be evaluated whenever an instrument is used in a study.

Jenny (1984) used mixed groups of people with NIDDM and IDDM which contained both men and women. Although heterogenous samples are often selected because homogenous samples may limit generalizability of findings, delimiting participants or grouping them by gender and disease type may provide more meaningful data about how the perceptions of social support differ. For example, Kvam and Lyons (1991) found that social support operates differently in people with NIDDM and IDDM and in men and women.

Comparisons of the findings of the studies in this review are hindered by failure to report complete demographic data. Neither race nor income were reported by Kaplan and Hartwell (1987). Jenny (1984, 1986) did not

report the ethnic distributions of the sample. Primomo et al. (1990) reported that the majority of the sample were Caucasian but gave no figures. Heitzmann and Kaplan (1984) only reported gender, number, and mean age of the sample; no other demographic data were reported.

No studies were found that were limited only to African American or Caucasian American women. In addition, no studies were found that dealt with the variables of middle-aged and middle income.

There is a general agreement among investigators of social support that social support is a multidimensional concept and should be measured accordingly (Cohen & Syme, 1985; Kahn, 1979; Norbeck et al., 1983; Primomo et al., 1990). However, only one tool, the NSSQ, reflected the multidimensionality of social support in previous studies. Consequently, the NSSQ was selected to measure social support in this study. The NSSQ is conceptually congruent with the theoretical definition of social support as defined in this study.

### Conclusions

The spouse was the most frequent source of support for women with either IDDM or NIDDM. Spouse/partner provided for affect, affirmation, and aid support in persons with diabetes mellitus. No studies were found that were limited



to African American and Caucasian American women. In addition, no studies were found that were focused specifically on the variables of middle-age and middle income; however, these variables were included with other variables in the studies. The methodological problems identified limit the interpretation and generalizability of the findings of the reported literature.

#### Diabetes and Psychosocial Adaptation

Psychosocial adaptation is defined as the acceptance of self and restructuring of one's environment so that one is motivated to choose a lifestyle "that transcends the limitations imposed by the illness" (Feldman, 1974, p. 290). Psychosocial adaptation to illness is conceptualized as a multidimensional phenomenon which includes not only the ill person but also other people in the environment (Derogatis, 1986).

The demands that diabetes mellitus places on people require psychosocial adaptation. Intrusion of a chronic illness, such as diabetes mellitus, produces feelings of depression, decreased self-esteem, fear, and anger. Chronic illness creates a variety of demands, including but not limited to choosing to implement a difficult regimen with alterations in lifestyle (Connell, 1991; Lambert & Lambert, 1987).

The task of synthesizing the research literature to accurately reflect what currently is known about how diabetes influences psychosocial adaptation is complicated by different conceptualizations of the variable, psychosocial adaptation. One perspective has been to equate psychosocial adaptation to compliance with therapeutic regimens. The aim of researchers who used this perspective has been to describe diabetics' perceptions of the types of problems caused by the disease and barriers to compliance. A second perspective has been to equate psychosocial adaptation as self-acceptance and "transcend[ing] the limitations imposed by illness" (Feldman, 1974, p. 290). The aim of researchers who used the second perspective has been to describe diabetics' perceptions of their adaptation to changes in roles and everyday events in their lives. The following review presents four studies in which the first conceptualization was used, three studies in which the second conceptualization was used, and one study in which both perspectives were used.

#### Psychosocial Adaptation as Compliance

Jenny (1984) described self-reports of adaptation to diabetes mellitus of 245 adults. In Jenny's study which was discussed earlier, the instrument used to assess psychosocial adaptation was an investigator-designed

questionnaire that contained items about health beliefs, social support, compliance, satisfaction with provider relationship, and family problems. Cronbach alphas for subscales varied from  $\alpha = .47$  to  $\alpha = .85$ ; no other data about validity or reliability were reported. Findings indicated the young group perceived their illness to be less serious than the older and aged groups. The middle-age group reported that diabetes interfered with their lives, mentioned more family problems because of diabetes, and reported more barriers to compliance than the other groups. Perceived value of medications and exercise decreased with age, and cost was reported as a barrier to compliance more frequently by the aged group. All claims to differences between groups were based solely on descriptive statistics; no inferential tests of group differences were reported.

In Jenny's 1986 study, also described previously, type of diabetes was used as the grouping factor for reporting descriptions of psychosocial adaptation. The two groups of diabetic patients responded to the same version of the self-report questionnaire developed in 1984 by the researcher. Frequency distributions revealed that regulating diet and exercise were problems for both NIDDM and IDDM subjects. The difficulty of obtaining regular exercise was cited as a barrier to compliance by both groups.

Davis, Hess, Harrison, and Hiss (1987) found that both IDDM ( $n = 56$ ) and NIDDM diabetics who used insulin ( $n = 191$ ) had more problems with psychosocial adaptation than did NIDDM diabetics who did not need insulin as part of their therapeutic regimen ( $n = 181$ ). Mean ages of the three groups were: insulin using IDDM subjects, 34.8 years; insulin using NIDDM subjects, 58.7 years; and noninsulin using NIDDM subjects, 62.3 years. Percentages of females were 60.8% for noninsulin using NIDDM subjects, 64.9% for insulin using NIDDM subjects, and 39.3% for insulin using IDDM subjects. Race and income levels were not reported.

Psychosocial adaptation was measured by the Diabetes Education Profile (DEP). Alpha coefficients for the subscales of the DEP varied from  $\alpha = .69$  to  $\alpha = .86$ . No further reliability nor validity were reported. Although values were not given, Davis et al. asserted there was strong support for construct and content validity. Mean scores of the DEP were compared between the three groups. Findings indicated the noninsulin using NIDDM subjects had significantly ( $p \leq .01$ ) lower mean scores than the other two groups. Among the three groups, insulin using NIDDM and insulin using IDDM subjects reported more barriers to adherence, more regimen complexity, and higher perceived risk of complications. Additionally, of the three groups,

the insulin using IDDM subjects reported more control problems, and the insulin using NIDDM subjects reported more social problems.

A longitudinal qualitative study was conducted by Packard, Haberman, Woods, and Yates (1991) to investigate the illness experience reported by women living with diabetes ( $n = 28$ ), fibrocystic disease ( $n = 35$ ), and nonmetastatic breast cancer ( $n = 52$ ). Ages of the women varied from 28 to 62 years ( $M = 41.3$  years). Subjects had an average of 2 years of college, 54% were employed outside the home, 70% were married, and there were an average of 2.4 children per household. For the diabetic group, the average duration of diabetes was 5 years. Race and incomes were not reported.

All groups were interviewed on five different occasions at 4-month intervals. A total of 22 illness demands categories were identified from the analysis of interviews. The primary constructs of illness demands were grouped into three domains: (a) direct disease effect, (b) personal disruption, and (c) environmental transactions. Packard et al. (1991) reported that the demands that emanated from personal disruptions and environmental transactions were most prevalent in all three groups; the researchers concluded that personal disruption and environmental

transaction demands were the basis of the stress experienced in chronic illness.

### Psychosocial Adaptation as Transcending Limitations

Shah (1989) assessed psychosocial adaptation in women with diabetes mellitus using the Psychosocial Adaptation to Illness Scale-Self Report (PAIS-SR). The 104 women were selected using convenience sampling from private physician offices, outpatient clinics, and meetings of diabetic organizations. There were 31 women with NIDDM and 73 women with IDDM. The average age of the subjects was 43 years. No data about racial group distribution or incomes were reported. Shah reported that overall, the women adapted well to their illness. The group's global score, which provides assessment of the subjects' overall adaptation, was 52; a score of 60 and below indicated psychosocial adaptation. The Psychological Distress subscale was negatively correlated with age ( $r = -.23, p < .01$ ); younger subjects had higher scores than did the older subjects. The Psychological Distress subscale measures dysphoric thoughts and feelings as a result of the illness.

Psychosocial adaptation of Caucasian women was the focus of a study by White, Richter, and Fry (1992). A mixed sample of NIDDM (14%) and IDDM (86%) women was recruited by

mail through the state's American Diabetes Association. A convenience sampling technique was used. The mean age of the subjects was 46 years. Of the women, 67% were married and an average of 2.4 individuals comprised the family household. The annual mean household income was \$31,000 to \$37,999, the mean educational level was 14.7 years, and the mean duration of diabetes mellitus was 17 years.

White et al. (1992) used the PAIS-SR. Reliability for the subscales of the PAIS-SR varied from  $r = .47$  to  $r = .85$ . Internal consistency of the total scale was  $r = .93$ . Other psychometric data about the PAIS-SR have been reported by Derogatis (1986). White et al. found the mean response on the PAIS-SR was 60 ( $SD = .39$ ), which indicated psychosocial adaptation. An ANOVA and post hoc tests revealed that Psychological Distress and Health Care Orientation domains were the most troublesome for the subjects. The Health Care Orientation subscale measures the person's attitude, quality of information, and the person's expectancies about the illness and its treatment. Although diabetes was the source of psychological distress and the women's attitude toward health care, the disease did not affect social roles or family relationships. The Extended Family Relations were the least disturbed by diabetes.

Primomo (1989) found that women with diabetes mellitus reported more depression and anxiety than women without diabetes mellitus. These psychological states affected the women's families and social relationships. The mean age of the sample was 38.3 years, average educational level was between some college and college graduate, and the median household income range was \$30,000 to \$35,000. Most of the women were married with a school-aged child. Psychosocial adaptation was measured by three instruments: the Center for Epidemiological Studies-Depression Scale (CES-D); the State-Trait Anxiety Inventory (STAI); and the Demands of Illness Inventory (DOII). The CES-D is a 20-item self-report questionnaire designed to measure clinical symptoms of depression. Alpha coefficients varied between  $\alpha = .84$  to  $\alpha = .85$ . Test-retest correlations were  $r = .51$  to  $r = .62$  over 9 months. Internal consistency was .90 for the current study. The STAI measured anxiety. Internal consistency for the scale varied from  $r = .89$  to  $r = .91$ . The DOII was used to measure social adaptation. The complete scale was administered, but only the Family Functioning and Social Relationships subscales were the focus in the analysis. Subscale internal consistency varied from  $r = .63$  to  $r = .93$ . Stability coefficients were  $r = .47$  for women and  $r = .73$  for the partners. A significant relationship was



found between family functioning demands and depression ( $r = .52$ ,  $p \leq .001$ ) and anxiety ( $r = .27$ ,  $p \leq .05$ ). Social relationships demands were significantly associated with depression ( $r = .39$ ,  $p \leq .01$ ).

#### Psychosocial Adaptation as Compliance and Transcending Limitations

Connell (1991) questioned whether having NIDDM was associated with more feelings of depression than are found in the general population of older adults. Using the Zung Depression Scale ( $\alpha = .77$ ), Connell measured depression in 191 community-dwelling adults whose mean age was 70.3 years. Although the sampling method was not reported, the demographic profile indicated that the total sample was composed of 60% females ( $n = 114$ ), 14% African Americans ( $n = 26$ ), 53% married participants ( $n = 101$ ), and 56% participants educated at least to the level of high school completion ( $n = 109$ ). No income levels nor descriptions of the number of females in the sample who were African American and Caucasian American women were reported. Home interviews were conducted with each subject.

The sample's depression scores were compared by Connell (1991) to scores of a community-dwelling group of 463 men and women, aged 60-79 years, who did not have diabetes mellitus. The finding that the NIDDM group was

significantly more depressed than the comparison group,  $t(.649) = 7.8$ ,  $p \leq .001$ , was interpreted to mean that having NIDDM impacts psychosocial adaptation.

Connell (1991) described the degree of perceived difficulty that the sample of older adults had in adapting to demands for lifestyle changes created by NIDDM. The older adults' perceptions of adaptation were compared to responses of 71 individuals with NIDDM who were less than 60 years old. The Diabetes Care Profile (DCP) was used to determine the psychosocial impact of diabetes on both groups. The older group reported that they had less complex regimens, fewer barriers to adherence, and fewer symptoms of poor glycemic control than the younger group. Connell interpreted the findings to mean that older adults perceived that diabetes had less psychosocial impact on their lives than the younger group, although tests for statistically significant differences were not reported.

#### Methodological Issues of Psychosocial Adaptation Studies

Findings of studies designed to examine psychosocial adaptation were inconsistent. This inconsistency was likely due to the various conceptualizations, various instruments used to measure the concept, and the use of mixed groups. Primomo (1989) used three instruments to measure

psychosocial adaptation--Center for Epidemiological Studies Depression Scale, State-Trait Anxiety Inventory, and the Demands of Illness Scale. Jenny (1986) used a 10-page self-report questionnaire containing "12 parameters of adaptation suggested in the literature" (p. 9). Most of the instruments had moderate reliability coefficients. None of the studies contained reports of validity of the instruments. Several researchers (Jenny, 1984; Primomo, 1989; Shah, 1989; White et al., 1992) used mixed groups of subjects who had NIDDM and IDDM, and the groups were unequal in number.

Additionally, investigators used cross-sectional designs. One-time measures cannot rule out alternative explanations of the findings (Polit & Hungler, 1995). Only one study (Davis et al., 1987) used random sampling. In the remaining studies, a nonprobability sampling was used, limiting generalizability of the findings.

There were no standardized techniques for collecting data. Primomo (1989), Connell (1991), and Packard et al. (1991) interviewed subjects. The presence of the researcher may have increased socially desirable responses. The remaining researchers used self-reports.

Another methodological issue is that claims of differences in studies by Jenny (1984, 1986) and Connell

(1991) were based on descriptive statistics. No inferential statistics were reported by either researcher.

The studies showed limited involvement of African Americans. Connell (1991) reported 26 of the subjects ( $N = 191$ ) were African Americans, and Primomo (1989) reported 2 of the subjects ( $N = 40$ ) were African Americans. The remaining researchers did not report the race of their subjects. In one study (White et al., 1992), psychosocial adaptation of only Caucasian women was assessed. No studies were found in which researchers examined psychosocial adaptation in middle-aged, middle income, African American and Caucasian American women who have NIDDM.

The PAIS-SR instrument was used to measure psychosocial adaptation in two of the reviewed studies and in this study. The PAIS-SR is reliable and is conceptually congruent with the definition of psychosocial adaptation defined in this study.

### Conclusions

People with NIDDM identified barriers to adherence, family problems, and depression as psychosocial adaptational problems. Some researchers used mixed samples of people with NIDDM and IDDM. The results from these studies documented people with diabetes mellitus had a positive outlook on life, difficulty in maintaining a diet,

depression, and anxiety. Among the literature reviewed, one study (White et al., 1992) was limited to Caucasian American women, and no studies were found that were limited to African American women. In addition, no studies were found that focused specifically on the variables of middle-age and middle income; however, these variables were included with other variables in the studies. The methodological problems identified limit the interpretation and generalizability of the findings.

#### Physiological Adaptation and Glycemic Control

Physiological adaptation refers to the way a person physically responds to environmental stimuli. The response results from the physiological activities of "all the cells, tissues, organs, and systems comprising the human body" (Andrews & Roy, 1991, p. 15). Adaptive responses promote growth and survival of the person (Andrews & Roy, 1991).

Glycemic control in people with diabetes mellitus was the parameter used to measure physiological adaptation, a way of assessing how well people are managing the illness. Glycemic control is maintenance of normal blood glucose levels (Abraham, 1985). In the literature, the terms glycemic control, metabolic control, and glucose control are used interchangeably. Glycemic control is the term used in this study.

### Glycemic Control

Diabetes-related complications such as kidney failure, heart disease, and blindness have been linked to poor glycemic control. Until recently, prior studies did not firmly document this relationship. According to Abraham (1985), "a major problem of previous studies has been the lack of an acceptable definition of good control" (p. 173). Glycemic control has been evaluated on the basis of urine glucose testing, self-report compliance to regimen, and fasting blood glucose values (Nathan, Singer, Hurxthal, & Goodson, 1984). The recent advent of glycosylated hemoglobin provides an objective and accurate means of evaluating glycemic control (Goldstein, 1986), thus enabling researchers to provide definitive measurement of glycemic control.

Goldstein (1986) defined glycosylated hemoglobin as "a generic term for hemoglobin containing glucose and/or other carbohydrates. . . . [Hemoglobin A] HbA [is] the major form of hemoglobin, a native, unmodified tetramer consisting of two alpha and two beta chains" (p. 3). The percentage of total hemoglobin to which glucose is bound is expressed in the glycosylated hemoglobin assay as a proportion of several fractions of hemoglobins. Both electrophoresis and ion exchange chromatography are used to identify the negatively

charged minor components, or fractions, which are designated as hemoglobins A1<sub>c</sub>, A1<sub>b</sub>, A1<sub>a</sub>, and so forth in order of the increasing negative charge ("National Diabetes Data Group," 1984). Collectively, these fractions of hemoglobins are designated hemoglobin A1 (HbA1). Hemoglobin A1<sub>c</sub> (HbA1<sub>c</sub>) is the largest fraction (ADA, 1988).

The multicenter Diabetes Control and Complications Trial (DCCT, 1993) research group used glycosylated hemoglobin values to assess glycemic control in their landmark study. A total of 1,441 persons with insulin dependent diabetes mellitus (IDDM) participated in the 10-year DCCT study. The results revealed that maintaining blood glucose values close to normal prevented or delayed progression of complications.

Glycemic control is the treatment goal for persons with diabetes mellitus. Glycemic control is complex and demanding but achievable, although challenging for many, especially African American women. Summerson, Konen, and Dignan (1992) evaluated race-related differences in glycemic control among 263 adult male and female patients with NIDDM. Glycemic control was measured by HbA1<sub>c</sub> levels. Findings indicated that HbA1<sub>c</sub> levels were significantly ( $\bar{M} = 7.9\%$ ,  $SD = 2.4$ ,  $p \leq .05$ ) higher for the African American group than for the Caucasian group, which indicated that the African

American group had poorer glycemic control than did the Caucasian group.

Similar results were obtained by Weatherspoon, Kumanyika, Ludlow, and Schatz (1994) in their study designed to assess glycemic control in 528 adult patients with NIDDM. The sample included 240 African Americans, of whom 190 were women and 50 were men, and 279 Caucasians, of whom 179 were women and 100 were men. Income levels were not reported. HbA<sub>1c</sub> was used to measure glycemic control. African American women were found to have significantly ( $M = 10.1\%$ ,  $SD = 1.9$ ,  $p \leq .05$ ) higher HbA<sub>1c</sub> levels indicating poorer glycemic control as compared to African American men and Caucasian men and women.

#### Glycemic Control and Social Support

Researchers have attempted to determine how glycemic control is influenced by psychosocial variables. The influence of social support on glycemic control as a measure of physiological adaptation is reviewed in this section. Research that was done using adults with diabetes is emphasized.

The relationship between glycemic control and social support has been assessed in Caucasians with NIDDM. Linton-Weiss (1990) examined the relationship between different types of social support in 88 patients with NIDDM. The



subjects had been to a diabetes education center 18 months prior to the study. The sample consisted of 47% males and 53% females; 58% of the sample were between 40 and 64 years. Of the subjects, 91% were Caucasian, 6% were Hispanic, and 2% were other ethnicities. No African Americans were represented in this sample. The majority of the sample was married (73%), had some college and above (63%), had incomes more than \$30,000 (68%), and had been diagnosed with diabetes 5 years or less (60%). Of the subjects, 51% used oral medications, 26% used insulin, and 23% used diet only.

Data were obtained by Linton-Weiss (1990) from mailed questionnaires and patient interviews. The Social Support Questionnaire Revised (SSQR) was used to measure social support. Internal reliabilities for the SSQR varied from  $r = .90$  to  $r = .93$ . The Diabetes Family Behavior Checklist (DFBC-II) was used to assess the family's support of the patient's treatment regimen. Internal consistency of the DFBC-II was  $r = .71$  on the positive score and  $r = .64$  on the negative score. Test-retest reliability was  $r = .55$  for the positive score and  $r = .70$  for the negative score.

Glycemic control was measured by glycosylated hemoglobin. No values were given that reflected the range used to designate good or poor control. Linton-Weiss (1990) stated that high values reflected poor glycemic control.

Diabetes specific support was related to glycemic control. More support for the diabetes treatment plan from a family member is related to lower blood glucose levels ( $r = -.31$ ,  $p \leq .001$ ). The general social support measure (SSQR) was not significantly related to glycemic control.

Gender differences in the relationship between social support and glycemic control in 76 persons with NIDDM were evaluated by Eriksson and Rosenquist (1993). The sample of 76 subjects consisted of 43 men and 33 women newly diagnosed as having NIDDM. Almost half (41%) of the subjects were older than 65 years, 72% were married, and 46% were employed full time. Race and income were not reported. Social support was measured by an instrument developed by the researchers. Psychometric properties of the instrument were not reported. Glycemic control was measured by the fasting blood glucose (FBS). Results demonstrated that males with high social support had lower FBS than females with high social support ( $M = 6.5$ ,  $F = .35$ ,  $p \leq .01$ ). There was no difference in FBS between low support men and all women.

The differential effects of social support and social network on psychological and social outcomes in 19 men and 18 women with NIDDM were the focus of Heitzmann and Kaplan's (1984) study. The mean age of the total sample of 37 subjects was 52.9 years. No other demographic data were

reported. Social support was measured by the SSQ. Glycemic control was measured by HbA<sub>1c</sub> levels. The sample was dichotomized into high and low social support groups. A 2 x 2 ANOVA was used to assess the effects of social support satisfaction (SSQ-S) upon HbA<sub>1c</sub> levels. There were no main effects, but there was a significant interaction between sex and HbA<sub>1c</sub> level mean scores for SSQ-S,  $F(1,33) = 7.43$ ,  $p \leq .01$ . Males with high HbA<sub>1c</sub> level mean scores had high SSQ-S scores as compared to males with low SSQ-S scores. Females with high SSQ-S scores had lower HbA<sub>1c</sub> level mean scores as compared to females with low SSQ-S scores. High HbA<sub>1c</sub> levels indicated poor glycemic control.

Similar results were found in a later study by Kaplan and Hartwell (1987) of 32 men and 44 women with NIDDM. Mean ages were 55.3 years for the men and 54.5 years for the women. No other demographic data were reported. Social support was measured by the SSQ with reported reliability of  $\alpha = .94$ . Glycemic control was measured by HbA<sub>1c</sub> levels and fasting blood glucose (FBS). Blood glucose levels greater than 140 mg/dl reflected poor glycemic control. The mean FBS levels were 186.72 ( $SD = 61.40$ ) for men and 194.64 ( $SD = 89.91$ ) for women. High levels of HbA<sub>1c</sub> indicated poor control, but no values were given. The means of HbA<sub>1c</sub> were 8.29% ( $SD = 2.62$ ) for men and 8.94% ( $SD = 2.83$ ) for women.

Findings indicated that for men, high social support satisfaction was related to poor metabolic control ( $r = .36$ ,  $p \leq .05$ ). For women, high levels of social support satisfaction were related to good control ( $r = -.32$ ,  $p \leq .05$ ).

Some researchers have assessed the relationship between glycemic control and social support in samples of only males with NIDDM. Saathoff (1989) examined social support and glycemic control in 70 males with NIDDM who attended the nursing clinic for diabetes at the Veterans Medical Center. No other demographic data were reported. Social support was measured by the Diabetes Care Profile (DCP). Psychometric properties of the scale were not reported. Glycemic control was measured by HbA<sub>1c</sub> levels. Results demonstrated that social support was not a predictor of HbA<sub>1c</sub> ( $r = .033$ ,  $p = .79$ ).

Older adults with NIDDM were the focus of a study designed to examine glycemic control and social support. Connell, Fisher, and Houston (1992) assessed social support and glycemic control in 191 NIDDM community-based elderly. The mean age of the sample was 70.3 years ( $SD$  6.7). Of the sample, 53% were married, 14% were African American, and the years of education varied from 4 to 23. Insulin was taken by 45% of the sample, while 10% did not use insulin nor take hypoglycemic pills. The duration of diabetes was 14 years.

The Social Provisions Scale (SPS) was used by Connell et al. (1992) to measure general social support. The Cronbach alpha for the total instrument was  $\alpha = .91$ , and alphas varied from  $\alpha = .57$  to  $\alpha = .91$  for the subscales. Diabetes specific support was measured by two 5-item subscales from the Diabetes Care Profile (DCP): Diabetes Specific Support Received and Diabetes Specific Support Desired, with Cronbach alphas of  $\alpha = .82$  and  $\alpha = .76$ , respectively. Glycemic control was measured by glycosylated hemoglobin (GHb).

Connell et al. (1992) found that the mean GHb was 10.3% ( $SD = 2.6$ ) in men and 9.9% in women ( $SD = 2.9$ ). A GHb score of less than 8% was considered excellent control, 8.1% to 11.3% was good control, 11.4% to 13.2% was fair control, and over 13.3% was poor control. Diabetes Specific Support Desired was significantly related to poor metabolic control in the 81 men in the study ( $r = .25$ ,  $p \leq .05$ ). Diabetes Specific Support Received was significantly associated with poor metabolic control in the 110 women in the study ( $r = .24$ ,  $p \leq .01$ ). Race was significantly related to GHb for both men and women ( $p \leq .05$ , respectively). Caucasians had lower GHb scores than did African Americans ( $p \leq .05$ ) which indicated better metabolic control. According to Connell

et al., years of education and taking insulin were related to better glycemic control for women.

African American women with NIDDM who were impoverished were the focus of a study by Skelly (1992) that was designed to examine the relationship between glycemic control and social support. Ages of the sample of 118 African American women with NIDDM varied from 32 to 77 years with a mean age of 57.4 years. Over one-third (36%) of the women were divorced or separated. The number of children varied from 1 to 13 with a mean of 3.3. Over three-fourths (78%) of the subjects had a yearly family income of less than \$10,000. The Diabetes Family Behavior Checklist II was used to measure support received related to daily diabetes self-care activities. Serum fructosamine was used to measure glycemic control. Serum fructosamine provides blood glucose levels over the preceding 2 to 4 weeks. Data collection took place on two different occasions approximately 3 to 4 months apart. At Time 1, 18 people reportedly did not have a family member or significant other. Eight subjects reported they were alone at Time 2. According to Skelly, perceived social support was related to glycemic control at both Times 1 and 2. However, as noted by Skelly, there was no significant effect between perceived social support and glycemic control at Times 1 and 2.

Bailey (1989) found similar results in a study of 188 diabetics. The sample consisted of 80 males and 108 females with a mean age of 46 years ( $SD = 15.6$ ). The sample contained 133 Caucasians, 34 African Americans, 8 Hispanics, 8 Asians, and 2 Native Americans. The mean education for the sample was 2 years post high school, duration of diabetes was 15 years, and 77% had NIDDM. The Support Behavior Inventory (SBI) measured general support and the Social Support Questionnaire-Diabetes Specific (SSQ-DS) measured support specific to the diabetes regimen. Cronbach alphas varied from  $\alpha = .91$  to  $\alpha = .94$  for the subscales of the SSQ-DS and from  $\alpha = .958$  to  $\alpha = .965$  for the SBI. Glycemic control was measured by HbA and values 6% to 8% indicated excellent control, 8% to 10% indicated good control, and less than 10% indicated poor control. Over half (56.4%) of the sample had HbA values less than 8% which indicated excellent glycemic control. The subjects reported between two and three people in their network. Results indicated that neither general social support nor diabetes specific support were related to HbA values.

Hopper and Schechtman (1985) assessed social, attitudinal, and physical characteristics of 161 NIDDM clinic patients. The majority of the sample were African American (74%) and female (74%). The mean age was 56 years,

and personal income averaged \$3,000. Social support was measured with one single item: subjects were asked, if they had a crisis, who they could count on to help. Glycemic control was measured by fasting blood glucose levels (FBS). Normal range was 80 to 140 mg/dl, however, the mean annual FBS level was 223 mg/dl. Lack of available help in a diabetes-related crisis was significantly ( $r = -.21$ ,  $p \leq .01$ ) related to fasting blood glucose levels.

#### Glycemic Control and Psychosocial Adaptation

Differences in the relationship between glycemic control and psychosocial adaptation have been compared in people with NIDDM and IDDM. In their study of psychosocial adaptation to and control of diabetes mellitus discussed earlier, Davis et al. (1987) measured glycemic control by hemoglobin A1, hospital admission frequency, and percentage of ideal body weight. Davis et al. found that, for the 184 NIDDM subjects, control problems and regimen complexity were significantly related to hospital admissions ( $r = .29$ ,  $p \leq .01$  and  $r = .16$ ,  $p \leq .05$ , respectively). Control problems were significantly related to HbA1 for the 191 insulin using NIDDM subjects ( $r = .26$ ,  $p \leq .01$ ). Social problems and control problems were significantly related to HbA1 in the 56 IDDM subjects ( $r = .29$ ,  $p \leq .01$  and  $r = .48$ ,  $p \leq .01$ , respectively).



Rapley (1991) investigated the influence of psychosocial adaptation, hardiness and self-efficacy, and coping style on the metabolic control in 48 NIDDM and 49 IDDM men and women ( $N = 97$ ) with diabetes mellitus. Subjects were clinic patients at a teaching hospital. Mean ages were 37.6 years for the IDDM group and 60 years for the NIDDM group. Race and incomes were not reported.

Rapley (1991) used the PAIS-SR to measure psychosocial adaptation. The alpha level in the study was  $\alpha = .04$ . Glycemic control was measured by glycosylated hemoglobin. Mean glycosylated hemoglobin values were 8.3% ( $SD = 2.1$ ) for the IDDM subjects and 7.3% ( $SD = 2.2$ ) for the NIDDM subjects. A glycosylated hemoglobin value less than or equal to 8.0% indicated glycemic control. The strongest predictor of glycemic control in the NIDDM group was psychosocial adaptation. The PAIS-SR Total ( $r = .297$ ,  $p \leq .02$ ) and the subscales of Social Environment ( $r = .297$ ,  $p \leq .02$ ) and Psychological Distress ( $r = .229$ ,  $p \leq .02$ ) were significantly related to glycemic control in the NIDDM group. The hardiness characteristic and psychosocial adaptation were significantly associated with glycemic control in the IDDM group.

Caucasian women with IDDM have been the focus of research designed to evaluate the relationship between

glycemic control and psychosocial adaptation. Pollock (1986) examined psychosocial adaptation and physiologic adaptation of 60 adults diagnosed with adult onset illness for at least one year. Diagnosed illnesses of subjects included 20 with IDDM, 20 with rheumatoid arthritis, and 20 with essential hypertension. The majority of the total sample was in the upper middle class (78%). Racial distribution of the total sample included 90% Caucasian, 3.3% African American, 6.7% Hispanic. Of the IDDM group, 60% were female, 85% were Caucasian, and 10% were African American. The majority of the IDDM group was married (65%) and employed (85%). The duration of illness in 55% of the IDDM group members was 10-20 years, whereas 45% of the IDDM group members reported a duration of less than 10 years.

Pollock (1986) measured physiologic adaptation for the diabetic group by using HbA<sub>1c</sub>, blood glucose levels 2 hours after meals, and no signs of retinopathy. Psychosocial adaptation was measured by the PAIS-SR. Results demonstrated that physiological and psychosocial adaptation were significantly related in the diabetic group ( $r = .35$ ,  $p \leq .05$ ), but not in the arthritic group or hypertensive group.

### Summary

Despite methodological problems, findings from the literature revealed that the majority of people with diabetes mellitus were receiving social support and exhibiting acceptable psychosocial adaptation. In addition, the research findings generally have upheld a relationship between psychosocial adaptation and glycemic control although the relationship between social support and glycemic control was inconsistent.

No studies were found that examined psychosocial adaptation, social support, and glycemic control in middle-aged, middle income, African American and Caucasian American women with NIDDM. Thus, this study was designed to address the limited knowledge regarding social support, psychosocial adaptation, and glycemic control in these populations.

## CHAPTER 3

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study used a descriptive, two-group nonexperimental design. Data were collected from each subject on a single occasion. The study was designed to examine the differences in perception of social support and psychosocial adaptation in African American and Caucasian American women with NIDDM. The relationships of two variables, perceived social support and perceived psychosocial adaptation, to glycemic control were described.

The purpose of a descriptive study is to provide an accurate presentation of phenomena studied. Additionally, in nonexperimental research, there is no manipulation of the independent variables and subjects are not randomly selected nor randomly assigned to groups (Rosenthal & Rosnow, 1991).

This chapter describes procedures for collection and treatment of data. The description addresses the study setting, population and sample, protection of human subjects, instruments, data collection, and data analysis procedures.

### Setting

The study was conducted in a large city in the southeastern region of the United States. The city had a population of 510,784 in 1990 (United States Department of Commerce [USDC] Bureau of Census, 1990). In this city, there were 65,330 African American women and 199,193 Caucasian American women between the ages of 40 to 60 years (USDC, 1990).

Subjects for the study were recruited from the patient rosters of four private physicians; two endocrinologists and two internists. The data collection areas were rooms located in the physicians' offices. These rooms were well lighted with comfortable seating and were private.

### Population and Sample

A convenience sampling technique was used to obtain a total sample of 66 subjects; 33 subjects were African American and 33 were Caucasian American. The number of subjects was based on a power analysis with an effect size of .70, a level of significance at .05, and a power value of .80 (Cohen, 1988).

The population consisted of noninsulin dependent diabetes mellitus female patients of four private physicians. Study participants met the following criteria:

1. Female.
2. African American or Caucasian American.
3. Between ages of 40 to 60 years.
4. Total household income \$25,000 to \$74,999.
5. Diagnosed with NIDDM at least 1 year.
6. Treated with prescribed regimens for diabetic management that consist of, alone or in combination, special diets, oral hypoglycemic agents, or insulin. (Note: Exogenous insulin may be required for adequate glycemic control in NIDDM but it is not needed for survival [American Diabetes Association, ADA, 1988].)
7. Able to read and comprehend English.
8. Free from other serious medical and psychiatric illness as indicated by the medical records.
9. No hospitalizations within the last 3 months.

#### Protection of Human Subjects

Written permission for conducting the study at the physicians' offices was obtained from each of the four physicians prior to beginning the study (see Appendix A). The study was exempt from review by the Human Subjects Review Committee of Texas Woman's University (TWU) because survey questionnaires were used. Guidelines established by the TWU Human Subjects Review Committee were followed for the protection of the rights of the subjects.

An explanation of the study including risks, benefits and expected duration of participation was presented both orally and in writing to the subjects (see Appendix B). All prospective subjects were told that they could refuse to participate or withdraw from the study at anytime without jeopardizing their medical care. They were informed that their completion and return of the questionnaires constituted consent to participate in the study.

All instruments were coded by date and appointment time. No names were recorded by the investigator at any time throughout the study. No information collected by the researcher was placed in the individual subjects' charts or shared with the subjects' nurses or physicians, but group findings were made available to interested subjects and their physicians.

#### Instruments

The instruments selected for this study were the Personal Profile Sheet, the Norbeck Social Support Questionnaire (Norbeck, Lindsey, & Carrieri, 1981), and the Psychosocial Adjustment to Illness Survey-Self Report (PAIS-SR; Derogatis, 1986). Additionally, glycosylated hemoglobin laboratory assay reports were used and recorded on the Personal Profile Sheet.

### Personal Profile Sheet

The Personal Profile Sheet (PPS) was developed by the investigator to gather general information for description of the sample (see Appendix C). The PPS solicited information about two categories: (a) items concerning demographic variables and (b) items concerning diabetes management. Demographic items included age, marital status, children, education, employment, income, and religion. Items related to diabetes included type of prescribed treatment regimen and use of self-care activities such as blood glucose monitoring, foot inspection, frequency of exercise, and membership in a support group. During development of the PPS, three nurses who teach patients with diabetes reviewed the questions about diabetes management for relevance.

### Norbeck Social Support Questionnaire

The Norbeck Social Support Questionnaire (NSSQ; see Appendix D) was developed by Norbeck and colleagues in 1981. The NSSQ is a self-administered questionnaire that is projected to require an average of 10 minutes to complete (varying from 5 to 20 minutes). Written permission to use and reproduce the NSSQ was granted by Jane S. Norbeck (see Appendix E).



The NSSQ was the empirical indicator for the concept of interdependence defined in the theoretical model for this study. The questionnaire measures perceived social support and has as its theoretical underpinnings the definition of social support by Kahn (1979). Kahn defined social support as follows:

interpersonal transactions that include one or more of the following: the expression of positive affect of one person toward another; the affirmation or endorsement of another person's behaviors, perceptions, or expressed views; the gaining of symbolic or material aid to another. (p. 85)

The NSSQ measures three primary variables of social support: Total Functional, Total Network, and Total Loss. Initially, respondents are asked to list up to 24 people who are significant in their lives and who provide personal support. The respondents then complete the questions related to the dimensions of each of the three primary variables.

The Total Functional variable is reduced to three dimensions: Affect, Affirmation, and Aid. Respondents are asked to rate each significant individual's contribution to six indicators of social support on a Likert-type scale with designations of not at all (value of 1) to a great deal (value of 5). According to Jane Norbeck (personal communication, November, 1994), the scoring for this Likert-type scale was changed from values of 1 through 5, as

printed on the instrument in Appendix D, to values of 0 through 4 (see Appendix F). Questions 1 and 2 measure Affect, questions 3 and 4 measure Affirmation, and questions 5 and 6 measure Aid. Ratings made in response to the two questions on each subscale are added together to get a single score for the subscale. A total score for Total Functional is obtained by adding the three subscale scores together.

The dimensions of Total Network of the NSSQ are Number in Network, Duration of Relationships, and Frequency of Contact. Question 7 assesses the duration of relationships by asking the respondent to classify the length of time the respondent has known the network member using five forced choices: (a) 1 = less than 6 months, (b) 2 = 6 to 12 months; (c) 3 = 1 to 2 years, (d) 4 = 3 to 5 years, and (e) 5 = more than 5 years. Question 8 assesses the frequency of contact with each network member using five forced choices: (a) 5 = daily, (b) 4 = weekly, (c) 3 = monthly, (d) 2 = a few times a year, and (e) 1 = once a year or less. The indicator for Number in Network consists of the number of individuals listed by the respondent on the network list. To obtain a Total Network score, the responses to each of these three questions are summed. For example, a respondent who listed the initials of three people in her network (Number in Network = 3) rated

the first person as 2, the second person as 3, and the third person as 5 in question 7 (Duration of Relationships = 10), and rated the first person as 5, the second person as 3, and the third person as 1 in question 8 (Frequency of Contact = 9) would have a Total Network score of 22.

The Loss, Loss Number, and Perceived Amount of Support Lost (questions 9a and 9b of the NSSQ) are the dimensions for the Total Loss variable. Question 9 which measures Loss requires a response of no (0) or yes (1). Question 9a asks the respondent to indicate the number of people in each of eight categories, such as spouse or friends and other, who are no longer available to the respondent. The number of categories checked determines the score for the subscale Loss Number. Question 9b, which refers to Perceived Amount of Support Lost, asks the respondent to rate how much support was provided by people no longer available to the respondent, using a 5-point Likert-type scale that varies from none at all (0) to a great deal (4).

The total score for Total Loss is obtained by adding Loss, Loss Number, and Perceived Amount of Support Lost. For example, a respondent who answered question 9 with yes (Loss score = 1), answered question 9a with 1 spouse, 2 friends, and 1 neighbor (Loss Number = 4), and answered question 9b with quite a bit (Perceived Amount of Support Lost = 3) would have a Total Loss score of 8.

Norbeck et al. (1981) used a group of graduate nursing students ( $N = 67$ ) whose ages varied from 23 to 51 years ( $M = 30.3$  years) to determine the psychometric properties of the NSSQ. Test-retest reliabilities varied from  $r = .85$  to  $r = .92$  ( $p \leq .001$ ). Further assessment of test-retest reliability was reported by Norbeck, Lindsey, and Carrieri (1983). The NSSQ was administered 7 months apart to another group of nursing students ( $N = 44$ ) whose mean age was 30.9 years (varying from 24 to 42). Correlations between the first testing and 7th-month follow-up for the subscales and variables varied from  $r = .58$  to  $r = .78$  ( $p \leq .001$ ).

A group of nursing students ( $N = 75$ ) whose ages varied from 23 to 51 years ( $M = 30.3$  years) was used to determine internal consistency of the NSSQ (Norbeck et al., 1981). The correlation between the two Affect items was  $r = .97$ ; between the two Affirmation items  $r = .96$ ; between the two Aid items  $r = .89$ ; between the three Network Property items  $r = .88$  to  $r = .96$ ; and among the Loss items  $r = .54$  to  $r = .68$ . All correlations were significant at  $p \leq .001$  (Norbeck et al., 1981, p. 267). However, the correlations suggested that the dimensions of each variable may not be distinct. Therefore, the items were collapsed into three variables: Total Functional, Total Loss, and Total Network.

To determine concurrent validity, Norbeck et al. (1981) administered the Social Support Questionnaire developed by Cohen and Lazarus to 42 graduate nursing students. Correlations were modest at best. Results showed a relationship between emotional support and Aid ( $r = .44$ ,  $p \leq .01$ ), Affirmation ( $r = .56$ ,  $p \leq .001$ ), and Affect ( $r = .51$ ,  $p \leq .001$ ). Construct validity was determined by administering the Fundamental Interpersonal Relation Orientation (FIRO-B) to a random sample ( $N = 136$ ) of university employees ages 22 to 67 years ( $M = 35.8$  years) (Norbeck et al., 1983). There were significant but small correlations between the NSSQ subscales and the FIRO-B constructs of need for inclusion and affection. The correlations varied from  $r = .18$  to  $r = .27$  with levels of significance at  $p \leq .05$  and  $p \leq .01$ . The FIRO-B construct of need for control (an unrelated interpersonal construct) was not related to the NSSQ subscales.

#### Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR)

The Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR) was developed by Derogatis (1986). Written permission was granted by Maureen F. Derogatis to use the scale but permission to reproduce it was not granted because copies of the PAIS-SR are available for sale (see Appendix G). The PAIS-SR was the empirical indicator for the

concepts of role function and self-concept defined in the theoretical model for this study.

The PAIS-SR evolved from the interview format of the original PAIS instrument developed by Morrow, Chiarello, and Derogatis (1978). Approximately 20 minutes are required to complete the self-report version of the questionnaire.

The first subscale, Health Orientation, consists of eight questions that assess the individual's general health care attitude and whether it fosters positive adjustment to illness and treatment (Derogatis, 1986). Vocational Environment is the second subscale. Six questions measure the impact of the illness on job performance, satisfaction, and adjustment (Derogatis, 1986).

The third subscale is Domestic Environment. The eight items in this section are designed to measure the effect the illness has on the home or usual family environment (Derogatis, 1986). The fourth subscale, Sexual Relationship, is composed of six questions. The questions are designed to assess illness-induced changes in the quality of sexual behavior or relationships (Derogatis, 1986).

Changes in relationships between the individual and the extended family due to the illness are measured by the fifth subscale of five questions (Derogatis, 1986). The sixth subscale, Social Environment, uses six questions to measure

changes in the individual's social and leisure activity (Derogatis, 1986).

The seventh subscale, Psychological Distress, has seven questions used to measure psychological difficulties secondary to the illness such as hostility, worry, guilt, anxiety, depression, self evaluation, and negative body image (Derogatis, 1986).

Each item has four possible contextually-anchored answers, and the respondent selects one. The answers are keyed on a 4-point (0-3) scale of adjustment. Higher scores indicate lower levels of psychosocial adjustment.

The PAIS-SR can be interpreted by evaluating each subscale score as well as the total score. Subscale and total raw scores are converted to T scores by referring to the published normative sample for diabetics (Derogatis, 1990). A total score or subscale score equivalent to, or less than, a T score of 60 is indicative of positive psychosocial adaptation.

The PAIS-SR normative sample ( $N = 99$ ) for diabetics consisted of persons with Type I insulin dependent diabetes mellitus. The mean age of the group was 32.5 years, 97 (97%) subjects were Caucasian, and 2 (2%) subjects were African American.

Reliability for the PAIS-SR was computed by Derogatis (1986) using the Cronbach's alpha statistic. The

reliability coefficients were based on three different samples: 269 renal dialysis patients had  $\alpha = .63$  to  $\alpha = .80$  across all subscales; 69 cardiac patients had  $\alpha = .47$  to  $\alpha = .85$  across all subscales, and 89 lung cancer patients had  $\alpha = .68$  to  $\alpha = .93$  across six of the seven subscales. In the sample of lung cancer patients, the Extended Family subscale had a coefficient of  $\alpha = .12$ ; therefore, the ambiguous item from this domain was rewritten as two distinct items.

DeNour (1982) reported predictive validity of the PAIS-SR. A total of 102 patients on chronic hemodialysis were rated by their physician on dimensions of physical condition, psychological condition, and dietary adherence using a 4-point scale. Based on their physicians' assessments, the patients were divided into three groups: good, fair, and bad adapters. Then they were given the PAIS-SR. The three groups significantly differed on their PAIS-SR mean scores. A positive relationship of  $r = .463$  was found between the physicians' assessment and the PAIS-SR. Levels of significance were not reported by the author.

#### Glycosylated Hemoglobin (HbA<sub>1c</sub>)

Glycosylated hemoglobin is the generic term used to identify hemoglobin which contains glucose and/or other



carbohydrates (Goldstein, 1986). The glycosylated hemoglobin assay expresses the percentage of total hemoglobin to which glucose is bound as a proportion of several fractions of hemoglobin A<sub>1</sub>. Laboratory tests used to identify the negatively charged minor components of HbA<sub>1</sub> include electrophoresis and ion exchange chromatography. These components/fractions are labeled hemoglobins A<sub>1c</sub> (HbA<sub>1c</sub>), A<sub>1b</sub> (HbA<sub>1b</sub>), A<sub>1a</sub> (HbA<sub>1a</sub>), and so forth by order of increasing negative charges ("National Diabetes Data Group," 1984). Hemoglobin A<sub>1</sub> (HbA<sub>1</sub>) is the designation used to collectively label these fractions. Hemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>), the largest fraction (ADA, 1988), was used in this study to measure glycemic control.

The various methods used to determine glycosylated hemoglobin are not standardized. Each laboratory sets its norms; therefore, it is important to know the laboratory norms to interpret values (Abraham, 1985). In this study, the norms of the laboratory serving the four physicians were used (Specialized Assay Laboratory, 1994).

Hemoglobin A<sub>1c</sub> provides an objective measure of plasma concentration of glucose during the 60 to 90 days before the blood specimen is obtained (Abraham, 1985). The measure is not influenced by a lack of conformity to the therapeutic regimen on a short-term basis and is not influenced by daily fluctuations of glucose levels (ADA, 1988). Glycosylated

hemoglobin reflects glucose levels over a longer time span than fasting or random blood glucose levels. Thus, it is considered the most informative measure of glycemic control in a person with diabetes mellitus (ADA, 1988).

#### Data Collection

The investigator visited the physicians' offices and reviewed the medical records of diabetic patients scheduled for office visits that week. The investigator reviewed the charts to ascertain if the patients met the following criteria for inclusion in the study: (a) female, (b) African American or Caucasian American, (c) between ages of 40 to 60 years, (d) total household income \$25,000 to \$74,999, (e) diagnosed with NIDDM at least 1 year, (f) treated with prescribed regimens for diabetic management that consist of, alone or in combination, special diets, oral hypoglycemic agents, or insulin, (g) able to read and comprehend English, (h) free from other serious medical and psychiatric illness as indicated by the medical records, and (i) no hospitalizations within the last 3 months. The appointment times and dates, but not the names, of patients who met the criteria for inclusion in the study were recorded in a notebook.

The investigator reviewed the appointment times and dates of potential subjects that were recorded in the

notebook. This method enabled the investigator to plan for data collection at the four physicians' offices used in this study. Plans were made to be present when the prospective subject arrived for the office visit.

At the office visit, after the prospective subject had signed in for the office appointment, the investigator introduced herself to the patient and explained the following: purpose, procedure, measures to assure confidentiality, and potential benefits for participating in the study. A verbal invitation was extended for participation. Following verbal consent, the subject was escorted to a private room in the physician's office to minimize interruptions. The subject was seated in a chair at a desk.

The investigator gave the subject a written explanation of the study and offered to answer all questions. The subject was told that completion and return of the questionnaires constituted informed consent. The subject then was given an envelope containing the Personal Profile Sheet, Norbeck Social Support Questionnaire, and Psychosocial Adjustment to Illness Questionnaire and asked to complete the questionnaires. The investigator was available in the next room to answer questions. All instruments were precoded with the subject's appointment time and date. The subject returned the completed

instruments to the investigator in a sealed envelope. Completion of the questionnaires by the subjects required from 25 to 40 minutes. Because the average waiting time for physician's appointments was 50 minutes, answering the questionnaires did not add to patients' time in the offices nor delay the physicians' scheduled appointments.

The four physicians whose patients formed the subject pool routinely obtain a blood sample for HbA<sub>1c</sub> during the subject's scheduled office visit. The results from the laboratory are available in two days. The investigator left a list of the subjects' appointment times and dates with the medical secretary at the end of data collection each day. All of the physicians' offices have computerized patient schedules that consist of the patients' names, appointment times, dates, and reasons for the visit. The medical secretary recorded the HbA<sub>1c</sub> results by the appropriate appointment times and dates with no names appearing. The investigator obtained the lists of HbA<sub>1c</sub> results at the end of each week from the medical secretaries and recorded them on the appropriate Patients' Profile Sheets.

A total of 73 patients were invited to participate in the study in order to obtain the sample of 66 participants. Two African American women and three Caucasian American women chose not to participate. Illness and lack of time were the reasons cited. One person did not give a reason.

Additionally, after two subjects had completed their questionnaires, it was learned that they did not meet the sample selection criterion with regard to income. These two respondents were replaced with subjects who met all inclusion criteria before data analysis.

#### Treatment of Data

The Mann Whitney  $U$  test for independent samples was used to answer the first research question: What is the difference in perceived social support between African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? The Norbeck Social Support Questionnaire (NSSQ; Norbeck et al., 1981), which generates ordinal level data, measured the variable of perceived social support. The Mann Whitney  $U$  test is a nonparametric alternative to a  $t$  test for two independent samples and requires data at ordinal or higher levels of measurement (Roscoe, 1975). The mean ranks of Affect, Affirm, Aid, and Total Functional scores of the NSSQ were compared between the two groups. Descriptive statistics were applied to the Total Network and Total Loss subscales.

The  $t$  test for two independent groups was used to answer the second research question: What is the difference in perceived psychosocial adaptation between African American and Caucasian American women who are middle-aged,

middle income, and have NIDDM? The Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR; Derogatis, 1986) was used to measure perceived psychosocial adaptation. The  $t$  test is a parametric test and requires a minimum of interval level data (Rosenthal & Rosnow, 1991). The means of all seven subscales and the total score on the PAIS-SR were compared between the two groups using two-tailed tests.

The Spearman rank correlation coefficient was used to answer the third research question: What is the relationship between perceived social support and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? The relationship between the mean ranks of Affect, Affirm, Aid, and Total Functional scores on the NSSQ (perceived social support) and the HbA<sub>1c</sub> values (glycemic control) was determined. The NSSQ scores are ordinal level data and the HbA<sub>1c</sub> values are interval. The nonparametric Spearman rho test is applicable when both ordinal and interval level data are used together (Rosenthal & Rosnow, 1991).

A Pearson product-moment correlation coefficient was used to answer the fourth research question: What is the relationship between perceived psychosocial adaptation and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? The strength of the relationship between the mean subscales

and the total score on the PAIS-SR (perceived psychosocial adaptation) and the HbA<sub>1c</sub> values (glycemic control) was determined. Both the PAIS-SR and the HbA<sub>1c</sub> generate interval level data. The Pearson product-moment correlation coefficient is a parametric test and requires at least interval level data (Rosenthal & Rosnow, 1991). The significance level was set at .05 for all nonparametric and parametric tests.

#### Summary

The study was conducted using a descriptive, two-group nonexperimental design. Four instruments were used to obtain data from a convenience sample of 66 middle-aged, middle income women with NIDDM. Half ( $n = 33$ ) of the sample were African American, and half ( $n = 33$ ) were Caucasian American. A Mann Whitney  $U$  and a  $t$  test were used to test the significance of the differences in perceived social support and perceived psychosocial adaptation between the two groups of women. The relationships between social support and glycemic control and psychosocial adaptation and glycemic control were assessed using the Spearman rho rank correlation coefficient and the Pearson product-moment correlation coefficient tests, respectively.

## CHAPTER 4

### ANALYSIS OF DATA

This study was conducted to examine the differences in perceived social support and perceived psychosocial adaptation in African American and Caucasian American women with noninsulin dependent diabetes mellitus (NIDDM). In this chapter, the description of the sample is followed by descriptions of perceived social support, perceived psychosocial adaptation, and statistical evaluation of relationships between social support and glycemic control and psychosocial adaptation and glycemic control in the two groups.

#### Description of the Sample

A convenience sample of 66 women, 33 African Americans and 33 Caucasian Americans, met sample selection criteria and participated in this study. Demographic characteristics of the sample are shown in Table 1.

Ages of the total sample varied from 40 to 60 years with a mean age of 50.24 years ( $SD = 6.37$ ). For the African American women, the mean age was 49.96 years ( $SD = 6.18$ ). The Caucasian American women had a mean age of 50.51 years ( $SD = 6.62$ ). Using a significance level of  $p \leq .05$ , a



Table 1  
Demographic Characteristics of the Sample

Variable	<u>African American</u>		<u>Caucasian American</u>		<u>Total Group</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
<u>Marital Status</u>						
Single, Never Married	3	9.1	4	12.1	7	10.6
Divorced or Separated	11	33.3	6	18.2	17	25.8
Married	17	51.5	20	60.6	37	56.0
Widowed	2	6.1	3	9.1	5	7.6
<u>Number of Children</u>						
0	6	18.2	5	15.2	11	16.7
1	8	24.2	5	15.2	13	19.7
2	7	21.2	11	33.3	18	27.2
3	5	15.2	6	18.2	11	16.7
4	2	6.1	4	12.1	6	9.1
5	4	12.1	2	6.0	6	9.1
6	1	3.0	0	0.0	1	1.5
<u>Number of Children at Home</u>						
0	12	36.4	18	54.5	30	45.4
1	13	39.4	7	21.2	20	30.3
2	6	18.1	5	15.2	11	16.7
3	2	6.1	2	6.1	4	6.1
4	0	0.0	1	3.0	1	1.5
<u>Educational Level</u>						
Partial High School	1	3.0	1	3.0	2	3.0
High School Graduate	5	15.2	9	27.3	14	21.2
Partial College	4	12.1	12	36.4	16	24.2
College Graduate	5	15.2	5	15.2	10	15.2
Graduate Professional Training	18	54.5	6	18.1	24	36.4
<u>Income Level</u>						
\$25,000-\$34,999	12	36.4	7	21.2	19	28.8
\$35,000-\$49,999	5	15.2	15	45.5	20	30.3
\$50,000-\$74,999	16	48.4	11	33.3	27	40.9

Table 1 (Continued)

Variable	<u>African American</u>		<u>Caucasian American</u>		<u>Total Group</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
<u>Religious Preference</u>						
Protestant	16	48.5	24	72.8	40	60.6
Catholic	4	12.1	4	12.1	8	12.1
Other	13	39.4	4	12.1	17	25.8
No Affiliation	0	0.0	1	3.0	1	1.5

two-tailed  $t$  test showed the two groups did not differ significantly in age.

Marital status of the subjects included single, never married; divorced or separated; married; and widowed. Of the total sample, 37 (56%) women were married and 17 (25.8%) were separated or divorced. The majority ( $n = 17$ ; 51.5%) of the African American women were married, as were over one-half ( $n = 20$ ; 60.6%) of the Caucasian American group.

The number of children reported by the subjects varied from 0 to 6. The number of children living at home at the time of the study varied from 0 to 4.

The educational levels of the subjects included partial high school, high school graduate, partial college, college graduate, and graduate professional training. Over one-half ( $n = 34$ ; 51.6%) of the total sample indicated they were college graduates or had graduate professional training

status. The majority ( $n = 23$ ; 69.7%) of the group of African American women indicated college graduate or graduate professional training status. Only 22 (23.3%) of Caucasian American women indicated college graduate or graduate professional training status.

Income level categories of the subjects were \$25,000-\$34,999, \$35,000-\$49,999, and \$50,000-\$74,999. Of the total sample, 27 (40.9%) women had incomes \$50,000 to \$74,999. Almost one-half ( $n = 16$ ; 48.4%) of the African American group had incomes \$50,000 to \$74,999, whereas only one-third ( $n = 11$ ; 33.3%) of the Caucasian American group had incomes within this range. A chi-square test was used to determine if a significant difference existed between income levels of the two groups. Findings of  $X^2(2, N = 66) = 7.24, p = .02$  indicated a significantly larger proportion of Caucasian Americans in the \$35,000 to \$49,999 and the \$50,000 to \$74,999 income categories than the proportion of African Americans.

The religious preferences of the sample included Protestants, Catholics, other, and no religion. The majority ( $n = 40$ ; 60.6%) of the total sample were Protestant.

Most ( $n = 56$ ; 84.8%) of the total sample were employed outside the home, although 10 (15.2%) women indicated they

were not employed outside the home. Almost all ( $n = 31$ ; 93.9%) of the African American group were employed outside the home. Over three-fourths ( $n = 25$ ; 75.8%) of the Caucasian American women were employed outside the home.

Diabetes related characteristics were reported by the sample of 33 African American and 33 Caucasian American women. A summary of the diabetes related characteristics is presented in Table 2.

The length of time since diagnosis with diabetes mellitus varied from 1 to 20 years for the total sample. The duration for the majority ( $n = 50$ ; 75.8%) of the total sample varied from 1 to 10 years. One to 10 years duration was also reported by over one-half of both the African American group ( $n = 24$ ; 72.7%) and the Caucasian American group ( $n = 26$ ; 79%).

Medications for diabetes used by this sample included none, insulin, and hypoglycemic pills (Table 2). Almost one-half ( $n = 32$ ; 48.5%) of the total sample reported insulin use. Similarly, over one-half ( $n = 17$ ; 51.5) of the African American group and almost one-half ( $n = 15$ ; 45.5%) of the Caucasian American group reported insulin use.

The total sample reported that they had been taught diabetes self-care by doctors, nurses, dieticians, a combination of all three, friends, and family members.

Table 2  
Diabetes Related Characteristics of the Sample

Variable	<u>African American</u>		<u>Caucasian American</u>		<u>Total Group</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
<u>Duration of Diabetes</u>						
1-10 Years	24	72.7	26	79.0	50	75.8
11-20 Years	9	27.3	7	21.0	16	24.2
<u>Medications for Diabetes</u>						
None	7	21.2	6	18.2	13	10.7
Insulin	17	51.5	15	45.5	32	48.5
Hypoglycemic Pill	9	27.3	12	36.3	21	31.8
<u>Educator of Diabetes Self-Care*</u>						
Doctor	5	15.2	6	18.2	11	10.7
Nurse	5	15.2	6	18.2	11	48.5
Dietician	4	12.1	13	39.4	17	48.5
Doctor, Nurse, Dietician	20	60.6	15	45.5	35	31.8
Friend	2	6.1	1	3.0	3	10.7
Family Members	0	0.0	2	6.1	2	48.5
Received No Diabetes Education	1	3.0	0	0.0	1	48.5

\*Many subjects responded to more than one choice on this question; therefore, the percentages total >100%.

Although over one-half ( $n = 35$ ; 53%) of the total sample, as well as the majority ( $n = 20$ ; 60.6%) of the African American group, reported receiving their diabetes self-care education from a combination of doctors, nurses, and dieticians, one (1.5%) African American woman reported receiving no diabetes education (Table 2). Almost one-half ( $n = 15$ ; 45.5%) of the

Caucasian American women reported their source of education was a combination of doctors, nurses, and dieticians.

The majority ( $n = 41$ ; 62.1%) of the total sample reported following a calorie controlled diet, but 24 (36.4%) did not, and one (3%) African American woman gave no response to the question. Of the African American group, over one-half ( $n = 19$ ; 57.6%) reported following a calorie controlled diet. Likewise, two-thirds ( $n = 22$ ; 66.7%) of the Caucasian American group reported following a calorie controlled diet.

Blood sugar was monitored with a meter by over three-fourths ( $n = 51$ ; 77.3%) of the total sample; 13 (19.5%) women used a chemstrip to monitor blood sugar visually, and 2 (3%) women did not monitor blood sugar. The majority ( $n = 23$ ; 69.7%) of the group of African American women used a meter to monitor blood sugar, 8 (24.2%) group members visually monitored with a chemstrip, and 2 (6.1%) group members did not monitor their blood sugar. Over three-fourths ( $n = 28$ ; 84.8%) of the Caucasian American group used a meter to monitor blood sugar, and 5 (15.2%) group members monitored visually with a chemstrip.

Over two-thirds ( $n = 45$ ; 68.2%) of the total sample reported they exercised; 21 (31.8%) subjects reported they did not. Similarly, 22 (66.7%) members of the African

American group exercised, and 11 (33.3%) members did not. Similar numbers of the Caucasian American group reported exercising ( $n = 23$ ; 69.7%) or not exercising ( $n = 10$ ; 30.3%). Walking, the most frequently reported exercise in both groups, was reported by 20 (60.6%) African American women and 17 (51.5%) Caucasian American women. Over one-half ( $n = 18$ ; 54.6%) of the Caucasian American group exercised 1 to 3 days a week as compared to just under one-half ( $n = 16$ ; 48.5%) of the African American group. One (3%) African American woman and one (3%) Caucasian American woman gave no response to the question.

Feet were examined by 56 (84.8%) women in the total sample, although 10 (15.2%) subjects reported not examining their feet. Similarly, 27 (81.8%) women in the African American group and 29 (87.9%) women in the Caucasian American group examined their feet, but 6 (18.2%) African American women and 4 (12.1%) Caucasian American women did not examine their feet.

Although 16 (24.2%) women in the total sample reported being diabetes support group members, 40 (75.8%) subjects were not members of such a group. Only 2 (6.1%) of the African American women reported membership in a support group. Of the Caucasian American group, 14 (42.4%) women were members of a support group. Frequent participation in

a diabetes support group by the African American group was reported by 2 (6.1%) women, and 3 (9.1%) women reported no participation. One-third ( $n = 11$ ; 33.3%) of the women in the Caucasian American group reported frequent participation in a diabetes support group, and 4 (12.1%) women reported no participation.

### Findings

Four research questions were formulated to describe African American and Caucasian American women's perceptions of social support and perceived psychosocial adaptation and the relationships these variables have with glycemic control. The analysis of data for each question is discussed.

#### Research Question 1

The first research question was: What is the difference in perceived social support between African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? Social support was measured using the Norbeck Social Support Questionnaire (NSSQ). The NSSQ measures three primary variables of social support: Total Functional, Total Network, and Total Loss. The number of support people in the networks of the African American group varied from 2 to 19 people, and the number of support



people in the networks of the Caucasian American group varied from 2 to 15 people. Levels of social support for each subject were calculated using the Total Functional variable which includes the Affect, Affirmation, and Aid subscales. Means, standard deviations, maximum, and minimum scores for Affect, Affirmation, and Aid as well as Total Functional and Total Network are shown in Table 3.

The husband was listed as the first member of the personal network by 17 (51.5%) of the African American women and by 16 (48%) of the Caucasian American women. The daughter was listed as the second member of the personal network by 11 (33.3%) of the African American women, followed by the sister, as listed by 7 (21.2%) African American women. The daughter was listed as the second member of the personal network by 9 (27%) Caucasian American women, followed by a friend ( $n = 7$ ; 21%) or the son ( $n = 7$ ; 21%). Loss of an important relationship within the last year was reported by 11 (33.3%) of the African American group and 9 (27.2%) of the Caucasian American group.

A Mann Whitney  $U$  test was used to evaluate differences in perceived social support of the two groups of women. The Total Functional score and Affect, Affirmation, and Aid scores were evaluated. A significant difference was found between the two groups on the Aid subscale (Table 4).

Table 3  
Means, Standard Deviations, Minimum, and Maximum Scores  
for Total Functional and Total Network

Subscales/ Scales	Means	SD	Scores		N
			Minimum	Maximum	
<u>Number Listed in Network</u>					
African Americans	7.97	4.62	2.00	19.00	33
Caucasian Americans	6.88	3.98	2.00	15.00	33
<u>Affect</u>					
African Americans	57.09	35.12	13.00	142.00	33
Caucasian Americans	46.64	29.18	10.00	120.00	33
<u>Affirmation</u>					
African Americans	51.73	31.48	11.00	130.00	33
Caucasian Americans	40.70	25.31	14.00	120.00	33
<u>Aid</u>					
African Americans	51.36	28.03	16.00	129.00	33
Caucasian Americans	38.82	24.29	11.00	120.00	33
<u>Total Functional</u>					
African Americans	160.18	92.96	46.00	379.00	33
Caucasian Americans	126.15	76.61	35.00	360.00	33
<u>Total Network</u>					
African Americans	18.15	43.72	2.00	192.00	33
Caucasian Americans	12.52	31.32	2.00	180.00	33

Therefore, this sample of African American and Caucasian American women only differed with respect to the Aid dimension of social support.

#### Research Question 2

The second research question was: What is the difference in perceived psychosocial adaptation between

Table 4

Mann Whitney U Test for NSSQ Mean Rank Subscale Scores  
and Total Functional Scores

Types of Social Support	African American Mean Rank ( <u>n</u> = 33)	Caucasian American Mean Rank ( <u>n</u> = 33)	<u>U</u>	<u>p</u>
Affect	36.89	30.11	432.5	.1507
Affirmation	37.30	29.70	419.0	.1074
Aid	38.71	28.29	372.5	.0273*
Total Functional	37.61	29.39	409.0	.0822

\* $p \leq .05$

African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? The variable psychosocial adaptation was measured by the Psychosocial Adjustment to Illness Scale-Self Report (PAIS-SR). The instrument consists of seven subscales.

Every effort was made to collect complete data on all instruments; however, missing responses did occur on the PAIS-SR instrument. Missing responses in each subscale were treated by calculating the mean for actual responses and substituting that value for the missing value. The Sexual Relationship subscale was not completed by five women who reported they were divorced, separated, or widowed. Thus, the Sexual Relationship subscale was judged inappropriate

for these women by the investigator and values that reflected no change in sexual functioning were assigned. The corrections for missing responses followed guidelines established by Derogatis (1986). Subscale and total raw scores were converted to standardized  $T$  scores, and descriptive and inferential statistics were calculated. Internal consistency was computed by using the Cronbach alpha. Reliability of the PAIS-SR subscales for the African American group varied from  $\alpha = .48$  to  $\alpha = .92$  and for the Caucasian American group from  $\alpha = .51$  to  $\alpha = .89$ . Reliability of the total PAIS-SR was  $\alpha = .91$  for the African American group and  $\alpha = .93$  for the Caucasian American group (Table 5).

Table 5  
Cronbach Alpha for Internal Consistency of PAIS-SR

Subscales	African American Alpha	Caucasian American Alpha
Health Care Orientation	.62	.75
Vocational Environment	.61	.54
Domestic Environment	.67	.82
Sexual Relationship	.63	.86
Extended Family	.48	.51
Social Environment	.92	.84
Psychological Distress	.80	.89
<u>Total</u>	<u>.91</u>	<u>.93</u>

A two-tailed  $t$  test for independent samples was used for analysis. A significant difference,  $t(64) = -2.17$ ,  $p = .05$ , was found between scores of the two groups of women on the subscale Psychological Distress (Table 6). Thus, the two groups only differed in their perceptions of psychological distress.

### Research Question 3

The third research question was: What is the relationship between perceived social support and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? Social support was measured by the NSSQ, and glycemic control was measured by glycosylated hemoglobin (HbA<sub>1c</sub>). The HbA<sub>1c</sub> values were obtained from laboratory tests routinely drawn by the physicians as part of their diabetic patients' examinations.

The HbA<sub>1c</sub> values for the African American group varied from a low of 5.7% to a high of 13.1%, with a mean of 8.2%. The HbA<sub>1c</sub> values for the Caucasian American group varied from a low of 5.1% to a high of 9.3%, with a mean of 7.5%. The reference range was 2.9% to 7.1%, with 5 (15.2%) of the African American group and 9 (27.3%) of the Caucasian American group in the good control range.

Table 6  
Two-Tailed  $t$  Test of Means of PAIS-SR Subscales and  
Total Scores

Subscales	<u>N</u>	Mean	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p</u>
<u>Health Care Orientation</u>						
African American	33	54.66	13.27	.05	64	.95
Caucasian American	33	54.48	14.56			
<u>Vocational Environment</u>						
African American	33	46.90	7.02	1.00	64	.28
Caucasian American	33	45.15	6.07			
<u>Domestic Environment</u>						
African American	33	44.54	9.16	.03	64	.98
Caucasian American	33	44.48	10.38			
<u>Sexual Relationship</u>						
African American	33	46.57	6.26	-1.24	64	.21
Caucasian American	33	48.78	8.09			
<u>Extended Family</u>						
African American	33	47.54	3.96	-.62	64	.53
Caucasian American	33	48.24	5.11			
<u>Social Environment</u>						
African American	33	50.24	9.24	.42	64	.67
Caucasian American	33	49.33	8.51			
<u>Psychological Distress</u>						
African American	33	45.09	7.80	-2.17	64	.03*
Caucasian American	33	49.66	9.24			
<u>Total PAIS Score</u>						
African American	33	47.36	9.14	-.35	64	.72
Caucasian American	33	48.18	9.96			

\* $p \leq .05$

A two-tailed  $t$  test for independent samples was used to test the difference in HbA<sub>1c</sub> values between the group of 33 African American women and the group of 33 Caucasian American women. A significant difference ( $p = .024$ ) was found between the African American group ( $M$  value = 8.2152,  $SD = 1.339$ ) and the Caucasian American group ( $M$  value = 7.5667,  $SD = .893$ ). African American women had significantly higher HbA<sub>1c</sub> values.

The Spearman rank correlation coefficient was used to determine the relationships between mean ranks of scores on the Affect, Affirmation, and Aid subscales, and Total Functional score and HbA<sub>1c</sub> values. The relationship was not significant at  $p = .05$ . Thus, there was no relationship between social support and glycemic control in either group of women in this sample.

#### Research Question 4

The fourth research question was: What is the relationship between perceived psychosocial adaptation and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? A Pearson product-moment correlation was used to analyze data from the PAIS-SR subscales and HbA<sub>1c</sub> values for the two groups. For Caucasian American women, the relationships between the seven PAIS-SR subscales, the PAIS-SR Total, and

the HbA<sub>1c</sub> values reached statistical significance: Domestic Environment ( $r = .57$ ;  $p \leq .05$ ), Sexual Relationships ( $r = .46$ ;  $p \leq .05$ ), Social Environment ( $r = .36$ ;  $p \leq .01$ ), Psychological Distress ( $r = .53$ ;  $p \leq .05$ ), and Total ( $r = .56$ ;  $p \leq .05$ ) (Table 7). However, no significant relationships were found in the African American group. Therefore, perceived psychosocial adaptation was related to glycemic control only in the Caucasian American women.

Table 7

Pearson Product-Moment Correlation Coefficients Between HbA<sub>1c</sub> Values and PAIS-SR Subscale and Total Scores

Subscales	African American ( $n = 33$ ) $r$	Caucasian American ( $n = 33$ ) $r$
Health Care Orientation	.0729	.2350
Vocational Environment	.1612	.1502
Domestic Environment	.0082	.5669*
Sexual Relationships	.0768	.4553*
Extended Family	.2588	.2021
Social Environment	-.0824	.3637**
Psychological Distress	.2571	.5344*
PAIS-SR Total	-.0051	.5590*

\* $p \leq .05$     \*\* $p \leq .01$



### Summary of Findings

The demographic profile of the sample indicated that the majority of participants were 40 to 50 years old, had some college, and had incomes above \$35,000. Both the African American and the Caucasian American groups indicated the duration of diabetes mellitus as 1 to 10 years; used insulin; received their education about diabetes self-care from a combination of doctors, nurses, and dieticians; followed a calorie controlled diet; monitored blood sugar with a meter; and were not members of diabetes support groups.

A Mann-Whitney  $U$  test showed a significant ( $p \leq .05$ ) difference between groups on the Aid subscale of the NSSQ. African American women reported more social support in the dimension of Aid than did Caucasian American women.

A two-tailed  $t$  test for independent samples showed a significant ( $p \leq .05$ ) difference on one PAIS-SR subscale. Caucasian American women reported more psychological distress than did the African American women.

Only 5 African American women and 9 Caucasian American women were in the good glycemic control range of between 2.9% to 7.1%. African American women with NIDDM had significantly higher HbA<sub>1c</sub> values ( $t = 2.31$ ,  $df = 56$ ,  $p = .02$ ). No significant relationships between social

support and glycemic control in either group were found using the Spearman rank correlation coefficient.

A Pearson product-moment correlation identified significant relationships between HbA<sub>1c</sub> and PAIS-SR subscales of Domestic Environment, Sexual Relationships, Social Environment, Psychological Distress, and Total Score in the Caucasian American group. Thus, perceived psychosocial adaptation and glycemic control were related in the Caucasian American women.

## CHAPTER 5

### SUMMARY OF STUDY

This study was done to determine how African American and Caucasian American women who are middle-aged, middle income, and have NIDDM differ in perceived social support and perceived psychosocial adaptation. Additionally, the relationships between perceived social support and glycemic control and perceived psychosocial adaptation and glycemic control in the two groups of women were investigated. This study was based on a theoretical framework containing The Roy Adaptation Model (Andrews & Roy, 1991; Roy, 1984).

This chapter contains the summary of the study, the discussion of findings, conclusions, and implications. Recommendations for further research finalize this chapter.

#### Summary

A descriptive, two-group, nonexperimental design with a convenience sample of 66 women, 33 African Americans and 33 Caucasian Americans, who were middle-aged, middle income, and had NIDDM was used in this study. Subjects were patients of four private physicians, and data were collected in the physicians' offices. Subjects completed three

questionnaires: the investigator-designed Personal Profile Sheet, the Norbeck Social Support Questionnaire (NSSQ), and the Psychosocial Adjustment to Illness Survey-Self Report (PAIS-SR). Glycemic control was measured in this study by hemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>) values.

### Discussion of Findings

The Roy Adaptation Model (Andrews & Roy, 1991; Roy, 1984) guided the choice of variables and measures to assess psychosocial and physiological adaptation. The model was useful as a framework for understanding the women's responses to NIDDM, the focal stimulus. The contextual stimuli in this study were age, income, and race.

### Research Question 1

The first research question for this study was: What is the difference in perceived social support between African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? A significant difference was found between the two groups on the dimension of Aid. The finding that African American women perceived themselves as receiving more Aid from their network may be associated with income differences between the two groups. A larger proportion of Caucasian American women than African American women were in the middle and upper income

categories. Therefore, the Caucasian American women may not have needed material assistance from their social support network.

The finding that the African American women had a network of family and friends who were supportive contrasts with findings from previous studies. Skelly (1992) reported that 18 of 118 African American females with NIDDM were not able to identify anyone in their network and stated they were alone. Linton-Weiss (1990) found that the mean number of people in the network of her sample of 88 subjects was 2.58 ( $SD = 1.81$ ).

Strauss (1975) asserted that a person with a chronic illness such as diabetes mellitus can become socially isolated. However, findings of the present study indicated that the women with NIDDM were not isolated. African American women had a mean of 7.97 ( $SD = 4.62$ ) people in their network and the Caucasian American women had a mean of 6.88 ( $SD = 3.98$ ) people, larger networks than reported by Skelly (1992) and Linton-Weiss (1990).

Assessment of the interdependence mode of Roy's (Andrews & Roy, 1991; Roy, 1984) model was assessed by the NSSQ. Evidence of affectional adequacy was indicated by the results of the NSSQ.

### Research Question 2

The second research question for this study was: What is the difference in perceived psychosocial adaptation between African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? The groups did not differ on the Total PAIS-SR scores. Only one significant difference was found between the two groups on the Psychological Distress subscale.

Although the Caucasian American women reported more psychological distress than did the African American women, the mean subscale score of 49.66 ( $SD = 9.24$ ) indicated that they were adapting. The findings of no differences between groups on the other six subscales may be attributed to the fact that the PAIS-SR has not previously been evaluated for validity and reliability in populations of African American women. The PAIS-SR reference scores for people with diabetes were developed based on a normative group composed of 2 African Americans and 97 Caucasian Americans (Derogatis, 1986). Only the Psychological Distress and Social Environment subscales had acceptable reliability,  $\alpha = .80$  and  $\alpha = .92$ , respectively, for the African Americans in this study.

The mean total score on the PAIS-SR which provides assessment of overall psychosocial adaptation was 47.36

(SD = 9.14) for the African American women and 48.18 (SD = 9.96) for the Caucasian American women. These scores are similar to Shah's (1989) findings. In a sample of 104 women with NIDDM and IDDM, Shah (1989) reported that the subjects' mean total score was 52 indicating psychosocial adaptation. White, Ritcher, and Fry (1992) reported that well-educated, middle income, Caucasian American women with NIDDM and IDDM had a total mean score of 60 indicating psychosocial adaptation.

Social desirability response set may have influenced the findings. Subjects in the African American group may have identified with the investigator and may have wanted to please her by giving socially acceptable answers.

Roy's (Andrews & Roy, 1991; Roy, 1984) model provides for two types of responses: adaptive or ineffective. The PAIS-SR provided tentative evidence of adaptive responses in the self-concept and role function modes in both groups.

### Research Question 3

The third research question for this study was: What is the relationship between perceived social support and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? There were no significant relationships between the Affect (expression of positive feelings), Affirmation (endorsement

of personal behaviors), Aid (material assistance) subscales of social support, the Total Functional score, and glycemic control in either group of women.

There were women in both groups who had adaptive responses in the physiologic mode. However, overall both groups had ineffective responses in this mode. The finding that the African American women had higher hemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>) levels than the Caucasian American women are similar to those of other investigators (Summerson, Konen, & Dignan, 1992; Weatherspoon, Kumanyika, Ludlow, & Schatz, 1994).

The diabetes-related self-care practices of the two groups were more similar than different. However, more Caucasian American women reported being in a support group. Inspection of the HbA<sub>1c</sub> levels showed that some of the Caucasian American women who were in support groups had good glycemic control. In contrast, none of the African American women who were in support groups had good glycemic control.

The finding of this study that there was no significant relationship between social support and glycemic control was similar to findings of previous studies. Bailey (1989) found that neither general social support nor diabetes specific support were related to glycemic control. Likewise, Saathoff (1989) found social support was not related to glycemic control.



The finding of a nonsignificant relationship between social support and glycemic control suggests that there are other variables related to glycemic control which were not examined in this study. Linton-Weiss (1990) found that a specific source of support such as a family member resulted in lower blood glucose levels than did support from a nonfamily member. Connell (1991) found a positive relationship between diabetes specific support and glycemic control.

#### Research Question 4

The fourth research question for this study was: What is the relationship between perceived psychosocial adaptation and glycemic control in African American and Caucasian American women who are middle-aged, middle income, and have NIDDM? Positive relationships were found between the PAIS-SR subscale scores of Domestic Environment, Sexual Relationships, Social Environment, Psychological Distress, the PAIS-SR total score, and glycemic control in the Caucasian American group. The relationships affirmed the interrelationship of the self-concept, role function, and physiological modes. However, the maximum shared variance between the PAIS-SR and glycemic control was .32 for Domestic Environment and .31 for the PAIS-SR total.

In a national study of 4,379 subjects by Cowie, Harris, Silverman, Johnson, and Rust (1993), the risk for NIDDM associated with obesity was highest in African American women as compared to African American men and Caucasian men and women. Thus, the literature indicates obesity needs to be taken into account when looking for other sources of variance in glycemic control, especially in African American women.

### Conclusions and Implications

A limitation of this study was the use of the NSSQ and the PAIS-SR. The following conclusions and implications are tentative because: (a) there is uncertainty as to whether or not the NSSQ was a valid and reliable tool for measurement of social support in the two groups, and (b) the reliability of the PAIS-SR exceeded  $\alpha = .80$  for only four subscales for the Caucasian American group and only two subscales in the African American group. Additionally, because of the use of nonrandom sampling, the conclusions cannot be generalized beyond this sample.

### Conclusions

1. African Americans receive more material assistance type social support than do Caucasian Americans.

2. African Americans and Caucasian Americans receive social support from a network of family and friends.
3. Caucasian Americans perceive more psychological distress than do African Americans.
4. Overall, both African Americans and Caucasian Americans perceive they are adapting psychosocially.
5. Social support is not related to glycemic control in either African Americans or Caucasian Americans.
6. Psychosocial adaptation is not related to glycemic control in African Americans.
7. Psychosocial adaptation, specifically in the areas of domestic environment, social environment, sexual relationship, and psychological distress, is related to glycemic control in Caucasian Americans.
8. Overall, African Americans and Caucasian Americans are not adapting physiologically.
9. African Americans exhibit poorer glycemic control than do Caucasian Americans.

#### Implications

1. Assessment of middle-aged, middle income, women with NIDDM should include assessment of material assistance, and nursing interventions should be developed which apprise women of available resources.

2. Nursing interventions to assist Caucasian American women in improving glycemic control should be focused on improving self-esteem, body image, social and leisure activities, and sexual relationships.
3. In addition to social support and psychosocial adaptation, assessment of African American women should include other factors known to influence glycemic control, such as weight.

#### Recommendations for Further Research

1. This study should be replicated using additional measures of social support and psychosocial adaptation that are valid and reliable for both groups. The social support measures should include evaluation of source specific support and diabetes specific support. As a result, nursing interventions developed for problems identified during assessment will be more trustworthy.
2. Future investigations should be designed to use large, randomly selected samples and mailed questionnaires to increase generalizability. As a result, nursing interventions would have wider applicability beyond the sample, and social desirability response will be reduced.
3. This study should be replicated with control of additional variables that represent the physiological

mode, such as life stress and obesity. Controlling additional variables will result in nurses placing confidence in the nursing interventions designed to improve psychosocial adaptation and glycemic control because the interventions will be based on the direct effects of diabetes mellitus and not on effects of life stress and obesity.

4. A qualitative study should be conducted in middle-aged, middle income, African American women to identify their perceptions of factors that facilitate as well as prevent good glycemic control. A questionnaire based on the findings of this study should be developed and administered to examine the relationship between the identified perceived factors and glycemic control. Identification of these factors may help to develop nursing interventions to promote good glycemic control in this population.

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APPENDIX A  
PERMISSION TO CONDUCT STUDY



E 410

203

9088

22 February 1995

To Whom It May Concern:

This is to notify you that Ms. Verla Vaughn has discussed her research proposal with me. She has been given permission to utilize my patients in her project, subject to the individuals consent.

If I can provide any additional information, please contact me at the above address or telephone number.

Sincerely,

*[Handwritten signature]*  
\_\_\_\_\_  
[Illegible printed name]

---

February 18, 1995

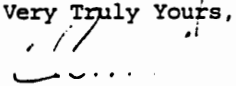
Texas Women's University  
1130 M.D. Anderson Blvd.  
Houston, Texas 77030

Re: Verla Vaughn

To Whom It May Concern:

Verla Vaughn needed permission to consult with selected Patients in my practice in connection with her studies relating to her university work.

Her proposal has been reviewed and her patient consultations are under my supervision and have been approved.

Very Truly Yours,  


cc: [unclear]

cc: [unclear]

---



OTIS GUNDEL, M.D., F.A.C.P.  
INTERNAL MEDICINE

1204 VICTORY DRIVE, SUITE 100  
HOUSTON, TEXAS 77057  
713/793-1234

February 10, 1995

Texas Woman's University  
1130 M.D. Anderson Blvd.  
Houston, Texas

Dear Committee Members,

Ms. Verla Vaughan has my permission to use my patients in her Doctoral research on diabetic women. I approve of her research and the procedure to protect the rights of my patients. Ms. Vaughan has agreed not to identify my office in published reports of her research.

For further assistance contact me at my office.

Sincerely,

OC/NS



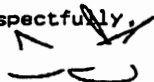
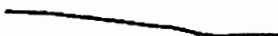
February 24, 1995

TO WHOM IT MAY CONCERN ;

Mrs. Verla Vaughan has my permission to use Diabetic patients for research studies.

It is understood that no names will be used in any publication and confidentially will be carefully maintained.

Respectfully,

A handwritten signature, possibly reading "J. C.", is written over the word "Respectfully,".A horizontal line is drawn below the signature.

APPENDIX B  
EXPLANATION OF STUDY

## EXPLANATION OF THE STUDY

You are being asked to participate in a research study conducted by Verla Vaughan, a doctoral nursing student at Texas Woman's University. The purpose of the study is to find out how African American and Caucasian American women adapt to diabetes mellitus.

1. You will be asked to complete three questionnaires.

This will take about 50 minutes of your time. There are no right or wrong answers to the questions to which you are asked to respond. You can ask any questions that you may have while completing the questionnaires.

2. You may experience anxiety about filling out the questionnaires. You will be provided privacy while you answer the questions. I will be available to answer any questions or to respond to any concerns which you might have.

3. Your blood sugar level will be obtained from your medical record.

4. Information you give will remain confidential and your name will not appear in any report. A code number instead of your name will be used. No individual information from this study will be shared with your nurse or physician or placed in your chart. The study

results will be summarized as group results rather than as individual results.

5. There is no other known comparable study in which you can participate. The alternative is for you not to participate in this study.
6. You are free to withdraw from this study at anytime. Your willingness to participate or your decision to withdraw from this study will not affect the care you receive from your physician.
7. You may not benefit directly from participating in this study. However, information about how you adapt to diabetes mellitus may help nurses in planning nursing care that is meaningful for women with your type of diabetes.
8. If you have any questions or comments later regarding this study, call me, Verla Vaughan, at (615) 876-2100 or my advisor, Dr. Judith Stocks at (615) 876-2100.

**COMPLETION AND RETURN OF THE QUESTIONNAIRES CONSTITUTE  
CONSENT TO PARTICIPATE IN THIS STUDY.**

APPENDIX C  
PERSONAL PROFILE SHEET

## Personal Profile Sheet

Please answer the following questions by checking (✓) the appropriate answer or by writing your answer in the blank space.

1. How old are you?

\_\_\_\_\_ years

2. What is your present marital status?

\_\_\_\_\_ Single, never married  
\_\_\_\_\_ Divorced or separated  
\_\_\_\_\_ Married  
\_\_\_\_\_ Widowed

3. How long have you been married?

\_\_\_\_\_

4. How many children do you have?

\_\_\_\_\_

5. How many children currently live at home?

\_\_\_\_\_

6. What is the highest level of education you have?

\_\_\_\_\_ Less than 8th grade      \_\_\_\_\_ Standard College or College Graduate  
\_\_\_\_\_ Partial high school  
\_\_\_\_\_ High school graduation      \_\_\_\_\_ Graduate professional training  
\_\_\_\_\_ Partial college

7. What is your family's total yearly income? Include all sources of income such as social security, child support, retirement benefits and interest income.

\_\_\_\_\_ \$25,000 - 34,999  
\_\_\_\_\_ \$35,000 - 49,999  
\_\_\_\_\_ \$50,000 - 74,999

8. Are you employed outside the home?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

9. What is your religious preference?

\_\_\_\_\_ Protestant  
\_\_\_\_\_ Jewish  
\_\_\_\_\_ Catholic  
\_\_\_\_\_ Islam  
\_\_\_\_\_ No particular religious affiliation  
\_\_\_\_\_ Other: Please specify \_\_\_\_\_

10. When were you first diagnosed for diabetes?

\_\_\_\_\_ Month/Year

11. Do you take medications for your diabetes?

\_\_\_\_\_ No

\_\_\_\_\_ Insulin

\_\_\_\_\_ Hypoglycemic pill (pill for controlling your sugar)

12. Who taught you diabetes self care management/education?

\_\_\_\_\_ Doctor

\_\_\_\_\_ Nurse

\_\_\_\_\_ Dietician

\_\_\_\_\_ Received diabetes self care management/education from all of the above

\_\_\_\_\_ Received diabetes self care management/education from a friend

\_\_\_\_\_ Received diabetes self care management/education from a family member

\_\_\_\_\_ Received no diabetes self care management/education

13. Do you follow a calorie controlled diabetic diet?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

14. How do you monitor your blood sugar?

\_\_\_\_\_ Visually (chemstrip)

\_\_\_\_\_ Meter

\_\_\_\_\_ I do not monitor my blood sugar.

15. Do you exercise?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

16. If you answered yes to number 15, what type of exercise do you do?

\_\_\_\_\_ Walking

\_\_\_\_\_ Jogging

\_\_\_\_\_ Bicycling

\_\_\_\_\_ Treadmill

\_\_\_\_\_ Swimming

\_\_\_\_\_ Other \_\_\_\_\_

17. How many days of the week do you exercise?

\_\_\_\_\_ Day(s)

18. Do you examine your feet?

☐ Yes

☐ No

19. Are you a member of a diabetes support group?

☐ Yes

☐ No

20. If you answered yes to number 19, how often do you participate in a diabetes support group?

☐ Frequently

☐ Infrequently

☐ Never



APPENDIX D  
NORBECK SOCIAL-SUPPORT QUESTIONNAIRE (NSSQ)

# **SOCIAL SUPPORT QUESTIONNAIRE**

**PLEASE READ ALL DIRECTIONS  
ON THIS PAGE BEFORE STARTING.**

Please list each significant person in your life on the right. Consider all the persons who provide personal support for you or who are important to you.

Use only first names or initials, and then indicate the relationship, as in the following example:

Example:

	First Name or Initials	Relationship
1.	MARY T.	FRIEND
2.	BOB	BROTHER
3.	M.T.	MOTHER
4.	SAM	FRIEND
5.	MRS. R.	NEIGHBOR

etc.

Use the following list to help you think of the people important to you, and list as many people as apply in your case.

- spouse or partner
- family members or relatives
- friends
- work or school associates
- neighbors
- health care providers
- counselor or therapist
- minister/priest/rabbi
- other

You do not have to use all 24 spaces. Use as many spaces as you have important persons in your life.

**WHEN YOU HAVE FINISHED YOUR LIST, PLEASE TURN TO PAGE 2.**

For each person you listed, please answer the following questions by writing in the number that applies.

- 1 = not at all
- 2 = a little
- 3 = moderately
- 4 = quite a bit
- 5 = a great deal

Question 1:

How much does this person make you feel liked or loved?

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_
- 11. \_\_\_\_\_
- 12. \_\_\_\_\_
- 13. \_\_\_\_\_
- 14. \_\_\_\_\_
- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. \_\_\_\_\_
- 18. \_\_\_\_\_
- 19. \_\_\_\_\_
- 20. \_\_\_\_\_
- 21. \_\_\_\_\_
- 22. \_\_\_\_\_
- 23. \_\_\_\_\_
- 24. \_\_\_\_\_

Question 2:

How much does this person make you feel respected or admired?

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
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- 21. \_\_\_\_\_
- 22. \_\_\_\_\_
- 23. \_\_\_\_\_
- 24. \_\_\_\_\_

Page 3

1 = not at all  
 2 = a little  
 3 = moderately  
 4 = quite a bit  
 5 = a great deal

## Question 3:

How much can you confide  
 in this person?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
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21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

## Question 4:

How much does this person  
 agree with or support your  
 actions or thoughts?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
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22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

[13-15]

GO ON TO NEXT PAGE

[16-18]

Page 4

- 1 = not at all  
 2 = a little  
 3 = moderately  
 4 = quite a bit  
 5 = a great deal

## Question 5:

If you needed to borrow \$10, a ride to the doctor, or some other immediate help, how much could this person usually help?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
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21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

## Question 6:

If you were confined to bed for several weeks, how much could this person help you?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
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21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

GO ON TO NEXT PAGE

{19-21}

{22-24}

Question 7:

How long have you known this person?

↕

- 1 = less than 6 months
- 2 = 6 to 12 months
- 3 = 1 to 2 years
- 4 = 2 to 5 years
- 5 = more than 5 years

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

Question 8:

How frequently do you usually have contact with this person?  
(Phone calls, visits, or letters)

- 5 = daily
- 4 = weekly
- 3 = monthly
- 2 = a few times a year
- 1 = once a year or less

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

Number \_\_\_\_\_  
Date \_\_\_\_\_

PERSONAL NETWORK

First Name or Initials

Relationship

- |           |       |
|-----------|-------|
| 1. _____  | _____ |
| 2. _____  | _____ |
| 3. _____  | _____ |
| 4. _____  | _____ |
| 5. _____  | _____ |
| 6. _____  | _____ |
| 7. _____  | _____ |
| 8. _____  | _____ |
| 9. _____  | _____ |
| 10. _____ | _____ |
| 11. _____ | _____ |
| 12. _____ | _____ |
| 13. _____ | _____ |
| 14. _____ | _____ |
| 15. _____ | _____ |
| 16. _____ | _____ |
| 17. _____ | _____ |
| 18. _____ | _____ |
| 19. _____ | _____ |
| 20. _____ | _____ |
| 21. _____ | _____ |
| 22. _____ | _____ |
| 23. _____ | _____ |
| 24. _____ | _____ |

9. During the past year, have you lost any important relationships due to moving, a job change, divorce or separation, death, or some other reason?

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- \_\_\_\_\_ 0. No  
\_\_\_\_\_ 1. Yes

## IF YES:

- 9a. Please indicate the number of persons from each category who are *no longer available* to you.

_____ spouse or partner	[58]	
_____ family members or relatives	[59-60]	
_____ friends	[61-62]	
_____ work or school associates	[63-64]	
_____ neighbors	[65-66]	
_____ health care providers	[67]	
_____ counselor or therapist	[68]	
_____ minister/priest/rabbi	[69]	
_____ other (specify) _____	[70]	[71-72]

- 9b. Overall, how much of your support was provided by these people who are no longer available to you?

[73]

- \_\_\_\_\_ 0. none at all  
\_\_\_\_\_ 1. a little  
\_\_\_\_\_ 2. a moderate amount  
\_\_\_\_\_ 3. quite a bit  
\_\_\_\_\_ 4. a great deal

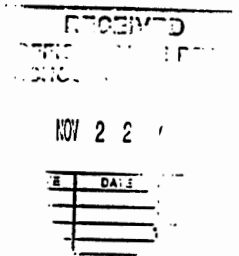
APPENDIX E  
AUTHOR'S PERMISSION TO USE NSSQ



APPENDIX A

Request Form

I request permission to copy the Norbeck Social Support Questionnaire (NSSQ) for use in research in a study entitled: The Relationship Between Social Support, Psychosocial Adjustment and Glycemic Control Of African American Middle Aged Women With Non Insulin Dependent Diabetes Mellitus.



Ula V. V. V.  
(Signature)  
November 10, 1994  
(Date)  
Asst. Prof. Nursing  
Position and  
Full Address  
of Inve  
1051 16th Ave

Permission is hereby granted to copy the NSSQ for use in the research described above.

Jane S. Norbeck  
Jane S. Norbeck  
November 22, 1994  
(Date)

Please send two signed copies of this form to:

Jane S. Norbeck, D.N.Sc.  
Department of Mental Health and Community Nursing  
University of California, San Francisco  
N505-Y  
San Francisco, California 94143

APPENDIX F  
CHANGE IN SCORING ON NSSQ

## 1984 UPDATE ON THE NSSQ

### Scoring Adjustment

Since the publication of the revised instrument and scoring instructions in 1982, a minor change in scoring has been made for the NSSQ. For questions 1-6 the 5-point rating scale has been converted in the computer to a 0-4 scale, rather than the 1-5 scale on the instrument. This is because the rating of "1" equals "not at all" (no support) from that network member. However, the "1s" continue to be added to the score, thereby artificially inflating the total amount of support.

For many uses this conversion does not make much difference because subjects usually do not give many "1" ratings. I have found that for the Aid items and for situation-specific items (see below) there is a greater use of "1" ratings, so this conversion does slightly increase the accuracy of the intended ratings. (This conversion should not be used for questions 7 and 8 because the rating of "1" has a non-zero value for these questions.)

### Corrected Normative Scores for Employed Adults

The previously published normative data for 136 employed adults (Norbeck, Lindsey, & Carrieri, 1983) were based on the uncorrected scale values. The scoring adjustment for the data published in Table 2 in the 1983 article results in the following corrected (lower) mean values:

	Mean	S.D.
<u>NSSQ Scales:</u>		
Affect	73.49	36.25
Affirmation	66.06	32.33
Aid	62.35	32.24
 Total Functional	 201.90	 95.87

As indicated above, the scoring adjustment is applied only to questions 1-6 (Affect, Affirmation, and Aid); thus, the mean values for the other NSSQ subscales and variables on Table 2 are not changed.

### SPSSx Program Statements Available

Don Chambers at UCSF has developed SPSSx program statements for the NSSQ that make this rating scale conversion on the Affect, Affirmation, and Aid scores, as well as on the calculated scores for the source-specific total functional measures. These program statements also check for the types of errors in the data that result in scores outside the possible range for calculated scores.

APPENDIX G  
AUTHOR'S PERMISSION TO USE PAIS-SR



**CLINICAL PSYCHOMETRIC RESEARCH, INC.**

Leonard R. Derogatis, Ph.D, President  
Maureen F. Derogatis, M.A.S., Vice President

February 28, 1994

Ms. Verla Vaughan  
3856 Woodward Dr.  
Nashville, TN 37207

Dear Ms. Vaughan:

In response to our telephone conversation today, I am forwarding you this letter to inform you that permission to use the Psychosocial Adjustment to Illness Scale - Self Report (PAIS-SR) is inherent in the purchase of the instrument, i.e., once you have purchased it you do have permission to use it.

Sincerely,

Maureen F. Derogatis