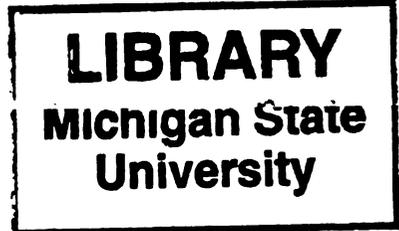




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THE RELATIONSHIP  
BETWEEN PRENATAL CARE UTILIZATION  
AND FUNCTIONAL LEVELS OF SOCIAL SUPPORT  
IN LOW-INCOME WOMEN

presented by

Arline Joan Barry

has been accepted towards fulfillment  
of the requirements for

Master of Science degree in Nursing

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Major professor

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THE RELATIONSHIP  
BETWEEN PRENATAL CARE UTILIZATION  
AND FUNCTIONAL LEVELS OF SOCIAL SUPPORT  
IN LOW-INCOME WOMEN

By

Arline Joan Barry

A THESIS

Submitted to  
Michigan State University  
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## ABSTRACT

### THE RELATIONSHIP BETWEEN PRENATAL CARE UTILIZATION AND THE FUNCTIONAL LEVELS OF SOCIAL SUPPORT BY A GROUP OF LOW-INCOME WOMEN

BY

Arline Joan Barry

A major effort has been made in the United States to provide adequate prenatal care to low-income women. Since utilization rates appear to be affected by more than the element of availability, attention has been directed to psychosocial factors. This research study analyzed the differences between the categories of prenatal care utilization and the functional levels of social support which poor women perceive they have. Secondary analysis was used on a sample of 81 women.

The results of this study showed that the women accessed and received adequate or better than adequate prenatal care. However, there were no differences in support levels. Consequently, other factors should be considered. The high level of health care delivered at their community facility and the accessibility of the care have been proposed to be influential in such positive outcomes. Further research should be directed toward considering these factors as a strong component of social support.

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**To all dedicated nurses who make knowledge  
a life-long pursuit.**

## ACKNOWLEDGEMENTS

An endeavor such as this would not be possible without the example and inspiration of those professors and students who have advanced the body of Nursing Science with their endeavors. They set the path for those who follow.

The understanding and encouragement of family and friends were much appreciated and essential to this achievement.

Also, an acknowledgement is in order to my best friend, my husband Jack, who always understood.

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## Introduction

The United States ranks 17th among industrialized countries in its infant mortality rate (Shotland, Loonin, & Hawes, 1988) in spite of its reputation for having a technically superb health care system (Starr, 1992). Shotland and colleagues informed us that the rate for infant mortality has shown a steady decline since 1950 for all the countries surveyed by the United Nation's Children Fund. The United States' position has dropped dramatically since 1950 when we ranked 6th. We ranked 17th in the rate of infant mortality behind Japan, Finland, Iceland, Sweden, Switzerland, Norway, Spain, Denmark, Canada, France, Luxemborg, Australia, Hong Kong, Ireland, Spain and the United Kingdom (Shotland et al., 1988). Two factors have made the greatest contribution to the lower infant mortality rates world-wide: the extension of prenatal care services to low-income women, and (probably the most important reason) the tremendous explosion in neonatal technology which is saving the lives of very low-birth-weight infants.

The importance of the effect of prenatal care on pregnancy outcomes has been the subject of much research. Murray & Bernfield (1988) examined the records of 44,038 infants born in the California Kaiser-Permanente hospitals

in 1978. They found that as the level of prenatal care increased, the percentage of preterm infants (<260 days gestation) decreased. This study did not address the multi-factorial aspects of why women access prenatal care; some of these factors are inherently structural in the U.S. system of health care. Others are psychosocial and affect the ability and the motivation of women to seek adequate prenatal care. We cannot be sure that it is the prenatal care itself which actually influences birth outcomes or other characteristics of women who are motivated to seek care.

Women who are of low socioeconomic status are at the greatest risk of delivering low-birth-weight infants. There are inherent structural barriers to poor women in the health care delivery system of the United States. The first barrier is financial, especially the lack of insurance (Kalmuss & Fennelly, 1990). Another structural barrier is the unwillingness of health care providers to provide care to low-income women due to malpractice concerns, low reimbursement levels, and administrative difficulties with government-sponsored programs (Miller, Margolis, Schwethelm, & Smith, 1989).

The full resources of the Federal government and the medical and nursing professions' research endeavors have addressed the problem of assuring adequate prenatal care for all mothers. The State of Michigan has made great strides

in making Medicaid insurance available to poor women and in raising reimbursement rates to attract providers to underserved areas (Miller et al., 1989). Other Federal programs such as the Health Manpower Shortage Area designations and educational grants have encouraged providers to locate in disadvantaged areas. Federal programs in founding Community Health Clinics have removed some of the barriers to access. Yet still, we trail the civilized world in effecting good pregnancy outcomes for our poorest and most vulnerable population.

Other factors must affect the utilization rates of prenatal care by disadvantaged women. These factors are social, cultural and psychological in nature and form the background from which the woman makes health care decisions. The network of social support is an integral part of this background and has an influence on those decisions (St. Clair, Smeriglio, Alexander, & Celentano, 1988). It has been increasingly recognized that psychosocial factors, such as social support, should be considered as determinants in the utilization of prenatal care.

The positive effects of adequate prenatal care on newborn morbidity and mortality are well-documented. Numerous studies show reductions in neonatal intensive care use (and subsequent cost savings): Fishburne & D'Angelos (as cited in St. John & Winston, 1989), Curry & Howe (as cited in St. John & Winston, 1989), California Department of

Health Services (as cited in St. John & Winston, 1989), and Michigan Department of Health (as cited in St. John & Winston, 1989). Kalmuss and Fennelly (1990) tell us convincingly that "health care research has provided convincing evidence that timely prenatal care is important for maternal and child health" (p. 215).

Adequate prenatal care has been quantified as the number and the timing of visits to the health care provider during the pregnancy. Dealing in such easily identified quantities does give a simple and measurable standard by which to define prenatal care utilization rates. This numerical standard does not address the content of the visits. The nature of the health care provided in prenatal visits has wide variability not easily identified or easily measured.

Research in the United States to improve our rate of infant mortality has been increasingly broadened to include the study of the relationship of psychosocial factors as well as structural factors. The utilization of prenatal care by disadvantaged women is considered to have an important relationship to infant mortality. The purpose of this research study was to address the question of whether there is a relationship between the functional level of social support which a pregnant women perceives that she has and her utilization of prenatal care.

### Problem Statement

Barriers other than poverty, lack of insurance and difficulty of access to care must exist for women who do not seek to take advantage of prenatal care. These barriers are personal and are rooted in attitudes and motivation which are derived from social structure which surrounds these women. Kalmuss & Fennelly's (1990) study investigated the women's perception of those barriers, i.e., such as not having the time and energy to deal with the problem of accessing health care. They reached the conclusion that disadvantaged women are more likely to feel overwhelmed by a variety of personal and family problems that may feel to them to have priority status and thus discourage them from initiating or continuing preventive care. The rate of pregnancy complications such as low birth weight and pre-term delivery were predicted most strongly among women with low levels of family functioning (Reeb, Graham, & Zyzan, 1989).

The concept of social support as an important variable in health research and its relationship to health care utilization has been investigated with varying results by Berkman & Syme (1979), Boyce, Schafer, & Uitti (1985), Bruhn & Philips (1984), Cobb (1976), Kahn (1976), McDonald & Coburn (1988), and St. Clair et al. (1989). Some studies have been based upon poorly defined terms. Others have been subjected to the natural evolution of the concept of social

support. The importance of psychosocial factors in prenatal care is a fairly new one - especially as regarding the disadvantaged population. This research study attempted to analyze one aspect of this important concept and, hopefully, contributed to the body of knowledge on this subject using data from a recent research study. It is recognized that social support has a number of components; the size of the social support network, the composition of the network, and the functioning of the network as perceived by the person receiving social support from that network. This research study focused on the functional component of social support.

#### The Research Questions

1. Are there differences by level of prenatal care utilization in the total functional social support low-income women perceive they have?
2. Are there differences by level of prenatal care utilization in the affect component of social support low-income women perceive they have?
3. Are there differences by level of prenatal care utilization in the affirmation component of social support low-income women perceive they have?
4. Are there differences by level of prenatal care utilization in the aid component of social support which low-income women perceive they have?

#### Conceptual Framework

#### Conceptual Definitions

Social Support. There were conceptual challenges in defining the term "social support" (Brown, 1986). It is a concept which is widely discussed and referred to in psychological and health literature. Most people would feel that the term has meaning for them. However, defining the term in concrete, measurable terms is in the process of development.

The concept of social support has its roots in the writings and definitions of Cobb (1976) and Kahn (1976). Cobb defined social support as "communicated caring." He considered it purely informational in nature and having three components: (1) emotional support leading to feelings of being cared for and loved; (2) esteem support leading to feelings of being esteemed and valued; (3) network support leading the recipient to beliefs of being in a definite position in a network of communication and mutual obligation.

Kahn's (1976) definition is somewhat more interactional. He proposes that:

Social support be defined as 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 giving of symbolic or material aid to another. The key elements in supportive transactions are thus

affect, affirmation, and aid (p.85).

Broadhead et al. (1983) agree with Kahn's definition and add the additional variable of "reciprocity or reciprocal affective support." Broadhead et al. also refer to the "dynamics of social support" which should not be thought of as static but as fluctuating in response to the environment and having its own dynamic component. Also considered important are the internal determinants of the individual (temperament, patterns of perception) and external (role definitions).

The dimensions of emotional support and esteem are further defined by Oakley (1985). She feels that a "reasonable working definition would equate social support with information leading the subject that (she) is cared for and loved, esteemed a member of a network of mutual obligations." Oakley refers to three dimensions: "tangible, emotional and informational" (p. 1260).

The refinement of the definition of social support was advanced as nurse researchers and nurse investigators developed and used instruments to measure the concept of social support. Stewart (1989) mentions the progress being made to define the concept and to describe the measurable aspects of social support. Stewart summarizes the dimensions as: "network structure (basic ties of a social network), support functions( of supportive functions which flow through these network ties) and the nature of

relationships (focal individuals's contacts with network members)." Her summary tells that social support instruments measure "three aspects of social support relationships: existence of quantity (structure), content or type (function), and quality or adequacy (nature)" (p. 268).

Norbeck, Lindsey & Carrieri (1981, 1983) have combined most of the fundamental dimensions mentioned in a definition of social support for their research. They rely on Kahn's (1979) definition of social support as "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 giving of symbolic or material aid to another" (p. 85). Norbeck et al. (1983) measure these concepts by the size, stability, and availability of the network by the "number listed in the network; duration of the relationships and frequency of contacts" (p. 265).

The present study was based upon the definition of social support from Kahn (1976) and Norbeck et al. (1981, 1983) as has been discussed: interpersonal transactions which show affirmation, affect and aid as demonstrated by the personal network and measured by its size, stability and availability. Examination of this definition shows that it has two components: one is structural and concerns the

size, stability, and availability of the personal network; the other is functional and concerns the effect of the network which are affirmation, affect, and aid. These functional aspects, when they are measured, necessarily contain a perceptual component, i.e., affect, affirmation and aid as perceived by the recipient. The functional aspects of social support were selected as the concepts for this study.

Adequacy of Prenatal Care. Prenatal care should be considered "adequate" if it accomplishes its purpose which could be considered as the best possible outcome for both the mother, the infant, and the family. Achieving that purpose involves the frequency and timing of prenatal visits and the content of those visits. The content of prenatal visits certainly influences the adequacy of care and that fact is acknowledged. Content of prenatal care can consist of physical exam, ordering of appropriate biochemical, genetic, and biophysical testing, discussion of nutrition and other health concerns, health promotion, psychosocial counseling and patient education. Care must begin early in the pregnancy for the purpose of risk screening for social and medical problems so that a plan of care can be developed. It must be continued on a regular basis as the pregnancy continues for biophysical monitoring and psychosocial counseling. Problems that arise during the pregnancy can be discussed. Educational preparation for the

birthing and mothering process is introduced at appropriate intervals (American College of Obstetricians and Gynecologists [ACOG], 1989). For this study the measurable parameters of frequency and timing were used. The evaluation of the adequacy of prenatal care was first introduced by Kessner, Singer, Kalk, & Schlessinger (1973). The Kessner Index uses two easily measured parameters: the timing of the first prenatal visit in terms of gestational weeks; and the frequency of the visits made. Timing is measured by the gestational week in which care was initiated with the 13th week or less (the first trimester) being considered adequate and the 14th week or greater being considered inadequate. The number of visits are counted. Adequate care ranges from care initiated at 13 weeks or less with one visit to 36 weeks or more with 9 visits with interpolations appropriate for the intervening weeks. Inadequate care ranges from care initiated at 14 weeks or greater with 1 visit to care initiated at 34 weeks or more with 4 visits. Intermediate Care is combination of these two factors not meeting the standards for Adequate and Inadequate Care. Nine or more visits for a pregnancy of 36 weeks or more is considered adequate using this index. Kotelchuck (1994a) proposes that the Kessner Index stops at the number 9 because, at the time it was developed, the computer analysis of this Index only allowed for one digit for that field.

The American College of Obstetricians and Gynecologists

(1989) recommends a higher number of prenatal visits: 5 visits by 28 weeks; 10 visits by 37 weeks; 11 visits by 38 weeks; 14 visits by 40 weeks. These parameters are based upon care being started in the first trimester. This timing and frequency of visits was established to meet the medical and social needs of the pregnant client.

A new method for measuring the adequacy of utilization has been recently introduced by Kotelchuk (1994a). Wise (1994) editorializes that the Kotelchuk Index is an improvement over the Kessner Index because it makes distinctions between the time of the initiation of care and the frequency of visits. The Kotelchuck Index (entitled Adequacy of Prenatal Care Utilization or APNCU) uses the ACOG Standards as its basis for the number of visits deemed adequate and then adjusts that number for the date of initiation of care. Thus the APNCU has two components: the timing of the initiation of care and the rate of utilization of care. The timing of the month of initiation of care is expressed in increments (1-2 month, 3-4 months, 5-6 months and 7-9 months). The number of expected visits is based on ACOG Standards adjusted for timing of the initial visit and gestational age at delivery. This is described in Kotelchuk's Adequacy of Prenatal Care Summary Index (See Appendix A). The percentages are computed by dividing the actual number of visits by the number of recommended visits. Inadequate Care is the number of actual received visits

being less than 50% of needed visits; Intermediate Care is 50%-79%; Adequate Care is 80%-109%; Adequate Plus Care is greater than 109%. Kotelchuk's Outline of the Adequacy of Prenatal Utilization Index describes these parameters (See Appendix B). He proposes that this Index identifies a greater percentage of under-utilization (16.7%) than for Kessner (7.2%)(Kotelchuk, 1994a).

Wise and Kotelchuk both admit that the newer APNCU Index does not measure the content of the prenatal care which is given. Health care is more than just the simple meeting of provider and client. The content of the visit should be an issue in measuring adequacy but there is no easily used, standardized index at this time. However, in measuring frequency and timing of visits, we are, indirectly, measuring content to some degree since the subjects are present and receiving prenatal care. For the purposes of this research study, the frequency and timing of prenatal care as measured by the APNCU Index (Kotelchuk, 1994) has been used to determine the levels of the adequacy of that care.

#### Theoretical Framework

The Roy Adaptation Model (Riehl & Roy, 1980, Roy, 1984) was selected as the basis for this research project for its dynamic and fluid view of the interactions of human being, nurse, environment, and health. Roy perceives human beings as being in constant interaction with their environment.

This model describes the recipient of nursing care as an holistic, adaptive system. "Holistic" describes the human system functioning as a whole and not merely the sum of its parts. "Adaptive" describes the human system as having the capacity to adjust effectively to its environment and the changes which occur. It also acknowledges that the human system can affect changes in its environment.

Especially important to this study is Roy's conceptualization of environment. She defines it as "internal and external stimuli, or all conditions, circumstances and influences surrounding and/or affecting the development and behavior of persons or groups" (p. 28). According to Roy, social support is an integral part of these conditions, circumstances and influences which surround the individual and affect behavior.

Another term which Roy uses needs definition. "Health" is defined by Roy as an optimum state of being, becoming, in the process, an integrated and whole person. The utilization of prenatal care which this study addressed could be considered part of that process toward health.

There are basic assumptions underlying Roy's Model which increase understanding (Riehl & Roy, 1980):

1. The person is a bio-psycho-social being.
2. The person is in constant interaction with a changing environment.
3. To cope with a changing world, the person uses both

innate and acquired mechanisms, which are biologic, psychologic, and social in origin.

4. Health and illness are one inevitable dimension of the person's life.
5. To respond positively to environmental changes, the person must adapt.
6. The person's adaptation is function of the stimulus he is exposed to and his adaptation level.
7. The person's adaptation level is such that it comprises a zone indicating the range of stimulation that will lead to a positive response.
8. The person is conceptualized as having four modes of adaptation: physiologic needs, self-concept, role function, interdependence modes.

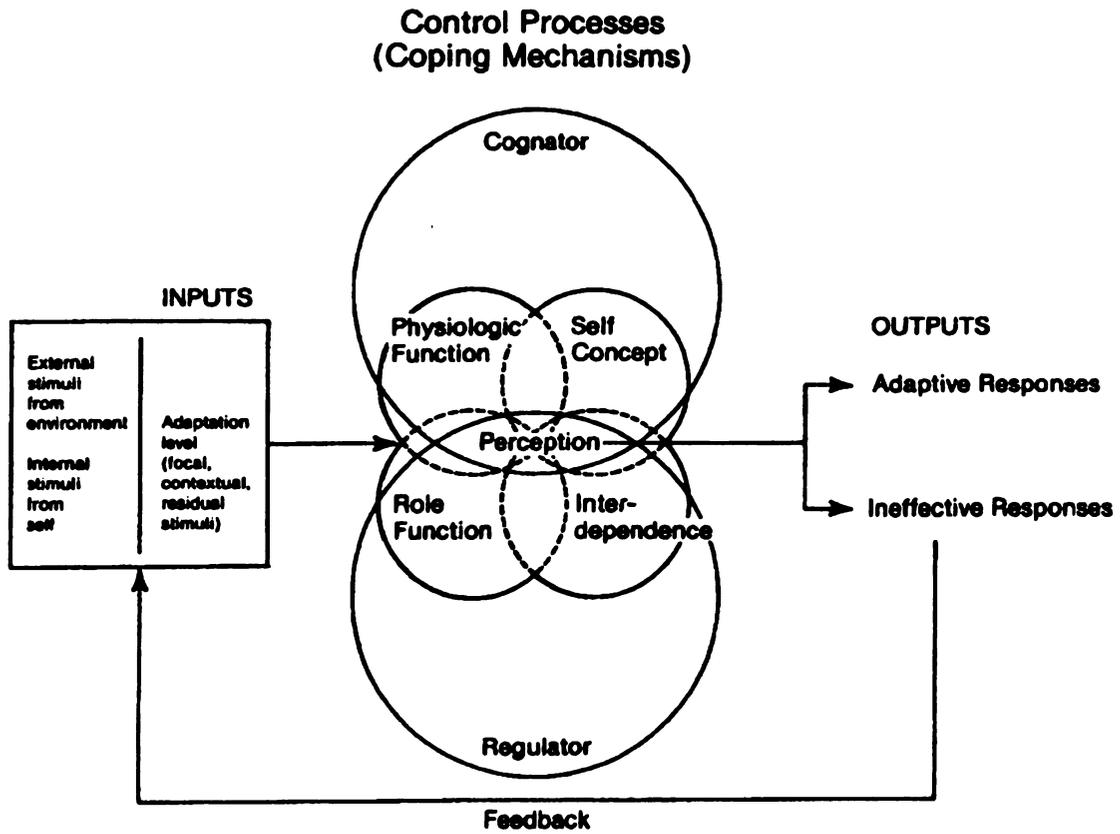
Roy perceives the adaptive system operating in terms of two functions: the regulator system and the cognator system. For the purposes of this study, the adaptive processes of the cognator system were considered. These are the processes of perception, learning, judgment, and emotion through which information is processed and responses to that information is produced. The process of perception involves the person's internal mental operations of selective attention, coding, and memory (Roy, 1984). Roy acknowledges that each person's perception of inputs to the cognator system is unique to the individual.

Adaptation in Roy's Model is accomplished through four

modes: Physiological Mode; Self-Concept Mode; Role Function Mode; and the Interdependence Mode. The Modes are interactive and what affects one affects all of them. (Roy does not define the meaning of "mode". This author interpreted this concept as the functional existence of an integral part of a person's personality.) The present research study focused on the Interdependence Mode which conceptualizes and defines the human interactions which are concerned with the giving and receiving of love, respect, and value (therefore, social support or some aspects of it). The basis requirement of this mode is "affectional adequacy" or the feeling of security in nurturing relationships.

Roy proposes that two specific types of relationships are the focus of the Interdependence Mode: "significant other (the individual to whom the most meaning or importance is given) and support systems (all persons, groups, or animals that contribute to the meeting of interdependence needs of the person)" (p. 307). This research study measured the level of social support supplied by significant others as identified by the pregnant woman. It used the concepts of affect, affirmation, and aid as defined by Norbeck. In other words, we are adding the dimension of measurability from Norbeck to Roy's concept of social support in the Interdependence Mode.

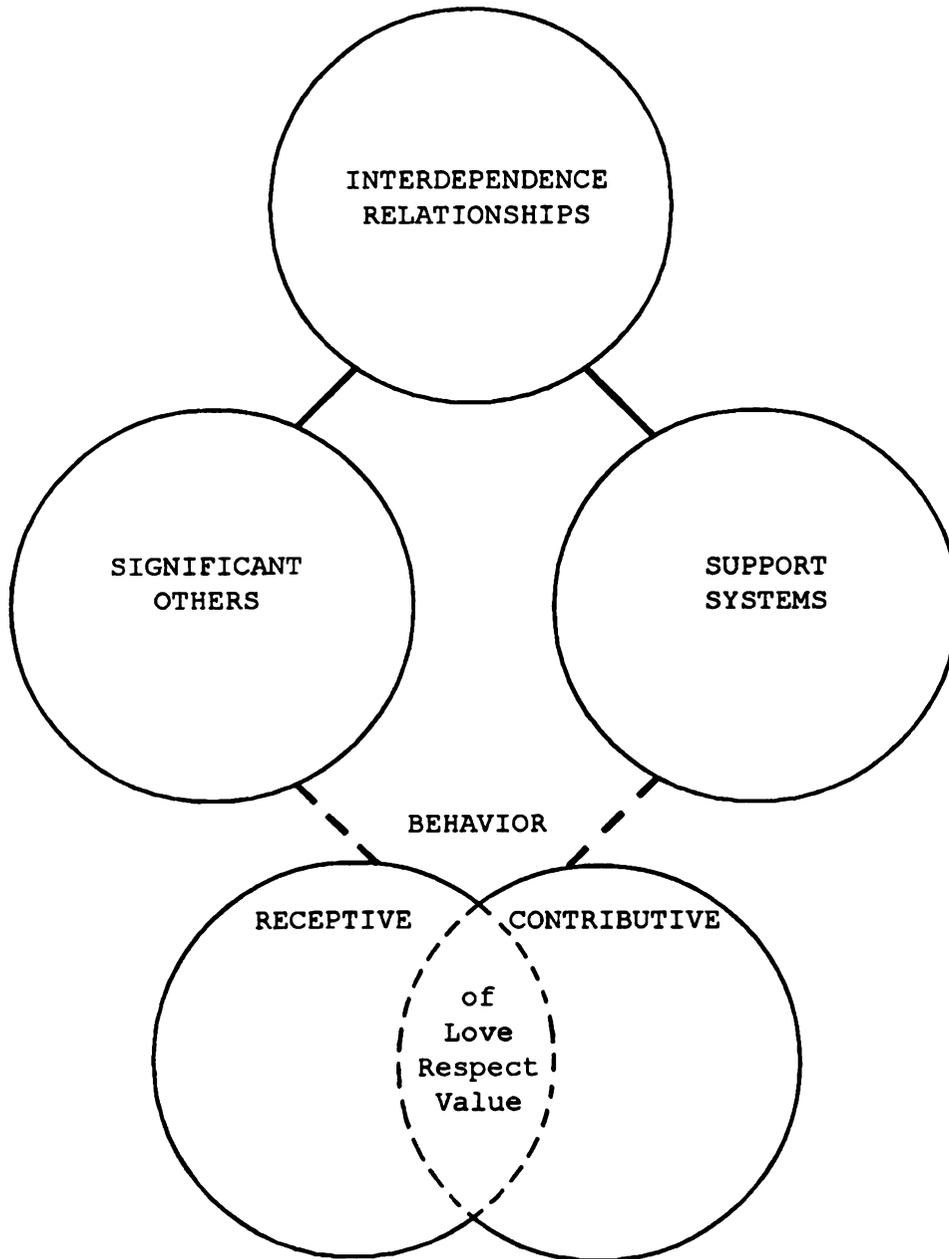
Tiedeman (1989) developed the model in Figure 1 to demonstrate the dynamics of Roy's adaptive process. It is a



**Figure 1.** Relationships among the basic concepts of the Roy Adaptation Model of Nursing (Tiedeman, 1989).

schematic diagram of the "relationships among the basic concepts of the Adaptation Model of Nursing."

The coping mechanisms of the pregnant client are represented by the intersecting circles. The four Modes and Regulator and Cognator Systems all interact to produce either an adaptive response (adequate utilization of prenatal care) or an ineffective response (inadequate utilization of prenatal care). The Inputs are all the various influences which the person's internal and external environment exert on this process. One of the Inputs are the external stimuli from the environment. Social support, by definition from Roy, is part of these external stimuli. The external stimuli are modified by the internal stimuli from self leading to the process of perception. Perception of social support affects the four adaptive modes leading to the adaptive responses or ineffective responses. Social support has two important functions in the Roy Model. It is, first of all, one of the external stimuli which the client perceives and processes. Those perceptions also become an integral part of the Interdependence Mode which is functioning in the adaptive process. Figure 2 from Roy and Andrews is a representation of the Interdependence Mode and the place of social support in that Mode. The perception of Total Functional Support, Affect, Affirmation, and Aid are represented by the circle titled "Support System.

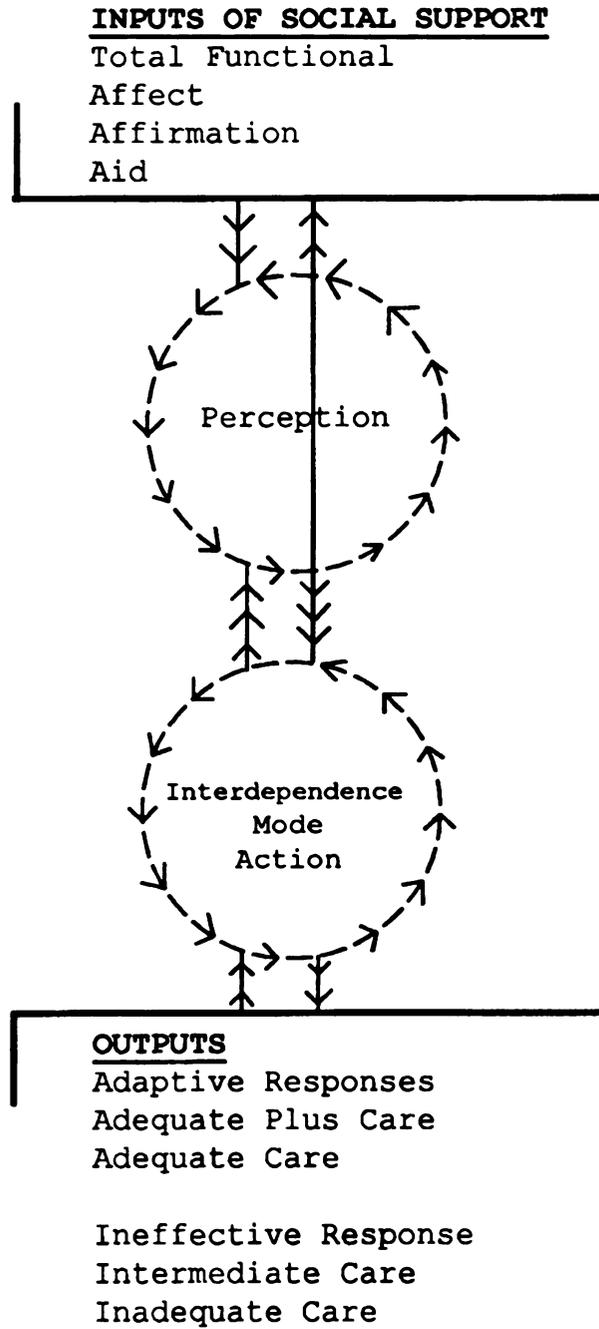


**Figure 2.** Expanded view of the Interdependence Mode (Andrews & Roy, 1986).

The next schematic model is this author's representation of a portion of the Roy Theory of Nursing (Figure 3) which leads us through the process of showing where social support affects the adaptive process. The actions of the pregnant client's social support system are interpreted by her perception of those actions leading to her system of social support her own Interdependence Mode. This process can affect her behavior. Adaptive responses could be considered adequate utilization of prenatal care and ineffective responses could be considered inadequate utilization of prenatal care. Roy's Adaptation Model of Nursing suggests that there can be an incidence of occurrence between the perception of social support by the individual (as measured by affect, affirmation, and aid) and the adaptive responses of that individual as expressed by the utilization of prenatal care.

#### Review of the Literature

This Review of the Literature examined the publications of the disciplines of sociology, nursing, and medicine in order to form a historical background of the development of the concept of social support as a psychological phenomenon and the relationship of social support and health-seeking behaviors. It also reviewed what other research studies have investigated and their conclusions regarding the relationship of social support and health care utilization



**Figure 3.** Placement of the study variables in the Roy Model of Nursing.

### Social Support and Health

The concept of social support and health having a positive relationship has been present in the psychosocial literature since 1972. Cobb (1972) offers a meta-analysis on the relationship between social support and health concludes that there is a possible theoretical explanation for the promotion of health by social support. He states that social support is a "really fundamental variable" and concludes that "the world would be a healthier place if training in supportive behavior were built into the routines of our homes and schools, and support worker roles were institutionalized" (p. 103). Nuckolls, Cassel, and Kaplan's (1972) study of the relationship between life style changes and lack of social support and pregnancy complications concluded that there is a significant relationship (using descriptive statistics). Kahn (1979) builds his concept of social support on governmental studies which showed a relationship between serum cortisol levels and role ambiguity which was relieved by supportive relationships in the workplace. He sees a direct structural relationship between the quantitative and qualitative adequacy of social support and the individual's well-being. Another contemporary point of view was advanced by McKinley (1973) in his research study of utilizers and underutilizers of health care. He found that underutilizers of health care had much stronger social support networks and presumed that

their strong family ties provided them with healthier behaviors which made health care less necessary.

McKinley's study was done on a working population and analyzed the relationship between structural social support and health-seeking behaviors. Further studies (Aaronson, 1989; Broadhead et al., 1983) refute this study and find a positive relationship between social support and health-seeking behaviors.

The relationship between mortality and social networks as studied by Berkman et al. (1979), using meta-analysis, revealed that people who use preventive health services have slightly lower mortality rates than those who make little or moderate use of such services. People with few social contacts are less likely to use such preventive services. Broadhead et al. (1983) agree that poor social support predicts mortality. Broadhead et al., however, qualify their opinion by stating that there may be other independent factors such as socioeconomic status which have chronic effects on access to supportive resources and health care.

These early research studies emphasize the confusion surrounding the definition of the concept of social support. Varying parameters were used in each of these studies on varying populations. It is difficult to generalize from these early studies due to this fact. As the research on the subject continued, social support became a more identifiable concept and its relationship to health began to

be studied in more concrete terms. The development of the Kessner Index was the groundwork for quantifying utilization of prenatal care and led to the more refined index - the APCNU. The refinement of questionnaires measuring social support, such as the Norbeck Questionnaire, made further research possible by nurse researchers.

#### Social Support and Prenatal Care Utilization

As the published research builds in strength and variety, researchers turned to the question of the relationship of social support and the utilization of prenatal care services. Oakley's (1983) review of current studies and literature concludes that there is considerable evidence to suggest that intervention programs aimed at improving the 'social' side of antenatal care warrant further research.

Other studies agreed and found varying degrees of relationship between social support (or social networks) and prenatal care utilization and/or pregnancy outcomes. Aaronson (1989) (n = 529, regression analysis) related improved health behaviors in pregnancy to social support. McDonald & Coburn (1988) concluded that economic factors alone do not influence utilization and that there are many other social barriers. St. Clair et al. (1989) (n = 184, regression analysis) found improved utilization of prenatal care dependent upon functional and structural social support. St. John & Winston (1989) (n = 733, regression

analysis) developed their own questionnaire and found a positive relationship between social support and prenatal care utilization for women having the most obstacles in obtaining care. Boyce et al. (1985, n = 89, Pearson R analysis) found a relationship between social support (functional and structural) and improved pregnancy outcomes. However, one study (Spencer, 1989, n = 733) found no significant differences whatsoever in a randomized, controlled trial using lay workers to provide social support to pregnant women and birth outcomes. It should be noted that they used their own instrument to measure social support which was untested for reliability and validity.

Bruhn & Philips (1984) stress the important of defining social support as a phenomenon and testing the adequacy of that definition. Their meta-analysis compiles the questionnaires measuring social support of fourteen researchers from 1978 to 1982. They theorize the differences in the questionnaires are partially responsible for the varying results of various studies (including Nuckolls and Norbeck).

Norwood (1991) used the Norbeck Questionnaire and the Family Apgar in her doctoral research project and found "that informal support, however, was found to be a significant predictor of prenatal care" as described in the Abstract to her thesis. Norwood's study used the term "informal social support" which has the same working

definition as the term "social support" which was used in this research paper. However, in her conclusions, she found only weak relationships between informal social support and formal social support and prenatal care utilization.

#### Adequacy of Prenatal Care

The most common method of assessing the adequacy of prenatal care is the counting of prenatal visits in relationship to the timing of the visits. The American College of Obstetricians and Gynecologists recommends (for an uncomplicated pregnancy) a visit every 4 weeks for the first 28 weeks of gestation, every 2 to 3 weeks until 36 weeks, and weekly thereafter (ACOG, 1989). The Kessner Index added the dimension of the timing of visits to the frequency of visits resulting in a categorization of care as "Adequate", "Inadequate", and "Intermediate" (National Academy of Sciences, 1973). Since 1973, this Index has been used in many research studies searching for a relationship between prenatal and pregnancy outcomes using the Kessner Index as the method of quantifying adequacy of care (Gortmaker, 1979; Katz, Armstrong & LoGerfo, 1994; Murray and Bernfield, 1988; Quick, Greenlick, & Roghmann, 1981; Showstack, Budetti, & Minkler, 1984). These studies examined the relationship of adequacy of care to birth outcomes.

Gortmaker's study (1979) was an analysis of a New York City population of births in 1968 divided by race into black

and white subjects serviced by private practitioners or public service practitioners. It used the ACOG standards for measuring utilization. Conclusions reached were that 17% of white mothers had inadequate utilization of prenatal care and 46.9% of black mothers had inadequate utilization.

Katz et al. (1994) compared women living in Washington State with women from Canadian British Columbia from 1987 through 1989. Overall, the risk for inadequate prenatal care was much higher for women in Washington State than Canadian British Columbia (probably due to delayed enrollment for Washington women). It should be noted that Canada has a National Health Service available to all women and that the State of Washington uses a Medicaid system which is difficult to access.

Murray and Bernfield (1988) compared black women and white women in a prepaid health care plan in 1978. Increasing levels of prenatal care (as measured by the Kessner Index) were associated with favorable outcomes, but more so for black women than for white women. Black women had rates of 58% for "adequate" utilization and white women had rates of 61% for "adequate" utilization. This was a large retrospective study with a sample size of more than 31,000 Kaiser Permanente HMO members.

Quick et al. (1981) found a positive relationship between pregnancy outcomes and prenatal care in a cohort of HMO members and general white females in Portland, Oregon in

1973-1974. (The main purpose of this study was to compare HMO and general population members). This was also a large retrospective study and a sample size of more than 23,000. The Institute of Medicine standards for prenatal care utilization were used (they are the precursor of the Kessner Index and similar to it).

Showstack et al. (1984) studied the records of mothers and babies in Alameda and Contra Costa counties, California. They found that adequate prenatal care was associated with an average increase in birthweight of 197 gms. Their sample size was 18,243 with 72% of mothers utilizing "adequate" prenatal care as measured by the Kessner Index.

Social support and its relationship to adequacy of prenatal care utilization has been the subject of fewer research studies. St. Clair et al. (1988) and St. John & Winston (1989) used ACOG standards in their research. McDonald & Coburn (1988), St. John & Winston (1989), Gortmaker (1979), Katz et al. (1994), Murray & Bernfield (1988), Showstack et al. (1984), and Quick et al. (1981) used the Kessner Index.

Kotelchuk's Index (APNCU) relates the timing of care in three 2 month sections and one 3-month section with the number of visits made in each section. Kotelchuk (1994b) contends that the Kessner index is not sensitive enough and contributes to low utilization rates. According to Kotelchuk, too much emphasis is given to the timing of the

initial visit which equates Inadequate Care with initialization in the third trimester. He also states that Kessner doesn't differentiate "inadequacy of care due to late initiation from inadequacy of care due to insufficient number of visits." Kotelchuk also reasons that the Kessner Index stopped at nine visits due to computer digit limitations in public health records.

Kotelchuk (1994b) applied his Index to data from 1980 National Natality Survey. His index suggests that "only 61.1% of women received adequate prenatal care, including 17.7% with more intensive care; 16.7% received inadequate care" (p. 1486).

#### Critique of the Literature

The concept of social support has its foundations in the psychosocial literature of the 1970's. Gradually, in the 1980's, its importance as factor in the improvement of health through health care interventions began to be explored. The recognition of the psychosocial side of pregnancy and its effect on pregnancy outcomes gave impetus to more research. As prenatal care utilization became recognized as a predictor of pregnancy outcomes, the importance of relating social support to prenatal care utilization was addressed in the literature.

As analysis of the literature review supports, research studies did not have the use of clearly definable instruments in research regarding the relationship of social

support and adequate prenatal care. Most research studies related social support and pregnancy outcomes but very few have studied the relationship of social support to the rate of prenatal care utilization.

Boyce et al. (1985) in a small study (n = 89) devised their own instrument to measure social support consisting of size and duration of network, perceived degree of support, and life events. They based their questionnaire on the works of Berkman & Syme (1979) and others. St. John & Winston's (1986) study was larger (n = 733) and also used their own instrument which is poorly defined in their publication. St. Clair et al. (1988) also used a self-defined questionnaire. Aaronson (1989) did use a tested questionnaire called the Personal Resources Questionnaire in a secondary analysis of a previous study (n = 529).

All of the above mentioned studies share several common characteristics. They are retrospective, non-experimental, and based upon convenience samples. All used regression analysis. Only one study was truly an experimental study: Spencer, Thomas & Morris' (1989) randomized trial which was done in Manchester, England. They used a large sample (experimental n = 655 and control n = 633) and used the intervention of a family case worker to deliver social support. Conclusions are difficult to obtain from this study, however, since there is no mention of how the case worker delivered "social support".

Instrument development, such as the NSSQ, are providing specific parameters by which social support and its various components can be measured. The need for such easily used instruments which provide the function of comparability is supported by this review of literature. Further refinements in measuring utilization rates have moved us from ACOG Standards, to the Kessner Index, to the Kotelchuk Index. The research studies reviewed used the Kessner Index almost exclusively. This reflects that this index was the only one available and that it had the endorsement of the Institute of Medicine (1973). Researchers in these studies did not question the reliability or validity of the Kessner Index but simply accepted it as the standard of the times.

The increasing sensitivity of the NSSQ instrument and the Kotelchuk Index formed the basis for this research study. This research study assessed the relationship of functional social support to prenatal care utilization in easily understood terms and seeks to reach a conclusion regarding that relationship.

#### Methods

The description of the research design, selection of subjects and sampling techniques, operational definitions of the variables, instrumentations used and their properties, plan for data processing and analysis, procedures for protection of human subjects and approval of UCRIHS, and

assumptions and limitations of this research study are discussed.

### Research Design

This research study was based upon a secondary analysis of data obtained by prospective survey and chart review by Schiffman & Omar (1992) in their research project "Factors Influencing Pregnancy Outcomes" which was non-experimental in nature. The original study was conducted at a not-for-profit Center providing comprehensive services to low-income women using a multi-disciplinary approach including advanced nurse providers. One of its purposes was to investigate if there was an association between the utilization of prenatal care and family functioning, including social support (See Appendix C).

### Subject Selection and Sampling Techniques

Refer to Appendix B for a description of the original study by Schiffman and Omar and the subject selection and sampling techniques that were used. The subjects selected for this study met the following criteria: 1) The subjects obtained their prenatal care at the Center for Healthy Beginnings as described in the original study; 2) The subjects completed the Norbeck Social Support Questionnaire.

The data from the original study (Schiffman & Omar, 1992) were chosen for a number of reasons: 1) In 1990, 38.4% of pregnant women living in Jackson County received inadequate or intermediate prenatal care; 2) The non-profit

Center was thought to be having a positive impact on utilization rates since the number of women delivering at the local hospital without prenatal care dropped from one per day in a three month period in 1990 to one per month in a comparable period in 1991; and 3) Sample size was sufficient for analysis.

#### Operational Definition of the Variables

The variable of functional social support was measured by six questions from the Social Support Questionnaire by Norbeck (NSSQ) (Norbeck et al., 1981) regarding the subject's perception of her social support network and its dimensions of affect, affirmation, and aid. Questions 1 and 2 reflect the component of Affect. Questions 3 and 4 reflect the component of Affirmation. Questions 5 and 6 reflect the component of Aid (See Appendix D). Answers to these questions produced numerical values on a Likert Scale of:

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

Scores from the questions were added together for each dimension (Affect, Affirmation, and Aid). The score for Total Functional Support was the total of the scores for the three dimensions.

The Adequacy of Prenatal Care Utilization Summary Index (APNCU) (Kotelchuk, 1994a) was used to measure the utilization of prenatal care as "Adequate Plus", "Adequate", "Intermediate" and "Inadequate" (See Appendix B). To be considered Adequate or Adequate Plus, care must be initiated by month 4. The Summary Index (Kotelchuk, 1994c) combines the initiation index with the received services index. The Summary Index also adjusts "expected" visits by the month of initiation for the first three months: 15 visits with the initiation in the first month; 14 visits with the initiation in the second month; 13 visits with initiation in the third month; no adjustment for the fourth or later month of initiation. "Adequate Plus" defines care initiated by 4 months or less or less with greater than or equal to 110% of expected ACOG-recommended visits. The Summary Index defines "Adequate" as care initiated by 4 months with 80-109% of expected visits. "Intermediate" defines care initiated by 4 months with 50-79% of expected visits. "Inadequate" defines care initiated by 13 weeks with six or fewer visits or care initiated after 13 weeks with 0-49% of expected visits. Adjustments for pre-term deliveries are made under this system because the categories are defined by a percentage of actual over expected visits. This research study used all four categories.

#### Instruments

Norbeck Social Support Questionnaire. This

questionnaire was developed to measure the psychological functions and network dimensions of social support. The respondent identifies the significant persons in her life (up to 24 in number) and identifies the categories of relationship: spouse or partner, family or relatives, friends, work or school associates, neighbors, health care providers, counselor or therapist, minister/priest/rabbi, and others. The measurement of these network dimensions are expressed in three concepts: Total Function, Total Network, and Total Loss. The Total Functional Component measures the quality of the relationships in terms of their Affect (questions 2 + 3), Affirmation (questions 4 + 5), and Aid (questions 6 + 7). Total Network measures the network number, duration of relationships and frequency of contact. Total Loss measures recent losses, loss quality and loss quantity. The Total Function component as measured by affect, affirmation and aid was the focus of this study (See Appendix D for Norbeck Social Support Questions).

The NSSQ was first published in 1981. The first phase of testing used graduate and undergraduate nursing students (certainly a convenience sample). Internal consistency (a form of reliability testing which compares the scores for the various questions) (Polit & Hungler, 1991) was reported to have moderately to high inter-item correlations (Pearson  $r$  Coefficients of .72 to .95) resulting in the collapsing of related items into several subscales to make scoring easier.

Reliability (after a one-week period) was high ( $r = .85$  to  $.92$ ).

Construct validity proved to be moderately problematic. Correlation with the Profile of Mood States questionnaire was weak and the Norbeck questionnaire was judged to be not suitable to a non-clinical population. Intercorrelations between the NSSQ Subscales and the Cohen and Lazarus Social Support Subscales was also moderate to weak. Further refinement of the instrument was necessary to address the inherent weakness: the use of a biased sample; and the weak to moderate correlations in construct validity.

The need for further construct validity was undertaken by comparing results of the NSSQ with other scales developed to measure social relationships. The FIRO-B Subscale which measures the constructs of inclusion and affection correlated weakly, but significantly, with the NSSQ (Pearson  $r$  for the total functional variables of  $.24$ ,  $p = .01$ ,  $n = 131$ , which Norbeck considered a "small to moderate" significance). Intercorrelations the NSSQ subscales and the Personal Resource Questionnaire (which measures scope and dimensions of the person's support network) resulted in medium levels of correlation ( $r = .35$  to  $.41$  with  $p = <.01$ ,  $n = 55$ ). Combining the NSSQ with the Negative Life Events Questionnaire and comparing those with the Profile of Moods Questionnaire resulted in a moderate correlation ( $R = .35$ ,  $n = 53$ ) for life stresses with 19% of the variance accountable

to functional support. Correlation tests with the FIRO-B Subscale, Personal Resource Questionnaire and Negative Life Events Questionnaire were done over a period of seven months with the same sample population and producing similar results. This confirmed the questionnaire's criterion-based validity.

The Adequacy of Prenatal Care Utilization Summary Index. This index (hereafter referred to as the APNCU) was first introduced in 1994. It interpolates the timing of first prenatal visit with the recommended number of visits as recommended by the American College of Obstetricians and Gynecologists. Number of actual visits are measured against the number of expected visits (according to ACOG standards) and then rated upon an arbitrary scale as "Adequate Plus," "Adequate," "Intermediate," and "Inadequate." (Appendix A and B). This index is relatively new - having been first published in 1994. Wise (1994) considers the Kotelchuk Index superior to the Kessner Index since it distinguishes when care is initiated along with frequency of visits. It is also more specific in measuring prenatal care for pre-term births. There are no published reliability or validity data.

#### Data Analysis and Data Processing

The sociodemographic characteristics of the sample population were described by age, race, marital status, educational level, insurance, and parity using the data from

the original study. Each characteristic was analyzed using descriptive statistics. The frequency of the categories of utilization of prenatal care were calculated and described as: Inadequate, Adequate, Intermediate, and Adequate Plus.

Four research questions have been analyzed:

1. Are there differences by level of prenatal care utilization in the total functional social support low-income women perceive they have?

2. Are there differences by level of prenatal care utilization in the affect component of social support low-income women perceive they have?

3. Are there differences by level of prenatal care utilization in the affirmation component of social support low-income women perceive they have?

4. Are there differences by level of prenatal care utilization in the aid component of social support low-income women perceive they have?

One-Way ANOVA's were used to test for the differences between the independent variable (category of Prenatal Care Utilization) and the dependent variables (Total Support, Affect, Affirmation, and Aid). One-Way ANOVA was chosen because it tests "the effect of one or more treatments on different groups by comparing the variability between the groups to the variability within groups" (Polit & Hungler, 1991, p. 640).

Data processing was done using the data sets from the

described sample and the SPSS Statistical Analysis Program (Norussis, 1993).

#### Protection of Human Subjects

Approval for the original research was obtained by its investigators from the Michigan State University Committee Invoking Human Subjects (See Appendix E). The protection for human subjects was maintained by the original investigators. This investigator was not aware of the identity of the human subjects, made no effort to obtain such information, and understood that such information would not be provided by the principal investigators.

Approval for the use of secondary data and precautions to protect the rights and confidentiality of the human subjects was obtained from Michigan State University Committee on Research Involving Human Subjects prior to data analysis (Appendix F).

#### Assumptions and Limitations

This researcher made the following assumptions:

1. The secondary data were obtained from a research study which was conducted as described in Appendix C.
2. The data presented to this researcher for use were valid as described in the original study.

Accuracy in coding the data for data analysis has been accepted.

The researcher recognized the following limitations of

this research study:

1. The sample used was a convenience sample and results obtained may not be valid for generalization to any other population.
2. The use of secondary data implies that there is no independence on the part of this researcher. This researcher accepted the appropriateness of the sample and instrument used in the original study.
3. Data collection from the NSSQ Questionnaire is dependent upon human responses subject to the circumstances under which the data was collected.

#### Study Results

The purpose of this study was to determine whether there were differences between the levels of Prenatal Care Utilization which poor women access and the levels of social support which they perceive they have.

The initial focus of this study was to identify and categorize the various characteristics of the sample which was used and initial data analysis was focused on that purpose. Attention was then directed toward assessing the levels of prenatal care which were utilized. The levels of the categories of social support were also subjected to analysis. After these preliminary measures were completed, data analysis was directed to answering the four research questions.

### Description of the Sample

The sample for this study consisted of 131 women ranging in age from 17 to 37 years of age who received their health care at the Center. Of these 131 women, 36 did not answer the questionnaire regarding their levels of social support and 4 did not answer the questionnaire completely. Ten women did not complete their prenatal care at the clinic. These various reasons for incomplete or missing data left a sample of 81 women who fulfilled the criteria for the study.

The 81 subjects in this study were primarily Caucasian and single with Medicaid or Medicaid-pending insurance. Most of them had completed at least some high school education. Table 1 summarizes the demographic characteristics of the sample. The majority were between 17 and 27 years of age with this pregnancy being the first, second or third pregnancy.

### Description of the Variables

The variables of the adequacy of prenatal care was measured at four levels: inadequate, intermediate, adequate, and adequate plus. These are described in Table 2. It should be noted that almost 82% of the women received the prenatal care which is recommended by Kotelchuk (adequate or adequate plus).

Table 1

Demographic Characteristics of the Sample

| Characteristic | Mean  | Range   | SD   |
|----------------|-------|---------|------|
| Age            | 22.79 | 15 - 37 | 5.04 |
| Gravida        | 2.19  | 1 - 5   | 1.25 |
| Parity         | .96   | 0 - 3   | 1.07 |

|                          | Frequency | Percent |
|--------------------------|-----------|---------|
| <b>Racial Heritage</b>   |           |         |
| Caucasian                | 60        | 74.0    |
| African/American         | 19        | 23.5    |
| Hispanic                 | 2         | .5      |
| <b>Marital Status</b>    |           |         |
| Single                   | 49        | 60.5    |
| Married/Cohabiting       | 20        | 24.7    |
| Separated/Divorced       | 12        | 14.8    |
| <b>Educational Level</b> |           |         |
| Less than high school    | 1         | 1.2     |
| Some high school         | 25        | 30.9    |
| High school diploma/GED  | 42        | 51.9    |
| Some college             | 10        | 12.3    |
| Associates degree        | 2         | 2.5     |
| <b>Insurance Status</b>  |           |         |
| Medicaid                 | 51        | 63.0    |
| Blue Cross               | 1         | 1.2     |
| Other insurance          | 1         | 1.2     |
| Cash                     | 6         | 7.4     |
| Medicaid pending         | 22        | 27.2    |

Table 2

Frequency and Percent of the Levels of Prenatal Care Utilization

|               | Frequency | Percent |
|---------------|-----------|---------|
| Inadequate    | 15        | 18.5    |
| Intermediate  | 3         | 3.7     |
| Adequate      | 27        | 33.3    |
| Adequate Plus | 36        | 44.4    |

The scores for the categories of functional social support (Affect, Affirmation, Aid, and Total Functional) are found in Table 3. The means for the first three categories were close together in value. The larger values for Total Functional are the results of the sum of the categories of Affect, Affirmation, and Aid. However, minimum and maximum scores were widely varied in all four categories resulting in large standard deviations.

Table 3

Mean, Range, and Standard Deviation of the Categories of Social Support

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|                  | Mean  | Range    | SD    |
|------------------|-------|----------|-------|
| Affect           | 60.90 | 10 - 180 | 35.39 |
| Affirmation      | 55.57 | 14 - 183 | 0.25  |
| Aid              | 51.69 | 12 - 14  | 28.12 |
| Total Functional | 68.16 | 37 - 478 | 90.63 |

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Statistical Analysis for the Differences in Prenatal Care Utilization by Social Support Components

Examination of the distribution calculations in Table 4 shows close mean scoring values for Inadequate, Adequate, and Adequate Plus Care (from a low of 46.89 to 64.78) indicating that, whatever the range of differences in each group, the groups in general averaged fairly similar scores. The group with higher scores (Intermediate Care) was only three in number so it is difficult to attach much statistical significance to this group.

**Table 4**  
**Mean, Range, and Standard Deviation of the Categories of**  
**Social Support Scores by APNCU Index**

|                          | Mean   | Range     | SD     |
|--------------------------|--------|-----------|--------|
| <b>Affect by</b>         |        |           |        |
| Inadequate care          | 58.20  | 10 - 178  | 43.13  |
| Intermediate care        | 71.67  | 54 - 89   | 17.50  |
| Adequate care            | 56.04  | 20 - 120  | 28.87  |
| Adequate plus care       | 64.78  | 20 - 180  | 38.44  |
| <b>Affirmation by</b>    |        |           |        |
| Inadequate care          | 57.67  | 14 - 183  | 43.76  |
| Intermediate care        | 66.00  | 44 - 93   | 24.88  |
| Adequate care            | 51.48  | 14 - 97   | 25.12  |
| Adequate plus care       | 56.89  | 19 - 243  | 28.20  |
| <b>Aid by</b>            |        |           |        |
| Inadequate care          | 51.13  | 13 - 116  | 27.27  |
| Intermediate care        | 69.33  | 56 - 83   | 13.50  |
| Adequate care            | 46.89  | 12 - 108  | 25.27  |
| Adequate plus care       | 54.06  | 17 - 144  | 31.24  |
| <b>Total Function by</b> |        |           |        |
| Inadequate care          | 167.00 | 37 - 478  | 112.67 |
| Intermediate care        | 207.00 | 167 - 265 | 51.42  |
| Adequate care            | 154.41 | 49 - 325  | 76.86  |
| Adequate plus care       | 175.72 | 59 - 456  | 93.94  |

The wide amount of variability in the ANOVA statistics in Table 5 is of interest. Even though the total scores are close in value, the questionnaire answers which produced those totals varied greatly. This suggests that the questionnaires were answered much differently by the subjects.

The four One-Way ANOVA statistics in Table 5 analyzed the four research questions. For each research question, the F Ratios of .43, .32, .74, and .47 support the null

hypothesis: there is no difference between the means of the population (Kohler, 1988). Examination of the mean square values demonstrated that most of the variability occurred within the groups and that there was much less variability between the groups which also supports the null hypothesis. This also correlates with our examination of the distribution scores in Table 4. Stating the results in terms of the research questions: There are no differences in the utilization of prenatal care by the levels of the components of social support as measured by the APNCU and NSSQ.

Table 5

One-Way ANOVAs of Social Support by Adequacy of Prenatal Care

| Source                           | DF | Mean Squares | F Ratio |
|----------------------------------|----|--------------|---------|
| <b>Affect by APNCU</b>           |    |              |         |
| Between Groups                   | 3  | 545.65       | .43     |
| Within Groups                    | 77 | 1280.21      |         |
| <b>Affirmation by APNCU</b>      |    |              |         |
| Between Groups                   | 3  | 302.08       | .32     |
| Within Groups                    | 77 | 938.70       |         |
| <b>Aid by APNCU</b>              |    |              |         |
| Between Groups                   | 3  | 587.44       | .74     |
| Within Groups                    | 77 | 799.16       |         |
| <b>Total Functional by APNCU</b> |    |              |         |
| Between Groups                   | 3  | 3903.73      | .47     |
| Within Groups                    | 77 | 8382.65      |         |

## Discussion

The findings of the research study were somewhat surprising to this researcher since the literature indicated strong relationships between social support and health care behavior except for Spencer's (1989) study and Norwood's (1994) study.

It should be recognized that the sample limitations could be an factor in the statistical results. Using subjects from one Center may have produced a sample group which was more homogenous than a truly random sample would have been and that may have affected the results. All subjects were from one geographic location having similar social, educational and insurance status characteristics (producing a sample whose subjects were more like each other than different (See Table 1). It must be remembered that 50 of the original sample of 131 women did not complete the questionnaire or left the program. This may have contributed to a self-selection process that left subjects who all had the same perception of their social support systems or were anxious to give the answers which they felt their health care providers were looking for.

The questionnaire itself may have introduced a quantity of bias. The process of self-reporting of social phenomenon may or may not be accurate. The subjects' perception of their social support may not reflect reality. It is possible that the subjects did not recognize some of the

social support which they receive. However, they did report some social support. The results from this study were compared with results which Norbeck et al. (1983, revised 1984) received using a sample of employed men and women (see Appendix G). Her study produced scores 20 to 40% higher than this study did, except for the scores for Affect which were approximately the same. It would be possible to generalize from this observation that economic circumstances are a factor in the perception of social support and the expression of that perception. Another possibility is that economic circumstances and employment encourage the access to social support. This study also raises the question that there is no relationship between social support and adequacy of prenatal care or that it is mediated by some other factor.

This study accepted the Kotelchuk Index as its measurement of the adequacy of prenatal care. It should be remembered that this Index is based upon the timing of visits and the number of visits. It does not address the content of the visits or the quality of care given during those visits. It is very possible that this Center did such a superior job in delivering effective care that the subjects' recognition of that care encouraged them to cooperate in making the required number of visits the Center expected.

The social support which was measured in this study was

taken from sources which the women themselves designated. Those sources are only one aspect of their support systems. There are other forms of social support which this sample did not perceive. Social institutions and communities also form part of their support systems and this Center is an excellent demonstration of that fact. In conclusion, this researcher believes that this study was influenced by the following circumstances: 1) the homogeneity of the sample; 2) the Norbeck Social Support Questionnaire itself which is weighted toward personal (and not community) sources of social support; 3) the presence of the Center and the quality of prenatal care given there which provided a form of social support which encouraged adequacy of care.

The Roy Model of Nursing which formed the theoretical background for this research study regards social support as an input which affects behavior. This input is only one of many other inputs which Roy uses in her model. All environmental factors (physical, psychological and social) are considered by Roy as contributing to the internal regulator and cognator processes of the individual operating in the four modes which lead to behavior. Social support must be recognized as only one factor which could be easily enhanced, diminished, or negated by other factors in the individual's environment. An example could be a pregnant woman who has barriers to prenatal care such as lack of insurance or transportation. Even if she comes from an

environment of strong social support she may not seek adequate prenatal care because it is too difficult to do so. The results of this study promote the conclusion that social support must be considered in the context of all other inputs which the individual receives affecting behavior. This study supports the Roy Model which is universal in accepting the many factors influencing adaptive and non-adaptive behaviors. This researcher would give more emphasis in describing the Roy Model to the inputs from the environment and their role in influencing adaptive behavior in conjunction with the inputs which the individual perceives.

This researcher would like to suggest that the Roy Model be considered in a broader view of the community and the culture surrounding the individual. Some aspects of community life are so pervasive and so blended with the environment that the individual does not have a conscious perception of the influences which they have. This research supports that theory. An individual's perception of social support is only one aspect of the actual social support which is received.

The results of this study also raise some questions about the measurement of social support by the NSSQ. This questionnaire has been accepted as an adequate measure of social support as perceived by the individual. This is supported by the distribution characteristics of the scores.

However, the wide variability in the manner in which the questions were answered raises another question: Is there a difference in the perception of social support and actual social support? Thus, this questionnaire should not be advanced as the only measure of social support. The presence of the Center and the quality of prenatal care given there also may have influenced the study results. Community institutions and the presence of community support must be given due recognition.

#### Implications for Nursing Practice

The results of this research study should not influence us to consider social support and its relationship to positive health care outcomes as unimportant. The limitations of the study will not allow that. Social support may be important for reasons other than enhancing adequacy of prenatal care. The results of this research study indicate that social support is a much broader concept than the instrument used to measure it. It would be far better to reach the conclusion that social support as this research study measured it is one factor among many factors influencing women to utilize prenatal care. Measuring social support by a questionnaire which is based upon the client's perception may not be the most accurate indicator of the actual support network.

The limitations of the Kotelchuk Index (and the Kessner Index) should be acknowledged by nursing science. It is

convenient to have a parameter which is easily counted, lends itself to statistical analysis, and can be relied upon for outcome-based investigations. However, the factors which affect those outcomes become much harder to quantify. This study points to the quality of the care given as a very important factor. Nurses specialize in giving advanced health care should recognize of the importance of the client's family and the environmental, psychosocial, and physical factors influencing health. They also need to recognize that the health-care environment and quality of care delivered as equally important.

One of the most important elements in producing good patient care is to obtain the patient's history and background information. This is the foundation on which nurses build their plan of care. The nurse should enhance the positive aspects of the client's social support system and introduce measures to counteract the negative effects. Assessing the client's levels of social support will help nurses plan the education and behavior modification methods they will use to maximize results for their clients. We have learned from the Roy Model of Nursing that the client is a product of the environment and the subsequent interactions and perceptions of that environment. That is an important philosophical basis for the nurse. It is especially important in delivery prenatal care because the health and future well-being of two persons are involved:

the mother and her infant.

Advanced Practice Nurses, by nature of their academic training and work experience, are a valuable asset in the design of programs which promote the health and well-being of the community. Such programs should have as a resource this type of research, i.e., research which investigates what motivates persons to seek health care and continue it. Such programs must be very pro-active and sensitive to community needs. A sound understanding of the individual's social structure and the community's social structure will be the basis for nurses' involvement in the innovation of preventive care programs which have favorable outcomes.

#### Implications for Research

The results of this study give further impetus to more research on the effects of social support on health care behavior. More questions were raised by this study than were answered.

This study suggests that the NSSQ does measure the perception of social support accurately. The homogeneity of the sample and the homogeneity of the test scores support that suggestion. However, the wide variation of the scores raises the question of whether the perception of social support varies greatly even in an homogenous sample. These wide variations suggest that social support as we define it does not mirror social support as it actually exists. It is possible that we should measure social support in much

broader, community-based concepts.

This study raises the question of whether the quality of care given at this clinic could have overcome the clients' rather low levels of social support. It also raises the question of whether health care is an integral part of social support. It suggests that descriptive studies should be done examining clinic provider behavior which produces compliance on the part of the client. Such descriptive studies often provide fruitful data which can be the basis for further research.

Another area for research should be the presence of the Center in the neighborhood. Attention should be paid to the motivation of the mothers to seek care at the clinic. Were they encouraged by accessibility, low-cost, advertising, reputation of the Center, or other factors?

Expansion of the Roy Model to include more community and cultural factors influencing health care behavior is another possibility raised by this research study. The U.S. health care system is becoming increasingly institutionalized, especially in disadvantaged communities. Does this institutionalization in and of itself form the background for the inputs which Roy suggests influence human behavior?

Not all community out-reach programs have had the success of the Center for Healthy Beginnings. In Michigan, the Health Department's Immunization Program is a notable

failure especially in the Detroit area which ranked last among 28 urban areas for their immunization rate (Wendland & Jonas, 1996). What factors make one program successful and another unsuccessful? Is it social support as we define it, or some new form of social support, a factor?

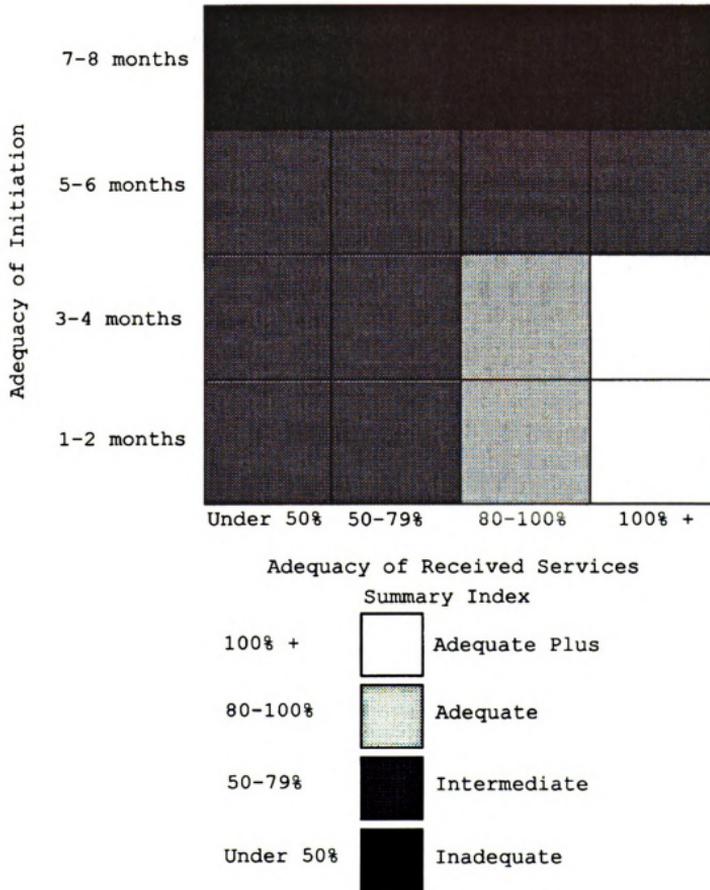
Further development for the measure of social support as a social construct is necessary. This research study supports the proposition that social support is more than the individual's perception and is a product of the actions of the community and the health care profession with individual perception. Should social support questionnaires such as the NSSQ be adjusted for those influences?

#### Summary

Social support as a factor influencing health care behavior is an appealing hypothesis. No one would deny that the individual's perception of the social network is a factor in human actions and reactions to the world. The difficulty in measuring social constructs makes research on this subject difficult. Increasing availability and institutionalization of health care delivery offer challenges to the researcher and provider both.

## **APPENDICES**

## Appendix A

The Adequacy of Prenatal Care Utilization Summary Index

From "An Evaluation of the Kotelchuk Adequacy of Prenatal Care Index," by M. Kotelchuk, Sept. 1994, American Journal of Public Health, 84, p. 1417.

## Appendix B

Outline of the Adequacy of Prenatal Care Utilization Index

Table 6 - Outline of the Adequacy of Prenatal Care Utilization Index.

## I. Month prenatal care began (Adequacy of Initial of Prenatal Care)

Adequate Plus: or 1<sup>st</sup> or 2<sup>nd</sup> monthAdequate: 3<sup>rd</sup> or 4<sup>th</sup> monthIntermediate: 5<sup>th</sup> or 6<sup>th</sup> monthInadequate: 7<sup>th</sup> month or later, or no prenatal care

## II. Proportion of the number of visits recommended by the American College of Obstetricians and Gynecologists received from the time prenatal care began until delivery (Adequacy of Received Services)

Adequate Plus:  $\geq 110\%$ 

Adequate: 80 - 100%

Intermediate: 50 - 79%

Inadequate:  $< 50\%$ 

## III. Summary Adequacy of Prenatal Care Utilization Index

Adequate Plus: Prenatal care begun by the 4<sup>th</sup> month and 100% or more of recommended visits receivedAdequate: Prenatal care begun by the 4<sup>th</sup> month and 80 - 109% if recommended visits receivedIntermediate: Prenatal care begun by the 4<sup>th</sup> month and 50 - 79% of recommended visits receivedInadequate: Prenatal care begun after the 4<sup>th</sup> month or less than 50% of recommended visits received.

From "An Evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index," by M. Kotelchuk, Sept. 1994, American Journal of Public Health, 84, p. 1418.

## Appendix C

Description of Schiffman and Omar Research Project

The purpose of this project is to use a sample of women who are receiving prenatal care at the Jackson Center for Healthy Beginnings and who are receiving prenatal care from other providers within the community to examine individual factors related to adequacy of prenatal care. Women will be followed to their six week visit to determine whether or not level of prenatal care utilization is associated with subsequent pattern of health care utilization. Specifically, the study will examine: a) maternal sociodemographic, physiologic, and psychosocial characteristics during pregnancy and postpartum; b) stated reasons for seeking or not seeking prenatal care; c) pattern of health care utilization and outcomes for mother and infant post delivery.

Subjects will be approached after the first visit with the Public Health Nurse at the Jackson County Health Department by the data collector. The project will be explained and informed consent obtained. At the next scheduled visit (Time 2), the data collector will: a) administer the instruments identified for Time 2 in a separate area identified by the Health Department Staff; b) answer subject's questions for clarification of instructions and meaning of words only; c) mark the record and data collection form for the post-partum visit for the WIC program.

From "Factors Influencing Pregnancy Outcomes at the Center for Healthy Beginnings," by Schiffman, R.F. & Omar, M.A., March, 1992. Unpublished manuscript, Michigan State University at East Lansing.

## Appendix D

Questions from the Norbeck Social Support Questionnaire

Question 2. How much does this person make you feel respected or admired?

Question 3. How much can you confide in this person?

Question 4. How much does this person agree with or support your actions or thoughts?

Question 5. If you need to borrow \$10, a ride to the doctor, or some other immediate help, how much could this person usually help?

Question 6. If you were confined to bed for several weeks, how much could this person help you?

Question 7. How long have you known this person?

## Appendix E

Approval from UCRIHS for Omar-Schiffman Project

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH  
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

March 2, 1993

TO: Rachel Schiffman, Ph.D.  
Mildred Omar, Ph.D.  
A230 Life SciencesRE: IRB #: 92-115  
TITLE: FACTORS INFLUENCING PREGNANCY OUTCOME  
CATEGORY: 1-C  
REVISION REQUESTED: February 23, 1993  
APPROVAL DATE: March 1, 1993

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must seek updated certification. Request for renewed approval must be accompanied by all four of the following mandatory assurances.

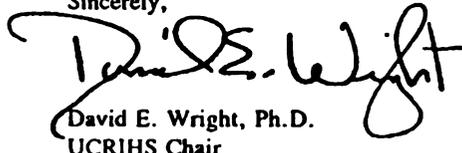
1. The human subjects protocol is the same as in previous studies.
2. There have been no ill effects suffered by the subjects due to their participation in the study.
3. There have been no complaints by the subjects or their representatives related to their participation in the study.
4. There has not been a change in the research environment nor new information which would indicate greater risk to human subjects than that assumed when the protocol was initially reviewed and approved.

There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. Investigators must notify UCRIHS promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,



David E. Wright, Ph.D.  
UCRIHS Chair

DEW:pjm

## Appendix F

Approval from UCRIHS for this Study**MICHIGAN STATE  
UNIVERSITY**

January 12, 1996

TO: Arline Barry  
17 Slatestone Dr.  
Saginaw, MI 48603RE: IRB#: 95-663  
TITLE: THE RELATIONSHIP BETWEEN PRENATAL CARE  
UTILIZATION AND FUNCTIONAL LEVELS OF SOCIAL  
SUPPORT IN A GROUP OF LOW INCOME WOMEN  
REVISION REQUESTED: N/A  
CATEGORY: 1-E  
APPROVAL DATE: 01/11/96

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

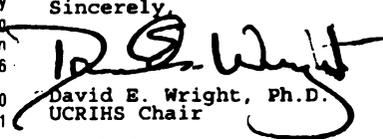
**RENEWAL:** UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

**REVISIONS:** UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

**PROBLEMS/  
CHANGES:** Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,



David E. Wright, Ph.D.  
UCRIHS Chair

DEW:bed

cc: Rachel F. Schiffman

**OFFICE OF  
RESEARCH  
AND  
GRADUATE  
STUDIES**Assistant Vice President  
for ResearchMichigan State University  
232 Administration Building  
East Lansing, Michigan  
48824-1046517/355-2180  
FAX: 517/432-1171

## Appendix G

## Corrected Normative Scores for Employed Adults

| NSSQ Scales      | Mean   | S.D.  |
|------------------|--------|-------|
| Affect           | 73.49  | 36.25 |
| Affirmation      | 66.06  | 32.33 |
| Aid              | 62.35  | 32.24 |
| Total Functional | 201.90 | 95.87 |

From "Revised Scoring Instructions for the Norbeck Social Support Questionnaire (NSSQ)," by Norbeck, J.S., 1984, University of California at San Francisco.

**REFERENCE LIST**

## REFERENCE LIST

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